ONTOHACKERS

Radical Movement Philosophy in the Age of Extinctions and Algorithms

Part II: R/evolution Technologies

Jaym*/Jaime del Val

ONTOHACKERS II

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Fig. 1. Detail from Hieronymus Bosch, *Ship of Fools* (1490–1500)

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Radical Movement Philosophy in the Age of Extinctions and Algorithms

Part II:
R/evolution Technologies

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Metahumanist Philosophy, Aesthetics, and Politics for an Earth Liberation and Regeneration: Undoing Human Supremacism and Its Planetary Holocaust. (Theory-Pragmatics of Metaformativity or Enferance/Enphereia)

An Impossible Book for a Metahuman Reader

p.

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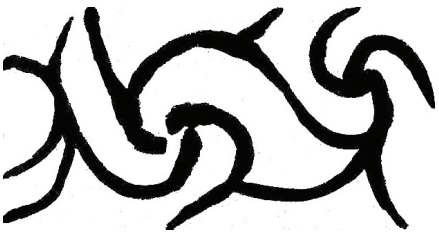
PART II

R/evolution Technologies



Metabiosis & Swarming Chaosmology
Sketches for a Theory of Orgiastic Evolution and of the Earth as Indeterminable Field of Variation

The following chapter is a fragmentary treatise on chaosmology and a speculative theory that gives some ontological pushes to important themes of current science, presenting a universe's evolution as movement of increasing variation actively propelled by quantum fluctuations. It culminates in the concept of *metabiosis*: life and evolution as symbiotic mutation or relational variation, at whose core is indeterminacy or open consistency, across all entangled strata of inorganic, organic, neuronal, and technical evolutions. Metabiosis defines life as a single-but-mutiple, entangled, and indeterminate variation, a metabodily process of increasing diversification. Along the way it unfolds a theory of swarming, orgiastic, indeterminate, symbiotic, mutant, kinetic, relational, diversifying, emergent, self-changing, self-propelling, self-organizing, enferant, and metabiotic evolution.

At stake is to renew a vision of life and evolution as creative process spanning the entire unfolding of a universe, with fluctuations as the only motor for an increasing variation, one which accounts for the superabundant dynamism of nature, in unimaginable but elegant scales of time-space and complexity. This should afford resituating humanistic dreams and pretensions of domination, control, or immortality. Instead, the best we can do is to contribute to the chaosmic movement of variation and avoid trying to fix it in our own image.[1] In the process, we will undo the phantom of order–chaos binarisms.

Quantum fluctuations are a means for a new understanding of movement as un/folding in fields of increasing complexity,[2] in a multifaceted and simultaneous expansion, condensation, diversification, tuning, and flocking: the movement of *enferance* (as explored in Book 3).

The following is a *speculative ontology* that pushes a number of existing, recent, past, and emergent discourses to the (meta)ontological horizon of Radical Move-

1 Upon final revisions of the book, I have encountered Thomas Nail's (2021) recent book *Theory of the Earth*, which is highly resonant and complementary with this section, both in spirit and in approach, I will try to outline some of the similarities and differences in some late added notes.

2 Edgar Morin (2008) is a major advocate of complexity who claims the primacy of improbable bifurcations in systems affording a movement of increasing complexity in evolution, where deviation-variation is prior to the norm. See Kagan (2011, 160). He would deserve closer attention, but my approach takes distance from any dynamics defined as happening between order and chaos, like he does.

ment Philosophy (RMP) as field theory of fluctuation.[3] It should be taken as a rather free interpretation of scientific speculations and facts while proposing *a shift of perception.* Scientists who believe to find inaccuracies are invited to apply the underlying thinking to whatever scenario of facts or speculations they consider more accurate. Considering the wild speculations going on contemporary cosmology, may I be forgiven for any inaccuracies.

I challenge some prevailing but problematic ontologies. Scientific thought, even at the most cutting edge, seems to be still populated by geometries of points following trajectories in a space, oscillating between order and randomness: a problematic idea of what movement is about. One can see this bias across the entire spectrum of physics, that is, from relativity through thermodynamics to quantum mechanics and its particle histories. But promising moves beyond this are coming up everywhere, such as those toward a field thinking.

In spite of the broad and overarching approach I propose, at stake is not to give an all-encompassing or encyclopedic account of the world. Rather, swarming chaosmology and evolution are a poetics and *poiēsis,* a way of thinking through the self-organizing processes of nature through the proposals of RMP.

I first outline a number of movement principles for my chaosmology and evolution theories, and later I will expand on details relative to each part. The final sections enter into some speculations in anthropology leading into the next chapter on the Age of Algorithms.

For several years, I have been looking for all possible descriptions of movement across the sciences, trying to find hints of theories that look beyond mechanism (echoing with Deleuze's and Guattari's (1987, 282) invitation to "look only at the movements"). What follows are sketches for a never-ending research, distilling from them some provisional motifs.

A problematic vocabulary still permeates many sciences, even in theories of emergence, a vocabulary of *structures* coming up, as if created by a designer or following rules and codes, which always leads to the question of where those rules and codes come from. I invite the reader here to rethink everything only from movement.

Perhaps the grand unsolved challenges of physics (such as the reconciliation of relativity and quantum mechanics), biology (in proteomics and genomics, bacteriology, or virology), neurosciences, or behavioral sciences and psychology will only be "solved" when taking an "only movement" and not just a "movement-first" approach, such as one that thinks movement as indeterminate and irreducible to "trajectories of points." But this will also entail a change of intentionality, that is, acknowledging that the only valuable knowledge is the one that allows us to move in more plastic and variable, less aligned and dominant manners. The grand questions will then reveal themselves to be wrong and the need for a new art–science of movement will be claimed. May this book inspire some moves in this direction.

3 I am here in complete resonance with Nail's claim for the need of a kinetic turn, a turn to movement, and for a movement revolution that can take all current concepts in the sciences, from cosmology and turbulence to the quantum realm, into a new (meta)ontological threshold (Nail 2018b; 2018c; 2020a; 2021).

4.0.1 Chaosmology: Closing the Circle?

In the beginning, there was no beginning. There were and still are no dual principles. Universes sprout from quantum fluctuations, differentials creating rhythms without metric. Endless energy changes attuning together bring up always new quality fields, increasing variation, from molecules and galaxies to bodies or ideas. It all follows the same principle: variation, a non-principle whose only rule is non-determination. Chaos (opening) is all that is.[4]

Current cosmology seems to have closed a circle, connecting to early animism, in recognizing the dynamism of matter and the entanglement of all inorganic and organic movements of life.

The chaosmological constant is variation.

4.1 Fluctuations Un/Folding

Fluctuations are indeterminate variations. In Quantum Field Theory (QFT), quantum fluctuations,[5] as indeterminate variations of energy–density, are the primordial state and substrate of physical fields, of the vacuum, and of the universe.[6]

I echo QFT when I claim that fluctuation is what underlies any chicken–egg dilemma, it is the only ontological *a priori,* a radical and dynamic neither–nor, neither being nor non-being. Indeterminate variation is the question! This implies a radical ontological revolution that reveals the core metaphysical questions revolving around being and non-being as profoundly wrong. The first philosophers were right in trying to think becoming rather than being, for becoming is precisely the movement of variation that fluctuations are and propel.

Fluctuation is the background "state" of the universe, and the unfolding of fluctuations is its process. Everything fluctuates, from subatomic variations of fields to gravity on the largest scales, through geophysical flows, flocks, proprioceptions, or the states of the nervous system, thoughts and affects, language and technics. The entire universe is the complex un/folding or expression of fluctuations. These are not an accident affecting something that preexists them, rather they are the very stuff of which all reality is made.

At stake is understanding the complexity of the movement of variation propelled by fluctuation, which is never an absolute indeterminacy but always takes new expressions along degrees of a spectrum in the balance of consistency and openness. I thus propose to exceed traditional approaches that see fluctuation as affecting the world's oscillations between order and randomness. Instead, the source is fluctuation itself expressing diverse degrees of complexity.

4 See Book 3 on the ancient etymology of *chaos* as opening.

5 "A quantum fluctuation is the temporary appearance of energetic particles out of empty space, as allowed by the uncertainty principle." *Wikipedia,* s.v. "Uncertainty principle," https://en.wikipedia.org/wiki/Uncertainty_principle. See also *Wikipedia,* s.v. "Quantum fluctuation," https://en.wikipedia.org/wiki/Quantum_fluctuation. See Barad (2007, 116) for an in-depth elaboration on this issue, differentiating Niel Bohr's deeper and more crucial idea of the ontological indeterminacy in quantum phenomena from Heisenberg's better known "uncertainty principle," which is epistemological, exposing the divergences within the Copenhagen School.

6 "Primordial fluctuations are density variations in the early universe which are considered the seeds of all structure in the universe." *Wikipedia,* s.v. "Primordial fluctuations," https://en.wikipedia.org/wiki/Primordial_fluctuations.

This undoes the whole cosmological tradition stemming from Plato's *Timaeus*, which places a formless receptacle or space, *hypodokhē* or *khōra*, as site for imperfect appearances of eternal forms. Here we have only formless receptacle, and, more importantly, we will see how consistency comes about without form, from the intrinsic and creative dynamism of fluctuation itself.

Even more insistently, I will be working against the order–chaos bias of modern thinking stemming from thermodynamics. There is neither order nor chaos, only fluctuation as non-random indeterminate variation!

If fluctuation is an indeterminate variation, oscillation is in turn a periodic fluctuation, vibration is a mechanical oscillation, and waves are types of vibration. Oscillations, vibrations, and waves are expressions and modes of fluctuation. But, as we will see, no oscillation is pure pattern, no fluctuation is pure randomness. All are entangled in complex rhythmic fields.

Subatomic oscillations[7] account for mass, energy, and fundamental interactions. These primordial oscillations have been "tuned" in the early moments of this universe as fluctuations expressed themselves while crossing high energy gradients during Big Bang and cosmic inflation.[8] Endlessly varied types of universes may unfold depending on how fluctuations express themselves in a cosmic inflation, each one creating different spacetime enfoldings, that is, energy–density distributions.

Electromagnetic oscillations also underlie all chemical processes, and thus all compositions and changes at physical, geo-biological, and neurological levels, and also in the chemistry underlying technical systems (both mechanical and electronic-digital).

The universe unfolds from vacuum fluctuations, indeterminate variations of energy–density, as movement fields emerge, differentiated regions in ongoing transformation, in a movement of increasing diversification.

Fluctuations un/fold as swarm-like fields of endlessly varied dynamics. Fields are not where movement happens, rather movement is the dynamics of the fields themselves: ever-changing rhythms–speeds, orientations–turns, and proximities–contacts of the energy–density zones.

Fluctuations propel a multiple movement of variation:

1. **of spacing/inflating**[9] while crossing energy gradients, as in cosmic inflation, or bubble formation (as tensional distribution), or growth (as complex flow), where the most primary enfolding is the spacing–expansion of a universe;

7 Subatomic oscillations include the angular momentum or spin of quarks in atomic nuclei and the momentum of electrons, both of them being increasingly considered as excitations of fields rather than discrete entities. Subatomic oscillations could also be thought as the strings and branes of String Theory, where particles are substituted by vibratory modes or multidimensional membranes. The field approach expands the particle idea to n-dimensional zones of continuous distributions of energy–density that may twist internally in ways we can associate to Calabi–Yau topologies, while also internally vibrating in metafractal rhythms.

8 See, amongst others, Galfard (2016) on the Big Bang as the heating coming *after* inflation, the latter being an inflaton field propelled by vacuum energy coming up in quantum fluctuations, which "freeze" during inflation and become the seeds for the largest scale distributions of matter, dark matter, and energy, where dark energy could be a remainder of the inflaton field. Quantum fluctuations express themselves across all scales form the smallest to the largest. In turn a possible existing explanation for dark matter is in so called "primordial black holes" that would have emerged soon after the inflation and the Big Bang, and that would be ubiquitous and tiny.

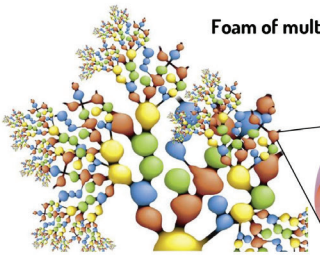
9 This multiple field dynamics of fluctuation un/folding exceeds any predominant mechanistic account of movement as displacement. In fact, pre-Socratic accounts of movement, as still sum-

2. **of difference within difference**, always new fluctuations coming up within fluctuations, regions condensing within regions, as in the gravitational density zones coming up in the early universe, where inside galaxy filaments condense the galaxies and inside these the stars and planetary systems. Vortical movements are a major type of flow coming up within density zones, from atoms to galaxies, when momentum in density differentials appears. Density accounts for macrocosmic spatiotemporal fluctuations. Extreme density gives rise to nucleosynthesis and radiation in stars, and even more extreme density gives rise to black hole singularities as radical spatiotemporal folds;
3. **of oscillatory tuning** (modes of excitation and momentum) as the bouncing of fluctuating regions stabilize while crossing energy gradients. Energy–density regions bouncing in relation to one another tune into a rhythmic field, affording the fundamental tunings of quantum fields in a universe. Every field is a *mode of excitation* stabilizing in the Big Bang. At the same time, these tunings afford fields of propagation like the electromagnetic field affording light and radiation. The bonds between these tunings acquire increasing complexity in the unfolding of chemistry and biochemistry. Thus, from elementary particles–oscillations stabilizing in the early universe, increasingly complex compositions are created as quarks create protons which together with electrons create atoms, which in turn create molecules, polymers leading to proteins, DNA, and neurochemical fields[10];
4. **of wave propagation**: a wave[11] is a propagating rhythm and is itself a change in the rhythms or proximities of the oscillations or distributions of a field. Waves are a prototypical field process that is entangled with other types of field processes: of energy transduction, chemical oscillations, vorticity and turbulence, fluid dynamics and mechanics, and so forth. Waves can be thought as the propagation effect within a field as defined by oscillatory modes (electromagnetic

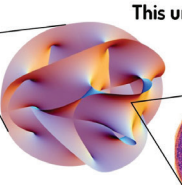
marised by Plato's cosmology, are closer to my field proposal, as are current theories of relativity and quantum mechanics, than was the Aristotelian and Newtonian inflection. The primordial spacing of a universe and in general the expansion of a field thus relates to notions of *archē*-genesis or *archē*-spacing in ancient theories of motion, but also to growth. Flows and fusions relate to ancient accounts of aggregation and rarefaction and thus coming to be and passing away. The vortex being one of their expressions they also account for circular motion. Swarming movements and changes in rhythm, contact and orientation account for alterations of quality but also for local displacements within a field, which always imply overall changes of internal relations

10 Oscillations like those of subatomic bonds tuned under the extremely high energy gradients of the initial universe, others, atomic bonds, need the high energies of nucleosynthesis happening in stars, or atomic energy and bombs, other molecular bonds change under lower energy conditions. The open consistency of our bodies and environments gradually unfolds along all those layers of attunements, including subatomic bonds emerging in the initial states of the universe, while other bonds of increasing complexity appear in lower energy gradients, which also need less energy to be decomposed.

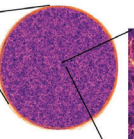
11 Waves are propagating disturbances, oscillations or vibrations of a physical medium or a field. There are two main types of waves: mechanical and electromagnetic. *Wikipedia,* s.v. "Wave," https://en.wikipedia.org/wiki/Wave. They can range from biological waves in the cortex and in developmental processes to the waves of quantum phenomena described by Schrödinger wave mechanics, see *Wikipedia,* s.v. "Schrödinger equation," https://en.wikipedia.org/wiki/Schr%C3%B6dinger_equation. On cortical waves, see *Wikipedia,* s.v. "Cortical spreading depression," https://en.wikipedia.org/wiki/Cortical_spreading_depression. On developmental waves, see Murray (1993, 1): "There is a vast number of phenomena in biology in which a key element or precursor to a developmental process seems to be the appearance of a traveling wave of chemical concentration, mechanical deformation, electrical signal and so on."



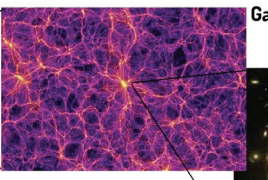
Foam of multiverses—eternal inflation theory

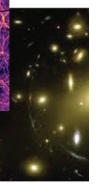


This universe—13,800 million years ago—infinite?



Observable Universe—Hubble Volume—10^{27}m=

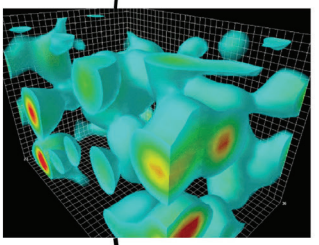




Galactic f

MODES / expressions of quantum fluctuations:

- Filaments & foams—bubbles-folds
- Flows -vortexes, spirals and spheres
- Swarms—from suabtomic to galactic
- Oscillations-vibrations-waves—from subatomic strings across all scales

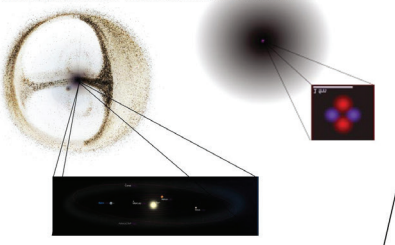


Quantum/vacuum/primordial
FLUCTUATIONS:
Indeterminate ad everchanging energy-density differentials
as source of a Universe's birth, tuning and evolution

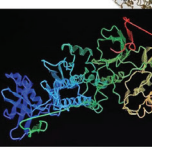
UN/FOLDING – DOU

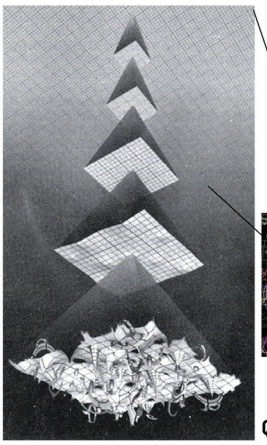
- From the smallest upwarc
- From the largest downwa
- Converging/evolving towa
- With the Algoricene as rec

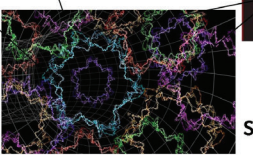
Solar system and atom, both with a tiny nucleus, thousands of times smaller than the radius of the electron or comet cloud



Organic life u







Atoms, with a tiny nucleus, thousands

Subatomic particles conceived as vibrating string

Quantum foam—Planck Length 10^{-35}m= 0,00000000000000000000000000000

ı= 10000000000000000000000000000m

: filaments, each with millions of galaxies

Galaxy cluster (Hubble deep field)

Spiral galaxy — around 100billion stars — 10^{21}m

Crab nebula — 6300 light years from Earth

Oort cloud and solar system—1 light year—10^{16}m

Earth with its current atmosphere

Atmospheric turbulence

OUBLE MOVEMENT / TUNING AND EVOLUTION OF A UNIVERSE

rds

ards

wards complex multicelular life

eductive anomaly

an

unfolding on Earth—4,000billion

Complex multicellular life—500million years till now

Flock of starlings

Brain of a fly

The anomaly of the Algoricene—10,000 years till now

Smoke ring and Medusa—invertebrates grow like flow-movements

Cell cytoskeleton made of protein microtubules

DNA molecules folded in the nucleus—10^{-6}m

Protein—around 1,000 atoms—billions in every cell

ds of times smaller than the radius of the electron cloud—10^{-16}m

GEOMETRIC REDUCTIONS

Grids

Colonialism

Microchip

HYPERCYBORG
TRASH COVERED PLANET
EXTINCTION CYCLE
PLANETARY HOLOCAUST

ıgs

000000001m

Fig. 1. Chaosmic evolution diagram where quantum fluctuations connect the largest and the smallest, as energy differentials in quantum foam on the smallest scale ("Planck length," at the bottom) create cosmic inflations, in a cascade of bubble membrane universes ("eternal inflation," at the top). A bubble or multidimensional membrane universe unfolds from the multiversal quantum foam of eternal inflations into subatomic oscillations and galaxy filaments, vortical flows, and fusions. On Earth, biochemical webs un/fold inside bubbles, folding–spiraling proteins and DNA, swarms of microorganisms evolve through symbiogenesis and bacterial sex into increasingly complex organisms with nervous systems, forming flock societies. Finally, geometric reduction in hominid cultures gives rise to a planetary algorithmic field of reduction. All along the tropes of the swarm, the oscillation, the bubble–foam, the filament–web, and the vortex–flow entangle into always new more complex movements (except for the more recent reductive algorithmic alignments). The double un/folding of the largest and the smallest creates particular relations between *orders of magnitude, complexity, and evolutionary timespans:* from the billions of galaxies each with billions of star systems, to the subatomic particles composing atoms in the early universe, which around 4 billion years ago composed an unprecedented aggregate in bacteria, each composed of trillions of atoms, which over 4 billion years evolved into aggregates of 100 trillion cells like us. In a very different span and mode, an algorithmic field of billions of aggregates is quickly emerging. *The smallest and the largest gradually converge in a middle scale of increasing complexity, across modes of organization*:

— Eternal inflation theory points to an endless web of universes giving birth to other universes. Inflation is the underlying vertiginous movement of vacuum energy propelled by fluctuations, within which bubble universes eventually stabilize, but due to fluctuations every bubble has differential regions, some of which stabilize while other continue to expand into new potential swarms of multiverses. However, string and brane theories afford a more complex image than the bubble for the multidimensional and entangled webbing of multiverses. Perhaps membrane universes relate to one another, or even connect via spacetime deformations such as black holes.
— This universe, represented here by an *n*-dimensional Calabi–Yau topology, of which the visible part (Hubble volume) is a very small part of the whole. Some theories propose a boundless but finite four-dimensional hypersphere, torus, or other multidimensional manifold, such as Calabi–Yau. But observations point to a 3-D *flat* universe without curvature, which implies the difficulty to think an infinite universe appearing from nothing in inflation, of which we see a infinitesimally small part, and whose matrix continues to expand. *Inflation may have created an already infinite universe that continues expanding.*
— Observable universe (see below).
— Galaxy filaments (see below) each containing around one million galaxies. This foamy web-like texture for the largest-scale structures of the universe is due to quantum fluctuations "freezing" during cosmic inflation and propelling a process of increasing differentiation, of condensation within condensation.
— Inside the filaments, galaxies form clusters and superclusters, giant swarms with complex evolutions and dances.
— Galaxies are of three different kinds: spiral, elliptical, and irregular, each containing hundreds of billions of stars.
— Nebulae are gas clouds where stars are born through condensation via momentum in flow forming vortexes.
— The Oort cloud is the cloud of trillions of comets surrounding the solar system, with a radius of around one light year, thousands of times farther from the sun than the orbit of Neptune. Indeed all planets around the sun could be seen as the nucleus of the solar system. This provides a structure surprisingly similar to the atom, whose nucleus is also thousands of times smaller than the electron cloud. Inside the star system nucleus are the actual sun, planets, satellites, and asteroids, like in the atom nucleus there are quarks underlying the protons and neutrons.
— The Earth is itself a vortex inside the solar system. The sphere of a star or planet is due to the curving of space caused by matter (gravity). With a certain distance and speed objects fall, with more distance and speed objects orbit.
— Atmospheric flows and vortexes on Earth. Vortexes reappear in all scales from galaxies to microscopic, perhaps even atomic scales.

— Flocks as predominant trope for life on Earth, entangled with atmospheric flows in evolution.
— Frozen flocks, as grids and networks of the Algoricene or Age of Algorithms.
— Brain of a fly (Rehm 2018). The nervous system and brain, evolving perhaps from bacterial mobility systems, create a new mode of movement, of swarming neuronal fields, underlying organisms and proprioception, and thus flocking behaviors.
— Smoke rings and medusas, exposing how the movements of morphogenetic growth are implicit in flow, and inversely how growth of medusas has evolved with the vortex rings of watery movements.
— Cell cytoskeletons, made of folding proteins, the filamentous and plastic architecture of the cell.
— Proteins and DNA, two expressions of spiraling folds as the new mode of movement proper to organic life.
— Atoms and their tiny nucleus, very similar in proportion to a star system, its nucleus and its surrounding cloud of comets (that may serve the exchange of new molecules across the galaxy, like the electron accounts for the fusions of atoms into molecules).
— Figuration of entangled subatomic strings tuning in the Big Bang, echoing Kelvin's vortex theory of atoms (and Descartes's vortex theory of matter). Subatomic particles are nodes in a vibratory multidimensional web.
— Quantum foam is the bubbling spacetime from whose vacuum energy and quantum gravity differentials eventually universes sprout, and whose existence is speculated to be at the Planck length of 10^{-35} m, the smallest scale conceived by current science due to the effects of quantum gravity that would appear below that scale.

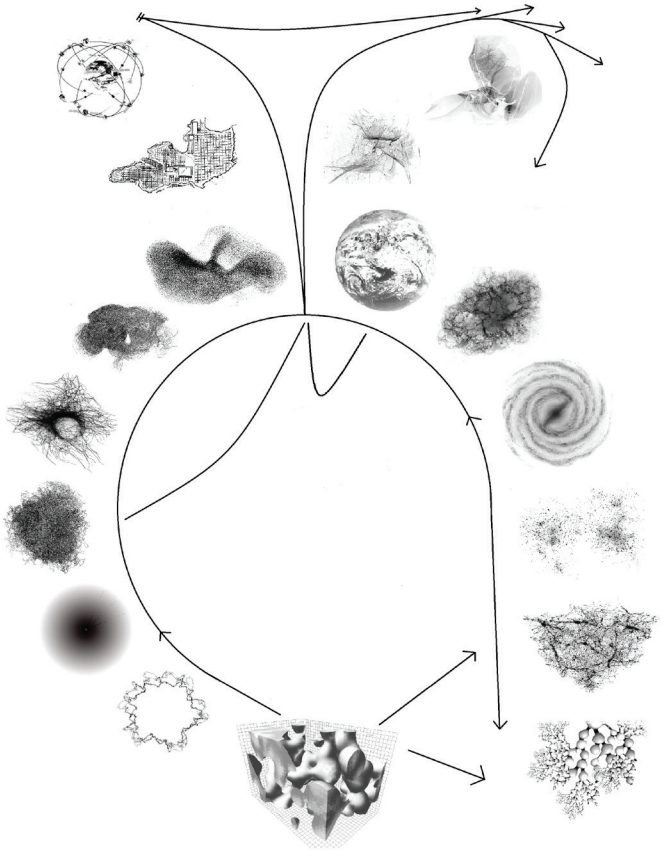


Fig. 1a. Variation of the previous diagram, showing fields in scales from subatomic quantum fluctuations to galaxy filaments, the observable universe or the multiverse.

waves), or by matter concentrations (mechanical waves). Waves have their own prototypical clinamental mode of ongoing variation in diffraction. Diffraction is the bending of waves around the corners of an obstacle[12];

5. **of swarm-like changes of rhythm, contact, and orientation between regions**, leading always to new compositions and qualitative variations, from swarms of galaxies and stars to swarms of particles,[13] atoms, and molecules, evolving into swarms of cells (bacteria) and organisms (flocks or societies). Affects, memories, and thoughts are complex expressions of these in crossing density thresholds of trillions of aggregates, in changing entangled compositions.

These simultaneous movements happen in cycles of condensation and dissipation across *infinitesimal spacetime thresholds*: from the birth, eclosion, and death of a universe or star, to a society, a bacterium, an atom, or a virtual particle. Some of them last for googols of years, others last for unimaginably small fractions of a second. In between, condensation and dissipation are always a transformation–variation.

The bubble (as expansive energy region) and the filament (as density zone between neighboring bubbles) are primary expressions of fluctuation in all scales, from galaxy filaments and multiverses to cells and nervous systems, across all protospherical and filamentous expressions of nature. Spacing, condensing, tuning, and flocking account for the more general swarming dynamics of nature. These movements happen mostly simultaneously as a multiple un-/in-/enfolding.

When a field consists, it can be source for new types of fields, just like atoms afford molecules, which allow folding proteins to appear, which allow growth to develop, which allow nervous systems to appear, and so forth. This un/folding is an ongoing variation and diversification, but within it occasional bubbles of closure appear. Fields are mostly entangled, but sometimes not, evolving and building upon one another, recomposing in the process non-linearly, with numerous shocks and unexpected encounters, but with minimal ongoing variation as motor. Fields emerge already as regions of energy–density differentials proliferate in new differentials within a region, sustained in relation to neighboring regions, but also as the tuning of an entire universe happening in a Big Bang or inflation.

The holding together through energy–density distributions is also the primordial mode of internal sensing of fields, which I call *anarchē*-proprioception, and it is also how fields sense other fields, through shifts in their own energy–density distributions.[14]

Fluctuations create differentials of excitation, oscillation, and rhythm, of momentum and force. The energy and excitation of one field transfers or transducts to others as they vibrate reciprocally, reattuning. Subatomic strings are excitations

12 See Books 3 and 7 and *Wikipedia*, s.v. "Diffraction," https://en.wikipedia.org/wiki/Diffraction.

13 Brownian motion studies the "random movement" of particles colliding, for instance in gas. I argue however that there is no such things as pure randomness, there are different kinds of swarming fields. See *Wikipedia*, s.v. "Brownian motion," https://en.wikipedia.org/wiki/Brownian_motion.

14 Our muscular proprioception is a complex expression of this process and is thus the best means to experience the ontological indeterminacy of movement fields. The body sustains indeterminacy, as its field fluctuates in many ways at the same time. The body is thus always already an indeterminate multiplicity with many "unactualized" but actual and sustained tensional zones, rather than discrete histories. See Book 2.

where the atom is like a node or vortex, or perhaps like a swarm of excitations, with complex, multifaceted rhythms and momentums.[15]

Every universe is a field un/folding within larger multiversal fields, each of them spacing and tuning into particular movement economies.

But this universe is already a multiverse, whose endless "histories" are implicit in the indeterminacy of its movement field, and where not everything is possible, but the possibilities are infinite. The cosmos as ontologically indeterminate open whole, i.e., not bounded and indeterminate field, is thus chaos, understood as opening through its ancient etymology and thus taking on Guattari's formulation: a *chaosmos*.

4.1.1 Momentum and Metabolism

The double primary unfolding of bubble filaments and oscillations in this universe leads to flow and propagation and the Age of Stars with a first primordial expression of movement: *momentum* (both in subatomic oscillations and gravitational fields of flow, each one with their modes of wave propagation).

Gravity could be seen as the sheer concentration effect of quantum fluctuation on the largest scales, creating the momentum of flow-within-flow-within-flow (swarms of stars, within swarms of galaxies, within galaxy filaments). Vortexes of all sizes appear in that process due to momentum, and the apparent circular motion and spherical shape of stars and planets is actually part of the differential dance of endless entangled vortexes and other amorphous flows, as in our solar system. Circularity and sphericity, both being always differential, are thus part of vortical movement, which is part of flow, which is the effect of momentum in density fluctuations.

Vortexes are inevitable convections of laminar flows in a fluctuating world, where there is never a purely laminar or linear flow and where any simple momentum or density and speed differentials emerging in flow will always meet others, leading to complex currents and protovortical or vortical formations. Momentum is *the impetus in movement* propelled by fluctuation as it creates energy–density differentials of speed.

Within our planet, bubble filaments, oscillations, and flows transducted into a new stratum of biochemistry, folds–spirals, and growth fields, where momentum became *metabolism* as a more complex mode of energy transduction. Flow acts like a sieve that can separate elements, as when water and rock are separated in a planetary formation process, but also allow the smaller bodies to collide, forming the planet, onto which water molecules later return.

Life needs a *flow of electrons* where always new biochemical bonds happen, where the momentum of flow coheres with the oscillatory momentum of electrons bonding. The way in which flexible plant bodies and elastic animal bodies defy gravity has to do with how the molecular and biochemical bonds emerging within flow created the means for new architectures that are not merely following gravity but can work with it or even against it!

With nervous systems and brains, these elastic bodies metaducted or enferred into the neuronal movement of *thought* with an increasing abstraction of neuronal

15 See *Wikipedia*, s.vv. "Theory of everything," https://en.wikipedia.org/wiki/Theory_of_everything; "String theory," https://en.wikipedia.org/wiki/String_theory; and "Fuzzball (string theory)," https://en.wikipedia.org/wiki/Fuzzball_(string_theory).

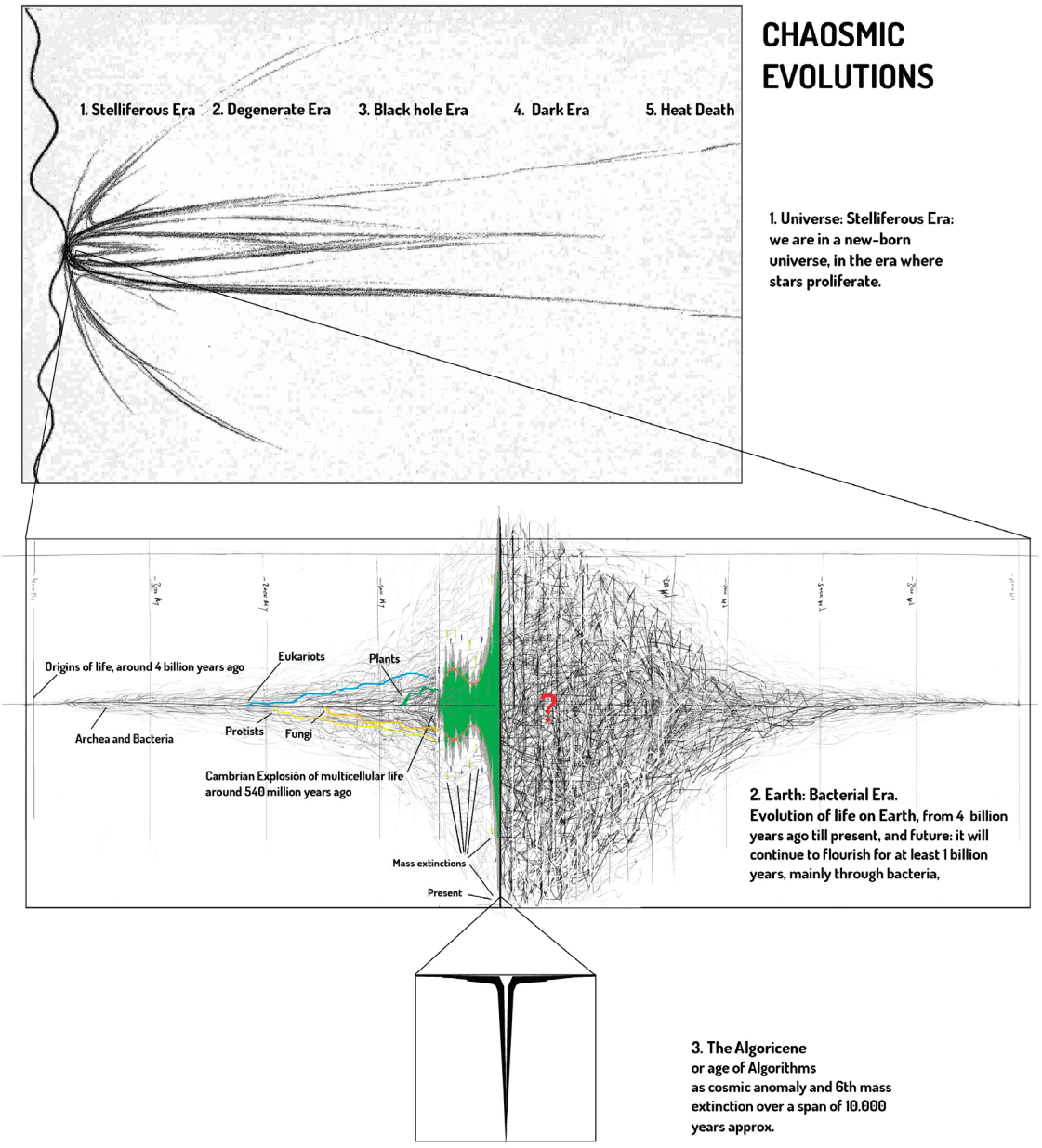


Fig. 2. Chaosmic–earthly–technocultural eras are also accumulating strata of organization. Cosmically we are in the age where stars are born, the Stelliferous Era. Earthly we are in the bacterial era. Technoculturally we are in the Age of Algorithms, extinctions and Planetary Holocaust.

1. **Stelliferous Era**: We owe the idea of cosmic evolution implicitly to Einstein's relativity theory. This universe is extremely young, almost new-born. In around 1 billion years the sun will begin

to grow and life on Earth will become difficult. In 4 billion years, the sun will become a red giant, possibly engulfing the Earth. In 8 billion years, the Milky Way will merge with Andromeda and later the entire local groups of galaxies will eventually merge into a giant elliptical galaxy. In a far distant future, after around 10,000 generations of stars like our sun, it is expected that stars will no longer form, and life as we know it will stop to be possible. A universe like ours has a span in which it can host life, mostly in its youth. Meanwhile, the expanding universe will make distant galaxies disappear from our cosmic horizon. First we will be bound to our local filament or supercluster of galaxies, then to our local group of galaxies, which will eventually merge in a single gigantic galaxy. After stars stop forming in about 10^{14} years the universe will have an even longer "degenerate era" where white, red, and black dwarfs continue to emit radiation. When these evaporate, in about 10^{40} years, the universe will enter an even longer "black hole era." When black holes evaporate, perhaps in a googol years (10^{100}) or more, provided that protons decay, the universe will enter the "dark era" on its way toward heat death, reaching thermodynamic equilibrium perhaps in 10^{1000} years, though unexpected evolutions could happen and new universes cold be born from the heat death of ours, always thanks to fluctuations. These are considerations for an expanding universe, which is the "shape" considered by current cosmology. With more dark energy, the universe would run more quickly toward a "big rip" that would end up ripping all matter apart. With less dark energy it would at some point collapse back on itself into a "big crunch," with a shorter life-span. There are different proposals for the "shape" of the universe according to different overall energy–density distributions. These influence the lifespan and evolution of a universe, and the possibility or not to host complex life. Other universes may have other "shapes" and evolutions.

2. **Bacterial Era:** In our universe, organic life appeared as soon as it had the chance, after two or three generations of stars creating complex elements like carbon through nucleosynthesis. Since 4 billion years ago, bacteria are the evolutionary matrix of life on Earth. It took 3.5 billion years of bacterial symbiosis and stabilization of the Earth, along endless hazards and accidents, to bring about complex multicellular life forms: the Cambrian explosion that is represented with more detail in the central part of the diagram (in green), with precise curves of multiplication of genera (biodiversity, not biomass) and the inflections caused by mass extinctions. Before the Cambrian explosion, the predominance of bacteria and the later emergence of eukariots, protists, fungi, and plants is more loosely represented in the diagram, while expressing the predominance of bacteria during the entire evolutionary span. In terms of current biomass, it is currently dominated by plants (450 gigatons), followed by bacteria (60 gigatons), most of which are deep under the Earth's surface. These are followed by fungi (12 gt), archea (7 gt), protists (4gt), animals (2.5 gt), and viruses (0.2 gt). Most animals are in the oceans (Bar-on et al. 2018). Every mass extinction has created new paths in evolution. The dinosaurs' extinction gave way to primates. The current extinction caused by humans seems to be already giving birth to superbacteria, resistant to human antibiotics! In terms of past and future evolutions of biomass and life, some evaluations say that we are already in a decline of overall proliferation of biodiversity and biomass. Generally speaking, and discounting unexpected catastrophes or the future effects of human action, the planet's life span is bound up with the future expected evolution of our sun, as it starts growing, becoming a red giant, eventually engulfing the Earth. It is possible that in 1 billion years from now life will already be difficult for any complex multicellular forms, though bacteria might continue to thrive.
3. **Algoricene:** Civilizations like ours have flourished (and will perhaps disappear) in an exponentially quick time lapse, a blink of an eye in evolution. Though some technopositivists and transhumanists think that machines and AI will be the new dominant life form on Earth, capable of surviving future extinctions and of expanding in the universe, the Algoricene is perhaps more of a dead end, unleashing another mass extinction that needs to be reverted toward new paths of symbiotic evolution.

networks within geometric environments into form *alignments*, as a recent bifurcation of nature leading to AI as a planetary field of *algorithmic* movements.

—**inflation** (cosmic)—*archē*-momentum–fluctuation un/folding and propelling universe formations:
—**momentum** (subatomic oscillations and in flow—Age of stars—this universe)
—**metabolism** (biochemical momentum—growth as energy transduction—Age of bacteria—biosphere)
— **creativity** (as transversal to all and as the momentum of thought-ideas in neuronal swarms)—leading by reduction to **alignments–algorithms**

4.1.2 Metafields

Swarming chaosmology considers our current evolution as un-/in-/enfolding of five major metafields:

1. Multiverse—eternal—multiversal metafield from which quantum foam,[16] a foam of endless bubble universes, emerges, each one a process of inflation, condensation, and tuning.
2. This universe—Stelliferous Era—13.8 billion years old—the tuning–spacing of this universe in the Big Bang recently (around 13.5 million years ago) provided the conditions for the emergence of galaxies and stars. Our Milky Way galaxy is the specific local medium in this universe where generations of stars have created the conditions for the complex elements inside our solar system.
3. The Earth or biosphere—Bacterial Era—4 billion years old—characterized mainly as the age of bacteria but encompassing all organic life on Earth (which could however have several sources and evolutionary modes), including protists, fungi, plants, sponges, and the few other animals without nervous system.
4. Neurocene—540 million years old approx.—emergence of diffuse nervous systems and of centralized nervous systems with brains, and with them of flock societies, of invertebrates and vertebrates, increasingly articulate, torsional bodies with proprioception proper, including insect societies and technics as well as early non-imperial, hominid, and human cultures.
5. Algoricene—10,000 years old approx., but gradually emerging since the origins of the *sapiens* (300,000 years ago) and of hominids (2.5 million years ago)—field of large-scale and aligned organizations in technohuman cultures in an exponential acceleration out of previous hominid societies emerging over the past 2.5 million years since the first tools and the domestication of fire, when bipeds found themselves in the savannah. This field is exponentially accelerating toward a potential but questionable and uncertain algorithmic life form imploding in the Big B.A.N.G. of convergent technologies.

For our purposes one could summarize these into three epochs which are also strata of composition: Stelliferous Era (relative to the larger cosmic medium), Bacterial

16 Quantum foam is the quantum fluctuation of spacetime on the smallest scale, the Planck Length, 10^{-35} m, the same scale in which subatomic strings are considered to oscillate. See *Wikipedia,* s.v. "Quantum foam," https://en.wikipedia.org/wiki/Quantum_foam.

Era (relative to the biosphere), and Algoricene (recent but exponentially accelerated technohuman sphere that is threatening life on Earth).[17]

Our universe is one possible kind of universe within a potentially infinite multiverse, just like life on Earth is one type of life amongst the many that there may be in the galaxy and the universe: "one voice in the cosmic fugue" (C. Sagan 1980). Likewise, early human cultures exposed a coexistence of highly varied expressions, from which, however, rationalist monotechnical culture has ended up dominating at planetary scale.

The biochemical and neurochemical similarities of life on Earth are not unlike the similarities of "physical laws" in the cosmos. The latter tuned during cosmic inflation. The former tuned during 4 billion years of bacterial, geological, and atmospheric evolutions of the biospheric field. Likewise, gradual coevolutions of more aligned ecosystems, bodies, movements, and brains account for the apparently sudden and simultaneous emergence of human cultures. Within this process, many ecosystems and human societies may have been almost separate bubble worlds until the different waves of globalization arrived, climaxing in the radical hyperconnection of industrialization (transport, production, waste, and pollution) and of planetary-scale computation systems. The algorithmic orgy of hypercontrol threatens the bacterial orgy of variation.

Just like Vladimir Vernadsky (1998, 50) claimed that organic life is like a more complex mineral, I claim cultures to be particular expressions of nature. I oppose any strict differentiation between matter, life, intelligence, and technics as is usually undertaken, as well as the idea of rational and artificial intelligence as a superior kind of evolution. Instead, evolution is a question of variation and plasticity. Why should self-aware "consciousness" be superior, if it imposes reduction instead of taking on variation? This narcissism of considering our capacity to reflect upon the universe as a sign of superiority and as telos of all nature needs to be seriously questioned, perhaps even reversed.

The open consistency of bodies comes up in this complex dance of improvisations slowly varying over billions of years of *n*-volutions. Their plasticity lies in the capacity to vary while holding together, where new fields build upon previous ones in unexpected ways. For instance, the neuronal field builds upon the field of folding molecules of organic life, which in turn builds upon the field of flows and fusions of inorganic life. We embody a 13.8-billion-year-old intelligence and memory, where transmodal connections between the fields composing us happen through the electromagnetic oscillations of chemistry.

17 Our environment is the Earth, but we know it is part of an unreachable (meta)cosmic milieu, from whose variety however we can learn to better take care of the Earth. Within the Earth the matrix of the biosphere is recently being threatened by another matrix, the Algorisphere. Perhaps not unlike mass extinctions of the past, this is an occasion for new evolutionary inflections.

Up till now the five major mass extinctions documented may have been due to interactions of the Earth with the larger cosmic medium: most of them due to massive vulcanism that may have been unleashed due to interactions with dark matter zones in our round through the galaxy's spiral, which involves poloidal cycles every 30 million years, within a 250-million-year-long toroidal round.

One of the mass extinctions was due to an asteroid and another possibly due to a supernova. In the early solar system this interaction was much greater and millions of comets reaching the Earth from the outer solar system may account for much of our water. The gradual stabilization of the solar system went along the engineering of the atmosphere, seas, and soil done by bacteria, creating more stable conditions for organisms like us.

4.1.3 F5 Theory of Fields

Swarming chaosmology proposes to approach the un/folding of this universe through RMP as field theory, exposing the diverse *types of movement fields* coming up in the process and their interrelations.

Chaosmos/*Physis* is becoming/movement/change/variation whose *poiēsis*/fielding unfolds in movements of

— spacing plus internal difference—*warping*;
— *weaving of rhythmic modes*—oscillations–fusions and propagations, pulsating, emerging, vanishing—flows and vortexes—micro- and macrorhythms and cycles (from the *oscillations of atoms to those of planets*)—always multiple and entangled;
— qualitative change and growth—chemistry and metabolism;
— folds—flocks—torsions–flexing–stretching—wandering—alignments.

For this nonlinear journey from the Big Bang to the Big B.A.N.G., I will propose an *F5 Theory of Fields*: *Fluctuations* un/fold as fields through frequencies–foams–filaments (primordial spacing and tuning of a universe), *flows–fusions* (inorganic matter and the age of stars), *folds–filaments* (organic movements and age of bacteria), and *flocks* (societies of organisms with nervous system), whereby dominant technical bodies relate to a fifth, occasional but now dominant type: *form–frame–fixity* alignments or frozen flocks (perhaps to be superseded by a formless feminism).[18]

They could also be considered as five primordial modes of composition (substituting Plato's five geometric solids and his idea of there being five worlds or *kosmoi*).

Fluctuation, flickering and un-/in-/enfolding in:

— Foam, filament, and frequency or flickering (fielding-inflating or cosmic inflation-condensation and oscillation-vibration-tuning and propagation);
— Flow and fusion (vortex—nucleosynthesis and radiation—life cycles of stars);
— Fold (growth–flourishing–flexibility—fabric-weaving–nesting—cells—spiraling molecules—biofilm);
— Flock (societies, ecosystems—elastic bodies with nervous system);
— Form (anomaly) → Formless Feminism (to overcome anomaly).

In each iteration, movement fields transduct to a new mode, a new level of variation and complexity (with the exception of form, which is as of now reductive).

Fluctuation un/folding as:

— frequency, foam–filaments. Flickering multiversal swarms of quantum foam unleash the cosmic inflation and Big Bang of this bubble universe, tuning the flickering frequencies of subatomic strings (including attraction and repulsion, collision and bond, recombination and wave diffraction) in modes of rhythmic attunement (webs of nodes of oscillations–vibrations or energy–density regions) and propagation across rhythmic nodes, constituting fundamental quantum fields, while creating the foamy density distributions of galaxy filaments;

18 Note the striking similarity but also complex difference between my proposal and Thomas Nail's movement ontology (Nail 2018b, 2021) which has flow, folds, and fields, in that order, as a core conceptual triad. In my case the field is primary, direct expression of fluctuation and crucial means to redefine movement without recourse to form, trajectory, being or quantity. Form indeed is an anomalous and recent reductive by-product of movement. And yet our proposals could be read as complementary.

— flow and fusion (age of stars, galaxies, planets). Vortical flows condensing in galaxies and stars create planetary systems, star nucleosynthesis (with the creation of new elements, atomic bonds, and molecules) and radiation, remixing in nebulae into new generations of planetary systems with more complex elements. Macrocosmic vortexes account for the differential cyclic or oscillatory movements of planets and stars. Flow appears across different degrees of aggregation including plasma; gas; fluid; viscous, viscoelastic, and elastic solids; and rigid solids. In it emerges the primordial spacing of molecules–substances–compounds–materials;
— fold, filaments, foam, and biofilm (age of bacteria): increasingly larger molecules of protein folds–spirals and their superfold in DNA folds–spirals develop increasingly complex biochemical pathways inside sea foam bubbles leading into the emergence of cells and bacteria, and later into swarms–fields of growth and morphogenesis, diversifying into fungi, protists, and plants in a symbiogenetic process fueled by bacterial sex and viral transduction. Bacteria take protein folds to a new level of complexity through complex metabolic and mutation capacities, and through symbiogenesis. Filaments and centrioles constitute relational *movement economies of molecular affordances* leading to a proliferation of movement types in the biosphere including cell motility, undulipodia, tendrils, growth, plant circumnutation, and bodies with flexible, elastic, and torsional movements;
— flocks, filaments–neural networks. Bacterial mobility systems evolve into decentralized neuron networks of proprioceptive systems and their superfolding brain networks in organisms of increasing articulation, from amoeboid invertebrates to insect societies and mammals with predator and mating behaviors, including swarm architectures and technics as well as protoaligned hominid and human societies. Apex of movement diversification?
— form—fixity, frame, figure, frozen, finalism, failure, fabricated, fake, fiction, factitious, false, fact, fabulation, fantastic—nervous systems–brains and articulate bodies–movements–architectures coevolve into superaligned geometric–algorithmic–gridded fields—Great Bifurcation—alignment as anomalous tendency in bipedal hominids. Reductive inflection of increasing alignments in various human cultures—hard alignments of imperial and sovereign cultures—static algorithms of disciplinary society and mechanism—dynamic algorithms of control society—Towards a Big B.A.N.G. of AI?—perhaps to be superseded by a formless feminism? —or leading to *extinction*?

4.1.4 The Chaosmic Metafields

Cosmic inflation and the Big Bang created the cosmic web of galaxy filaments as field of gravitational fluctuation flows and the three fundamental subatomic oscillatory fields, which remixed by fusion in gravitational flows. All the quintillions of black holes, stars, planets, and the septillions of asteroids and comets in the observable universe are all ordinary matter that is aggregated, nodes within much vaster fields of gas and dark matter in the cosmic web. Every star is a field of trillions of dancing objects, in our case trillions of comets in the Oort Cloud, billions of asteroids in the inner belt and the Kuiper belt, hundreds of satellites, planetoids, and eight planets.

Flow and fusion in galaxies and their star systems has created the mixing and mutation of matter into complex elements, substances, and mixes, in the galaxy

field, the star system field, and the planetary field, with increasingly complex molecular flows affording a first planetary web of molecular fusions where momentum in flow gradually becomes metabolism through the new intraflow movements, the folds within the flow.

The subtle balance of these flows in a planet like Earth, always threatened by myriads of cosmic hazards, has afforded (unlike in Mars or Venus) the emergence of new strata of diversification when foams and molecular filaments coalesced into the cellular field: swarms of microorganisms, epitomized by the radical folding movement of proteins and DNA creating webs of biochemical paths, happening in and across the open membranes of bubble fields that in turn created a planetary web of membranes which afforded the emergence of so called *autopoiēsis* (as actually metastable sympoietic, metapoietic, or kinopoietic[19] process in and across cells) and allowed the transposition of life from sea to land: Hypersea field (McMenamin and McMenamin 1994).

Bacteria formed a second planetary web of biochemical paths through metabolic and genetic exchange, a planetary bacterial orgy, now already lasting 4 billion years, of experimentation, symbiosis, and mutation, terraforming the Earth radically as with the creation of the oxygen atmosphere that allowed the emergence of eukaryotes, a myriad of modes of sexual reproduction and multicellular life.

This, along with the stabilization of the solar system and the fluctuations of the climate, tectonics, and so forth, allowed at some point the complexification of the planetary field of bacterial exchange into more complex symbiotic compositions, as a planetary web of multicellular organisms: fungi, protists, and later plants, with an increasing diversification of biochemical webs, processes, ecosystems, and fields. The folding nature of proteins allowed the proliferation of webs of diversification of flexible and elastic movement that includes the spiraling circumnutation of plants, and the upwards growing of trees.

The symbiotic evolution of bacterial mobility systems, across protists and plants, may have led to the emergence of nervous systems as yet another expression of biochemical webs across the planet, allowing a new stratum of movement of articulate bodies, leading to a planetary web of nervous systems or planetary field of neurons: of flocks of bodies with proprioceptive, exteroceptive, interoceptive systems and brain, where nervous systems are interconnected, amongst others, through the exteroceptive sensory systems of animals with increasingly autonomous and articulate movement.

We could now be at the apex of diversification of what this planet can host.

But a recent anomalous evolution of these articulate bodies–brains has created very quickly another metafield, one of reduction that is unleashing an unprecedented form of mass extinction: an algorithmic field.

…

Metafields are, for our purposes, of two major kinds: *cosmic* and *planetary*. Though our universe may be part of, and interacting with, larger multiverses, we are mainly part of stellar interactions in our galaxy, while the fundamental physical interactions relate to the tunings of this universe during inflation.

All geo-physio-bio-chemical processes emerging on Earth are to be considered planetary-scale fields, unique to our planet in terms of the tuning of the biochemis-

19 For more on *kinopoiēsis* or *synkinēsis,* see Nail (2021, 138).

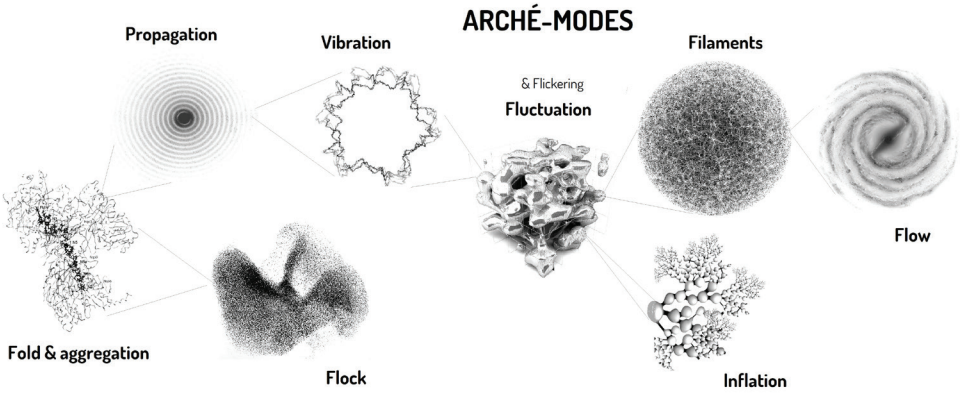


Fig. 3. Diagram of *archē*-modes of fluctuation.

try of life in relation to this planet's flows, fluctuations, and oscillations, not unlike other universes may differ in fundamental tuning from each other. But the planet's tuning is a crucial effect of its entanglement with the larger cosmic medium.

All the unique earthly processes are planetary in scale. The emergence of bacteria and their sustained network of mutations is the core matrix for a planetary network of biochemical mutation emerging in the archean eon, complexifying with protists, fungi, and plants in the proterozoic eon and with the explosion of multicellular life and the arrival of nervous systems and animals in the phanerozoic eon, building up new entangled biochemical planetary networks of protists, fungi, plantsm and animals, the latter together with the new, quicker movement of nervous systems that is the ground for the rational bifurcation in the *sapiens,* which has created its own planetary algorithmic field.

The cosmic web of galaxy filaments hosting vortical nodes of galaxies, which in turn host filaments of nebulae, where in turn the vortical nodes of star system appear, has afforded a planetary medium, where webs of more complex biochemical processes unfold as planetary webs of brownian motion, polymers, bacteria, multicellularity, and nervous systems, emerging within and across plastic membrane architectures. The web of nervous systems is related to flocks–swarms of animals entangled with all the previous strata in their flocking and wandering, developing exteroception from a more primordial proprioception. But from this web of nervous systems an algorithmic planetary web has recently emerged that no longer coemerges with the ecosystems, a reductive and dominant bifurcation of nature unleashing a new type of mass extinction.

4.1.5 The *Archē*-modes

Throughout Book 4, the prefix *archē-*, echoing the pre-Socratic use of *archē* as ongoing principle or source of becoming rather than origin, implies constitutive principles or processes that may have an application in this universe across all its orders of magnitude (*archē*-modes), events of the universe's formation (*archē*-genesis), or principles of movement and becoming underlying the ones traditionally analyzed (*archē*-spacing and *archē*-proprioception).

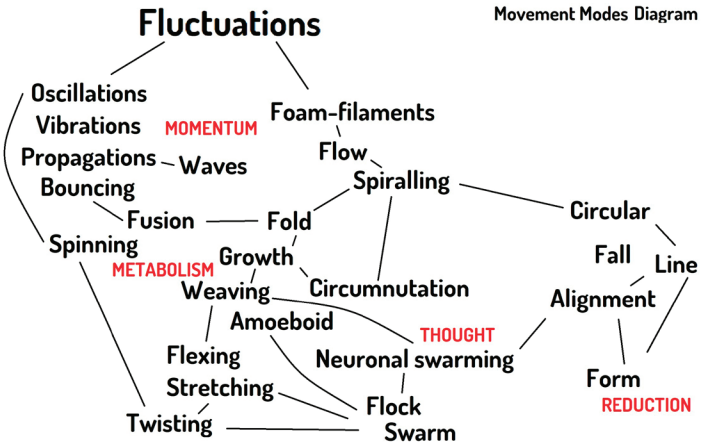


Fig. 4. Formless–Field–Fluctuation Modes diagram.

In each iteration the foam–web trope (bubble–filament, inflation, condensation and difference within), the flow–vortex trope (condensation–dissipation), the swarm trope (rhythm, contact, orientation), and the oscillation trope (tuning–propagation) transduct into a new mode of entangled composition of greater complexity. These are the *intraducive* or *enferant* modes in the universe's *n*-folding[20]:

— Cosmic inflation gives rise to this universe. Condensation gives rise to the inorganic life of stars and their flows–fusions, which then create new expansions as growth movements inside the bubble cells of organic life and their endless organismal compositions. Particles "flow–grow" into atoms, into molecules, into polymers, into cells, into organisms. The bubble as zone of energy expansion implies the filament as zone of condensation that is both separating and connecting bubbles.[21] The tensional distribution of bubbles in sea foam constitutes already a primordial mode of proprioception, unfolding as molecular fields, the cell and colony, the organism, and the swarm–society. So do the force distributions of subatomic, atomic, and molecular fields, composing endlessly complex biochemical pathways and choreographies in the cell. But also, gravitational fields of galaxies and stars are also a mode or *archē*-proprioception.
— Webs–filaments as condensations between expansive bubbles, and as difference within difference, appear across all scales and modes: from the galaxy filaments of the cosmic web, in which galaxies and stars condense in vortical flows and nucleosynthesis with new atomic bonds, through the cell bubbles where filaments create an internal folding–spiraling molecular architecture of biochemical pathways (of proteins and their DNA superfold), to the emergence of nervous filaments–networks and the brain as superfold, to more aligned networks in cities and information systems.

20 Note how some of these modes were present in ancient cosmologies, as I will mention in Book 7, for instance in Aztec cosmology that described three fundamental motions: oscillating, vortical, and interlacing (Maffie 2014).

21 See Peter Sloterdijk's (1998; 1999; 2016) *Spheres* trilogy for an ontology of the sphere unfolding across bubbles, globes, and foam.

— The vortex as one important expression of flow is a transversal trope that can be seen in galaxies, star systems, planetary accretion discs, and atmospheric phenomena. Vortexes are yet another transversal trope to think density distributions. William Thomson, known as Lord Kelvin, proposed a vortex theory of the atom (Thomson 1867). Descartes (1983) had previously proposed a vortex theory of matter in macrocosmic scale. Momentum and its spinning nodes appear both in gravity fields of galaxies and stars and in subatomic fields of electrons and quarks. The vortex, as differential circle–field, is one type of economy of aggregation visible in galaxies, star systems, planetary accretion discs, atmospheric flows, or even atoms. Vorticity is a major field of study in fluid mechanics as a dissipative structure on tiny scales but also on the scale of storms, planetary systems, or galaxies. In ancient thought, it was core to atomism and the *clinamen,* giving rise to endless spiral designs. The vortex is effect of a double or triple convergence of flow momentums (density–speed differentials).
— Swarms can also be seen across all scales and modes: from galactic and stellar swarms to subatomic–atomic swarms, through dust and bubble swarms, molecular–bacterial swarms, animal flock societies, technohuman societies, and increasingly aligned and autonomous swarms of algorithms. As soon as density nodes appear, these express varieties of ROC (rhythm, orientation, and contact or distance) dynamics
— Oscillations tuning in the high energies of the Big Bang afford increasingly complex chemical and biochemical pathways–compositions in lower energy states across all strata of geochemistry, biochemistry, neurochemistry, and the more gridded mechano- and electrochemistry. They also afford waves as propagating disturbances happening through provisional distance–density changes in given rhythmic fields.

This Universe is a field made of endless other fields *inflating, condensing, propagating, vibrating,* and *swarming across each other,* already for 13.8 billion years of increasing variation. The entire universe is an expanding bubble that harbors increasing internal difference. Will memories of that diversity spread between universes, in an eternal metacosmic web?

These five *archē*-modes are entangled right from the start, they are not an exhaustive description but a starting point for a field and movement-only thinking. Already in cosmic inflation we see subatomic strings tuning as oscillations or vibrations, as vortical spinning, and as foam filaments, while twisting *n*-dimensionally, and creating fields of tension. Tension or force appears already as fundamental expression of differentials in density which are constantly varying, moving, fielding forth in complex entangled manner as they weave relations of which the primary expression is the bubble of energy density, hosting new differentials to infinity.

Flickering and vanishing, appearing and disappearing, condensing and dissipating, and fulgurating are also expressions of fluctuation: from the superquick flickering of subatomic virtual particles to entire universes.

4.1.5.1 Interchangeable Tropes

Distributions of fluctuating energy–density zones account for everything from atoms to galaxies and from quantum foam to bubble multiverses or "mental states." But it is crucial to consider the endless modes of rhythm and variation of the inflation, condensation, spiraling, swarming, and oscillatory movements.

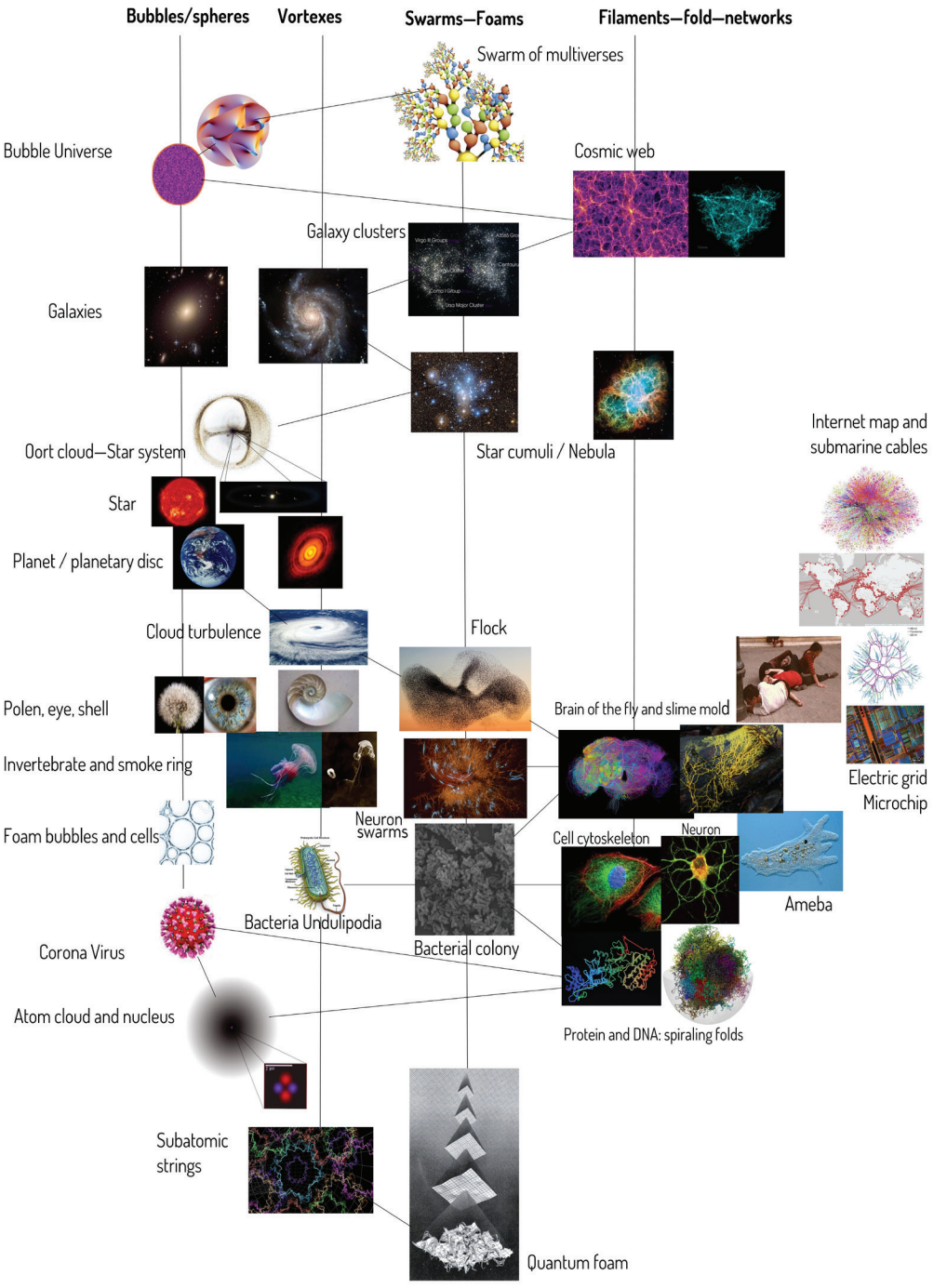


Fig. 5. Diagram of chaosmic movement modes. This Diagram exposes the recurrence of formless modes or expressions of fluctuations recurring across orders of magnitude, from the smallest to the largest.

The foam and swarm is presented as perhaps the most all-encompassing one, from quantum foam

to the multiverse. Foam is perhaps the most primordial expression of fluctuations understood as changing regions of energy–density that may expand or contract, but which once defined can change relations to other regions like birds in a flock. Molecular swarms compose grains of sand or rocks, different from the molecular swarms leading to proteins, DNA, membranes and cells, which in turn compose swarms of bacteria, leading to cells and tissues, organs and organisms. Cosmic inflation is the most radical and primordial expression of the expansive movement of foam bubbles, as energy regions, accounting for the emergence of universes and perhaps also for dark energy. Fluctuations more generally may account for the distribution of the universe's composition between the expansive dark energy, the condensing dark matter, as well as ordinary matter and energy.

Filaments are also present across nearly all scales: from the cosmic web to our brains, and below, to the spiraling folds of proteins and DNA. They are somehow the reverse of bubbles in foam: the density regions between bubbles. From these there is a long journey to the more geometric networks of roads, railway, electric grids, the Internet, and computation, which aim at excluding the openness of fluctuations.

The vortex is the one that recurs perhaps more regularly, from galaxies to microscopic flows and perhaps even to atoms and beyond, as in Kelvin's vortex theory of atoms that is partially recuperated by string theory. The vortex is conceived as a node within fluctuations due to momentum in flows converging. Protoplanetary disks and stars expose two movement economies of vortical–gravitational aggregation. The disk comprises material that doesn't collapse in the star or planet due to its momentum and distance, the start instead is the effect of the gravitational collapse creating a field of density, a space curving where atoms fall and collapse in nucleosynthesis, emitting radiation.

Spherical formations are partly effects of vortexes, as in star an planetary formation, but also of the movement of light that creates the sphere of our observable universe, as well as that of the eye or of antennas! It is more generally a movement affordance for connections, like in pollen, fungi, flowers, or the Corona virus. Another protosphere is the actual foam bubble that eventually led to the cell membrane. Spherical is also the head of electromagnetic waves, and more generally wave propagation and radiation, but also the head of some smoke rings and flows, hence also the head of medusas, like bubbles propagating! But sphericity always goes along with fluctuations and diffractions.

Waves, oscillations, and vibrations are missing in this diagram due to the difficulty in representing them, but they also are present across all scales, from cosmic gravitational waves and electromagnetic radiation through biochemical and brain waves, mechanical and acoustic waves, to atomic and subatomic wave functions, or even subatomic strings: the most primordial oscillations tuning at the birth of this universe. Waves are a paradigmatic expression of fields as the disturbances that momentarily change the rhythms of a field's texture and consistency. Quantum fields are rhythmic fields of oscillations tuning in the nascent universe, but entangled with more indeterminate fluctuations from which evanescent "virtual particles" constantly appear, constituting most of the mass of an atom.

In the process we see the un/folding of the cosmic field (inflation), vortical flow fields (galaxies, stars, plants, atmospheres), cellular fields of growth (morphogenetic fields), neuronal webs–fields, and more aligned social–technical fields including the algorithmic field. The smallest (particles) and the largest (galaxy filaments) gradually evolve into a middle scale of more complex entanglements. The different movement types expressing fluctuations transduct with one another in always new symbiotic compositions of increasing complexity and consistent openness.

The different types are in fact interchangeable tropes: Kelvin's vortex theory of the atom resonates in today's theory of subatomic strings, entangled by means of the endless vibratory modes, which in lower energy scenarios afford all the chemical compositions of nature, including biochemical pathways leading to complex webs in the cell and nervous system. Flows and vortexes, but also foam can be seen as types of swarming movement. Webs and filaments, on the other hand, are implicit in foam as that which lies in between bubbles. The vortex takes further expression in the webs

of folding–spiraling molecules: proteins and DNA, composing biochemical fields and pathways.

Inflation and contraction, condensation and dissipation, oscillatory tunings and their propagation, or changes in rhythm, contact, and orientation, acquire increasing complexity in the transducive recomposition with one another. For instance, bacterial sex is a mode of mutation of very complex biochemical and metabolic architectures which also change the environment via the planetary webs of bacterial orgies–swarms. These create increasingly complex webs of biochemical pathways, where flow and inflation become growth. In turn, in an organism like us mutations can happen at every level of its biochemical composition, transmodally, by means of how we move, what we perceive, our thoughts, emotions, and memories, while other types of genetic mutations require reproductive sex and death.

Every stratum has its multiple un/foldings and superfolds, and cosmic inflation creates at the same time subatomic tunings and macrocosmic density distributions; gravitational collapse in stars creates both nucleosynthesis and radiation (a double expression in atomic fusions and in waves), as well as occasional black hole superfolds; protein folds–spirals grow along their DNA-nucleus superfold–spiral; organisms with nervous systems grow along their brain superfold; algorithmic societies are creating their cybernetic, planetary-scale superfold or hypercyborg.

4.1.5.2 The Swarm Trope

The swarm (and its expressions as orgy or chorus) is a major trope I propose to approach the complex variations and compositions of fields. Bacterial sex, defined by Lynn Margulis and Dorion Sagan (1997) as ongoing genetic exchange in endlessly varied orgiastic assemblages, is the paradigm for an orgiastic theory of evolution. But it can be extended to inorganic life and the complex processes of star nucleosynthesis and dissemination in a galactic medium.

In my proposal, the ontological "unit" is always the swarm, not the individual. I provided a critical ontological discussion of the swarm concept in Book 3. Swarms of primordial fluctuations create swarms of multiverses as inflationary processes of spacing and tuning, composing fields within fields across fields. Swarms of subatomic string vibrations compose the atom in the early universe; swarms of atoms compose elements, composites, substances, and mixtures in flow.

Meanwhile, swarms of fluctuations during cosmic inflation create uneven zones of condensation: following the principle of difference within difference, flow will create swarms of galaxies within galaxy filaments and within them swarms of stars whose gravitational collapse unleashes radiation and nucleosynthesis, as well as swarms of planetary systems affording lower energy conditions for more complex biochemical evolutions, but also swarms of black holes as perhaps the most radical folds within galaxy filaments.

After several generations of stars, swarms of molecules moving in a planetary environment compose larger molecules; swarms of polymers compose metabolic assemblages and then cells; swarms of cells compose bacterial colonies, which over eons evolve symbiogenetically and orgiastically into multicellular organisms: protists, fungi, plants, and animals, while reengineering the Earth and atmosphere, giving rise to the biosphere, and allowing less plastic life forms to emerge. Swarms of multicellular organisms compose ecosystems and societies, some of them creating highly aligned (frozen) swarms. Swarms of technical-architectural alignments are composing a planetary scale hypercyborg of computation systems.

Each swarming field (quantum field, atom, composite, galaxy, nebula, star system, molecule, polymer, tissue, organism, flock, society, technical system, hypercyborg) is defined by a mode of (*archē-*)proprioception, by particular internal rhythms, orientations, and contacts holding together the field, and recomposing in relation to other fields, therefore by modes of mutation, at times spreading across other fields or imposing their movement ratios on them.

4.1.5.3 In-Between–Metametafield

Chemistry describes an in-between realm, transversal to all fields and connecting them, as electromagnetic bonds and reactions underlie inorganic molecules, organic compounds, and also our nervous system and technics. All these are based on oscillations tuning into increasingly complex resonances.

Chemistry is the matrix of our resonance fields as electromagnetic tunings of the universe. Chemical bonds and reactions are the matrix binding and connecting all scales of naturecultures. Given the dual nature of electromagnetic fields defined by opposing charges, this provides a radically Heraclitan view of tension of opposites underlying becoming. Of course, this is only part of a more complex story that includes interactions that are not based on opposite forces but on more complex dances, such as the strong nuclear force, a swarm of protons and quarks whose complexity is studied by quantum chromodynamics.

Chemical bonds and their transduction across modes and fields go from the electrons bounding atoms and binding them together, through all molecular bonds, biochemistry in the body, nervous system, and brain, to the mechanochemistry and electrochemistry of technical systems:

— physiochemical (physical universe);
— geochemical (the planet);
— biochemical (the biosphere);
— neurochemical (organisms with nervous systems and proprioception, ecosystems, flocks, and societies);
— mechanochemical (involving all crossovers of mechanics and chemistry and thus also the chemical alignments of dominant technical societies culminating in mechanism involving chemical thermodynamics and statistical mechanics—mechanosphere);
— electrochemical (dominant technical systems acquiring autonomy through binary electronic movements involving electrochemistry, and related to statistical information theory and the channelling of subatomic flows–vibrations—algorisphere).

Bonds are not negentropic stabilities but *sustained tensions* appearing when energy thresholds are crossed, within fields which are always partly changing and partly holding together. The holding together will be different in each case: a dissipative vortex "structure" or a metabolic and morphogenetic growth field of energy transduction, or a field of alignments producing dissipation due to closure.

4.1.5.4 Recapitulation

RMP proposes a c(ha)osmology of fluctuation where the evolution of a c(ha)osmos is nothing other than infinite variation actively propelled by quantum fluctuations, expressing themselves in modes (of variation–composition):

— of spacing and condensation, oscillation and propagation, flow and fusion, folding and swarming;
— always intertwined, interwoven, or nested in each other, from subatomic strings as vibratory filaments of energy to galaxy filaments, through ecosystems or thoughts;
— where the quantum fields are modes of oscillation, of rhythmic condensation within fluctuation;
— where implosive rhythms create the momentum of matter and explosive rhythms that of energy, and all their interactions, compositions, transmutations, and entanglements;
— driven by a will to grow in variation (will to power of variation);
— where the momentum of cosmic inflation gives way to the momentum of flow and the subatomic momentum and its fusions, which on Earth have given way to the metabolic momentum of growth and to creativity in all orders: as a never-ending diversification;
— through the cosmic field (stelliferous era) and the terrestrial field (bacterial era);
— where *chaosmos* means open whole (from *khaos,* "opening");
— so that there is no entropy as a passive tendency to dissipation, rather, there is enferance as active force of variation.

4.1.6 Warning about Speculative Ontologies

As I said, this chapter needs to be taken as a speculative reontologization of a number of scientific proposals rather than as accurate scientific fact, taking on the spirit of the pre-Socratics, Lucretius, or Giordano Bruno (who died in the fires of the Inquisition for defending amongst others hir belief in infinite worlds).

My "ontological push" to the sciences includes the following proposals:

1. Fluctuation is proposed as a field account of movement and as self-sufficient principle of variation propelling evolution.
2. Fluctuation intraducts within and across its own spacing in a *triple movement of un-/in-/enfolding.*
3. The trope of the swarm is revisited in terms of rhythm, orientation, and contact—memory, openness, and composition—affect, desire, and sex.
4. Filaments and bubbles (foams) are zones of energy–density distribution. Vortexes, bubbles, and spheres (stars and planets) are economies of relation, distribution, movement, and density.
5. Movements are prior to spacetime as spacing and temporization: *enferance.*
6. Rhythmic modes of momentum account for
   — matter, or implosive contraction;
   — energy, or explosive propagation;
   — forces–interactions or transductive, swarming, oscillatory exchange.
7. The preponderance of the open, irregular, and formless is thought alongside the degree of plasticity as measure against reduction for a chaosmopolitics of the open.
8. Ontological indeterminacy is thought as fields along degrees of a spectrum.
9. Variation as fundamental drive and minimal variation as primordial technology of nature, with occasional bubbles of closure, restaging the Nietzschean problem of active and reactive tendencies.

10. Difference and variation require no repetition, and fluctuating fields are ontological primaries.
11. Variation is only qualitative because the quantitative is a degree zero in a spectrum.
12. The proprioceptive model for field perception is the movement–force distributions as *anarchē*-proprioception of fields.
13. Evolution as F5 Theory is associated with modes of movement unfolding.
14. No categorical differentiation exists between matter, life, intelligence, and technics.
15. There is neither order nor chaos, neither actual nor virtual, neither pure extension nor pure intensity. Openness and consistency dance always together and when they stop doing so, or if they don't dance together very well, there tends to be a problem.

An incorrect structuralist vocabulary still abounds that seems to imply a designer or creator. How to think only from movement self-propelling?

The following sections will swarm through current sciences in a double loop, by reaching into the novel conceptions of movement they are calling for, and by rethinking them through a Radical Field Theory of movement. What follows is a sketch that could take further evolutions in endless other books, as a nonreductive diagramming of nature that allows us to think its dynamism and potential, from within its movements. This may allow us to partake more dynamically in its creative evolution and undo some of the destructive gestures of the algorithmic era. At stake is also the reversal of dominant accounts in science and common sense as teleological, causal, fatalistic, deterministic (or "randomistic"), as justifying reduction and domination: to undo entropic fear and embrace chaos as opening.

My proposal could be said to reproduce the grand mistake of totalizing universalisms or to present itself a reductive view of "all" nature: take it as a movement of thought. In this it will doubtlessly horrify Cartesian minds in search for pure order. But hopefully some of the sensitivity and consistency can break through and seduce even them: the joy of dancing with chaos.

At stake is a physics of transformation that instead of reducing, allows us, and the worlds we cocreate, to move in more plastic ways. I thus build upon Henri Bergson's (1944) proposal for a Creative Evolution. Ilya Prigogine (1980) claimed years ago the possibility to have a radical new scientific paradigm, a science of becoming, finally breaking through after years of new developments, and like Bergson, Alfred North Whitehead and many others had called for before him. And yet it seems that probabilistic approaches to uncertainty evolving from thermodynamics double-folded into an improved science of control. Can we reverse that story into an irreducible science of becoming? Isabelle Stengers's (2010) very necessary claim for a cosmopolitics needs to be extended to a *chaosmo-ontopolitics*.

In *Le toucher du monde: Techniques du naturer,* Sophie Gosselin and David gé Bartoli (2019a) propose that the dynamism of nature as power of variation needs to be rescued from a science of quantification that has impoverished our senses and this can only be done by claiming back a body irreducible to quantity and to ontology. For this they propose a *pathic,* instead of ontologic, approach to the body and the

world, where one may enable relational becomings and spacings by a renewing and enriching of sensibility.[22]

...

Even if some "facts" in my proposal turn out to be "wrong," the general idea could hopefully resist and be taken on, mutating. After all, everything that a positivistic science has assumed to be solidly defined can be radically redefined. This entails the continuous production of new perceptions, as Manuel De Landa (1992) points out. The crucial question is what these afford. Therein lies their ethico-politics: fixed universal truths that narrow down our field or new capacities to move with the world?

The purpose, if any, of this chaosmo-ontology is to challenge the disruptive dystopias and hyperhuman dreams of domination and immortality, resituating them within an infinitely wider horizon of cosmic movements of variation, while claiming back our evolutionary richness as corporeal experiential richness that may help us contribute once more to the unique and endlessly rich variations of complex life on Earth, which is by all intents our only possible cosmic milieu.

At stake it to radically reconceptualize what bodies and worlds are, as swarming fields of fluctuations in an amorphous ontology of nature, undoing the tradition that has tied them to a grid and a fixed point of vision, thinking instead *only from inside the movements* and rethinking movement along the way!

4.2 Swarming Chaosmology

4.2.1 *Archē*-genesis and Primordial *N*-Folding

Following Niels Bohr's indeterminacy principle,[23] not only can one not measure at the same time the wave momentum and particle position of a quantum phenomenon, both states are also not given at the same time. This is not just an impossibility to know but an ontological indeterminacy of the phenomenon itself. This also implies that fluctuations are unavoidable, as it is never possible to fix a position in coherence with a wave momentum, so that differentials are present in any vacuum state of the universe, even before the formation of a spacetime matrix, even before the Big Bang.

Vacuum fluctuations, which have been measured through the Lamb shift experiment (Barad 2007, 92), as indeterminate variations of energy–density are the *a priori* state of any vacuum in the universe, and also the substrate of the fundamental physical fields, whose "virtual particles" constantly appear and reabsorb in or from vacuum fluctuations, forming most of the mass of an atom. A subatomic particle

22 This seems to be taking further echoes from Bergson's claim for a Creative Evolution and for the need to re-enrich perception. Part of this strategy is in claiming technics as intrinsic part of nature, whereby techniques of variation need to be claimed against techno-logical domination and stagnation in search for all-encompassing control. Till here the resemblances with my proposal are astonishing and their proposal is powerful and promising, the difference is though in that they make no reference to proprioception, remain in the realm of touch and don't fully undertake a radical reconceptualization of movement, perception, and the body. See Gosselin and gé Bartoli (2019a).

23 This is the deeper ontological principle behind Heisenberg's epistemological "uncertainty principle" of the particle–wave duality, as proposed by Barad (2007, 116). This definition of an "indeterminacy principle" is actually Barad's and refers to Bohr's theory of complementarity, developed already in a 1927 in a paper written at the same time as Heisenberg wrote his famous paper on the uncertainty principle. See amongst others Bohr (1948) and the 1927 essay in Bohr (1963).

with mass is a node of vibratory excitations that nourishes itself from the surrounding vacuum fluctuations, which end up constituting most of the mass of an atom in the form of these evanescent virtual particles. We are made of vacuum fluctuations understood as the rhythms coming up in it and reabsorbing back into to it, around the vortical nodes of more stable "particles," which are also defined as particular kinds of momentums, swarms of energy oscillations in fields. The more perceptible aspects of ourselves and our worlds are complex expressions of those fluctuations, as they unfold in rhythmic momentums composing complex evolutionary fields.

Fluctuation is the motor of the universe and of life as diversification, we are one of its expressions.[24] Fluctuation intraducts in a movement of variation because of how differentials appear within and across differentials, unfolding, infolding, and enfolding, tuning across their own gradients.

The Big Bang itself and the original inflation of this universe can be seen as an astonishing expression of fluctuation, and all the particular tunings of this particular universe are due to fluctuations as well. Even in standard physics subatomic particles are defined by their movement, their momentum.[25]

Electrons in turn are defined by their orbital angular momentum that accounts for the atom's interactions. Most of the mass of an atom is due to the momentum of so-called virtual particles in the electron cloud, expressions of vacuum fluctuations which appear from a field's fluctuations and reabsorb in it very quickly.[26] The fact that the atom's nucleus occupies such a tiny part[27] makes more sense one we consider the wave function composing the atom as implying thresholds fading to infinity, where the void is made of fluctuations.

More generally particles are increasingly considered as excitations of fields, defined by momentums and rhythms. *The particle is a fluctuating field.*[28]

So, certain momentums or excitations account for the holding together of atoms, others for their interactions, exchanges, recompositions, and energy propagations.

Meanwhile string theory substitutes particles by vibratory "objects" or modes from one dimensional string to n-dimensional branes or membranes, with infinite vibratory possibilities, whereby the mode of vibration defines the type of particle and thus of energy, matter, and interaction.

24 I am here pushing some established notions from current cosmology. For instance, it is fairly well assumed that the matter distributions in amorphous galaxy filaments has been caused by fluctuations, and that these have had a major influence in the tuning of this universe. I stretch this also into the tuning of subatomic oscillations and into a more general, almost metaphysical, but always only physical idea of fluctuations as self-moving motor of variation. Whether or not fluctuations per se unleash cosmic inflations due to vacuum energy differentials in a pre-cosmic multiversal quantum foam is also more vaguely speculated in cosmology though of course is not yet "proven." It is implicit in the idea of a "universe from nothing" (Krauss 2012), where this nothing is actually fluctuations.

25 Quarks composing atomic nuclei are defined by their spin, which is a mode of angular momentum with vector quantity, magnitude, and direction, though quantization makes this sense of direction different from ordinary, and the different types of quarks composing nuclei interact through that spin, mostly entering complex interactions and compositions of three quarks, studied by quantum chromodynamics. Dark matter could be made of hexaquark compositions, much more stable "eternal particles" of six quarks.

26 See *Wikipedia,* s.v. "Virtual particle," https://en.wikipedia.org/wiki/Virtual_particle.

27 The nucleus is thousands of times smaller than the radius of the electron cloud. The ratio is similar to the difference between a sun's radius and its distance to the limits of its planetary system, which in Relativity is a field defined not by a "force" of gravity but by a curvature of spacetime. See *Wikipedia,* s.v. "Atomic nucleus," https://en.wikipedia.org/wiki/Atomic_nucleus.

28 See Jepsen (2013) on Sean Carroll's statements on *particles as fields.*

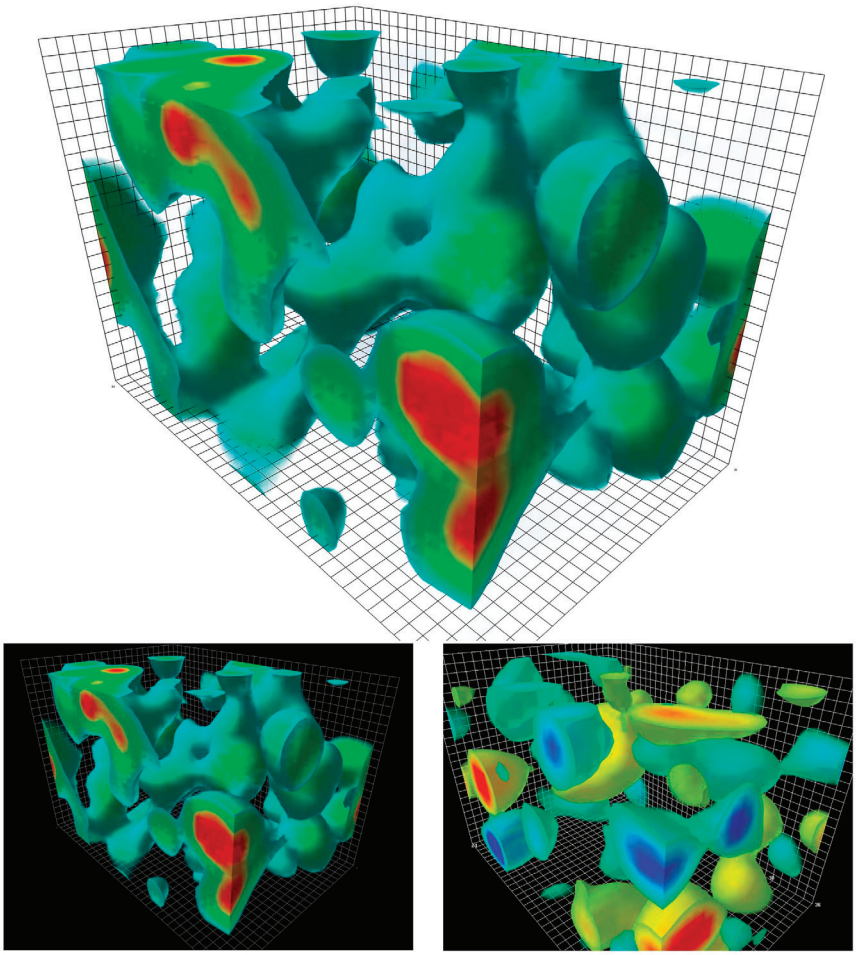


Fig. 6. Simulations of quantum fluctuations in the vacuum of quantum chromodynamics, the theory that explains the strong interaction of quarks forming the atomic nucleus, in a cube of 2.4 × 3.6 femtometers, corresponding to the vacuum of approx. two protons in the atom nucleus, by Derek Leinweber, CSSM, University of Adelaide. Source: https://commons.wikimedia.org/wiki/File:Quantum_Fluctuations.gif.

I suggest considering all these momentums, excitations, and vibrations as "tunings" of fluctuation itself folding across the differentials of the cosmic inflation.

In current physics, forces are no longer mysteriously acting at a distance. Already relativity was substituting the notion of force by spacetime geometry and movement economy (Barrow 1991). Quantum Field Theory (QFT) more generally considers forces as effects of fields and not the reverse. I suggest considering both fields and forces as effects of particular movements and momentums, excitations and vibrations coming up as fluctuations un/fold.

Implosive rhythmic momentums may account for movements of concentration affording so-called mass, explosive rhythmic momentums may account for movements of propagation and so-called energy. Rhythmic attunements and relations may account for fundamental interactions: the complex ones of strong nuclear force studied by quantum chromodynamics, holding nuclei together by the interaction

of momentums in quarks via gluons, or the holding together of the positive–negative charges of the electromagnetic force that underlies all chemical interactions of nature, including our genes, neurons, and microchips. Like charges repel each other and opposed charges attract mutually. The moving electric charges compose the electromagnetic field, which precludes a vacuum as it has momentum and energy in absence of particles.

The four fundamental physical fields are tunings of this particular universe enacted by fluctuation during inflation, in a gradual differentiation from an originary, undifferentiated grand unified field. As the universe heats upon inflation and then gradually cools down, fluctuations tune into the four physical fields described by current science (gravitational, strong nuclear, electromagnetic, and weak nuclear fields), each of them defined by modes of vibration, oscillation, or momentum. Inflation itself relates to an inflaton field, and another crucial field being theorized today is the Higgs field, which tries to explain the existence of mass in this universe.

Heating comes after inflation in some cosmological models. Inflation without heat implies the inflaton field as a pure spacing of vacuum energy due to fluctuations, and energy appears as its consequence, when the inflaton field dissipates or stabilizes. There is no primordial explosion, only spacing of fluctuations, which in its transitions or transductions creates tunings of strings or fields of resonance.

The speed of light in a vacuum being a constant and a limit also prioritizes movement: the movement of massless electromagnetic radiation or energy as limit that particles–momentums with mass cannot reach without reaching infinite mass due to acceleration.

Yet the initial inflation happens at far greater speeds than light as it is not happening in spacetime but unfolding the spacetime matrix itself: as a movement field defined by particular densities that still today continues expanding, and even accelerating again. The overall "shape" and future of this universe is a question of overall energy density distributions and their evolution.

So-called cosmic strings (different from the strings of string cosmology) are tiny cracks in the spacetime matrix also due to fluctuations along the early expansion. As it continued cooling further tunings appeared as fields gradually differentiated, as elemental rhythms–particles appeared in a superhot and still highly undifferentiated plasma soup, later composing atoms as the original radiation went to the background, allowing ordinary matter and galaxies to consist, and stars and their radiation to form.

The fact that there are regions of the universe where matter aggregates is also due to fluctuations expressed during inflation. Fluctuation accounts also for the peculiar imbalance between matter and antimatter that accounts for the existence of ordinary (baryonic) matter as a peculiarity of this universe. The peculiar balance between ordinary matter, dark matter (which allows galaxies to hold together), and dark energy (which makes the universe expand) could also be an effect of fluctuations in the initial unfolding of a Big Bang scenario. So, fluctuations account for everything that has come about in this universe and for its ongoing evolution.

4.2.1.1 A Universe from Fluctuations

Current cosmology speculates with the possibility that an entire universe is born from quantum fluctuations[29] when, in absence of a universe, certain instabilities of vacuum energy arise in quantum foam,[30] or, even more radically, with a background eternal inflation as active movement propelled by fluctuations within which occasionally bubble universes stabilize. These processes could happen also after the heat death and expansion of a universe or in Big Rip or Big Crunch scenarios. This cosmology doesn't imply a gravitational singularity where an entire universe is condensed, but it does involve high energy: all energy–matter unfolds "from nothing" in an inflationary vacuum energy burst.

The origin of a universe could be from sheer spontaneous fluctuations, without a previous singularity of infinite density, since the mass–energy balance allows for inflation to spring from any spacetime bubble of vacuum energy in quantum foam, whose variation comes up precisely due to the *fluctuations creating asymmetries* during its unfolding. The inflaton field is one possible expression of fluctuations, which in quantum foam entail radically fluctuating spacetimes at the Planck scale.

Other theories speak about singularities emerging in black holes as seeds for new universes, in an endless cascade of universes within universes and across universes.

4.2.1.2 Double Un/In/Enfolding or N*-folding*

This universe *n*-folded in the double simultaneous movement of unfolding into the largest scale and infolding in the smallest vibrations, where fluctuation effects the tuning of the smallest as it unfolds in the largest. The oscillations coming up in the process could be seen as stabilizations of fluctuation across gradients, just like the overall uneven distribution of amorphous galaxy filaments is also an effect of fluctuation "freezing" during inflation in the largest known scales.[31]

29 On spontaneous inflation arising from quantum fluctuations, eventually after the heat death of a universe, see Nail (2018b, 269): when every atom "is unravelled back into the constitutive vibrating quantum fields that composed it all in the first place, often referred to as 'vacuum energy'[…] [it could] produce enough [quantum] gravitation relative to the surrounding fields to gather all the fields back together in spontaneous inflation."

On pre-Big Bang fluctuations unleashing a universe see Nail (2021, 22): "Before the Big Bang, 13.8 billion years ago, when the universe was younger than 10^{-43} seconds old, there were only indeterminate quantum fluctuations. These fluctuations occurred at a size smaller than the smallest measurable length (1 Planck length) and at indeterminately high temperatures. […] Before the Planck Epoch, the universe was neither random, determinate, nor probabilistic. The cosmos was neither one nor many because its energy was as indeterminate as its position and momentum. The laws of physics had not yet emerged, and even the conservation of energy could not be guaranteed. In cosmological time, we can call this the 'Indeterminate Epoch.' Through completely relational and nonrandom processes of its own, energy began to iterate itself into a single Planck-sized pattern called the Planck Epoch."

30 Quantum foam may be a key for solving the greatest riddle of physics: bridging between relativity and quantum mechanics, as is being proposed by Loop Quantum Gravity Theory (LQG), of which *spin foam*, a theory of quantum foam, is a branch. LQG is "an attempt to develop a quantum theory of gravity based directly on Einstein's geometric formulation rather than the treatment of gravity as a force. As a theory LQG postulates that the structure of space and time is composed of finite loops woven into an extremely fine fabric or network. These networks of loops are called spin networks." See *Wikipedia*, s.v. "Loop quantum gravity," https://en.wikipedia.org/wiki/Loop_quantum_gravity. These loops seem to echo Lord Kelvin's Vortex theory of the atom.

31 See *Wikipedia*, s.vv. "Chronology of the universe," https://en.wikipedia.org/wiki/Chronology_of_the_universe; "Timeline of the early universe," https://en.wikipedia.org/wiki/Timeline_of_the_early_universe; and "Timeline of the far future," https://en.wikipedia.org/wiki/Timeline_of_the_far_future.

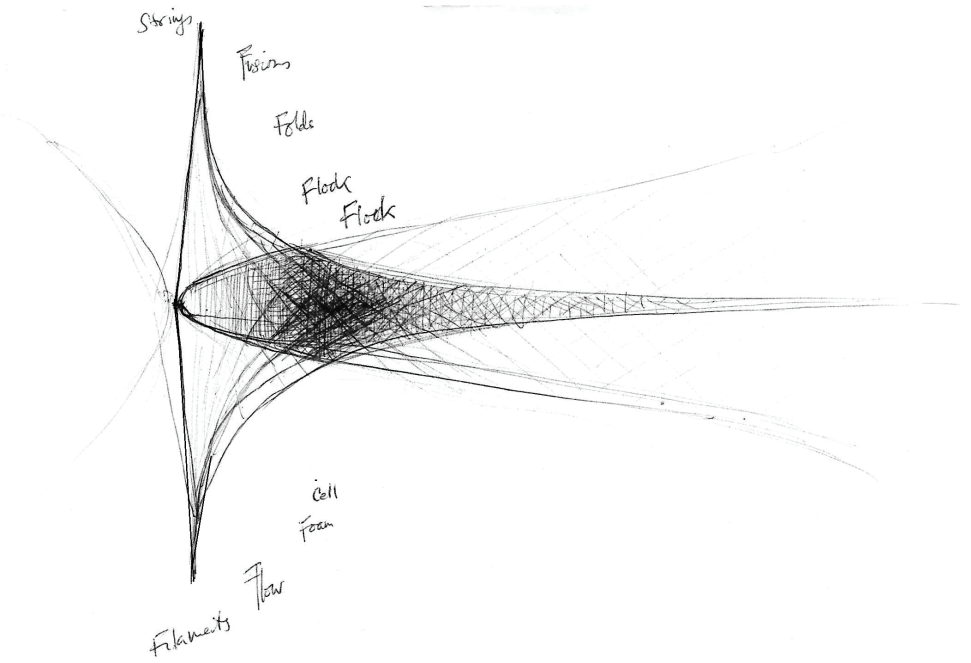


Fig. 7. Diagram of the double un/folding of a cosmic inflation in which heating appears after the initial inflation, inducing a *double movement* of *cooling down* and *continued expansion.* In the process, quantum fluctuations "freeze" in the largest-scale distributions of matter as well as "freeze" in the subatomic oscillations of strings–particles as energy gradients are crossed from higher to lower energy. Oscillations lead to fusion and waves, while filaments lead to vortical matter flows. Both combine into more complex movements in nucleosynthesis and later in planetary molecular folds, sea foam, turbulence, and radiation, giving rise to swarms of multicellular organisms and growth. The diagram also shows how our cosmological horizon shrinks as the universe expands and we become causally disconnected from other parts of this universe which are currently observable but will no longer be so in future.

The most radical fielding process is cosmic inflation, which accounts for a double enfolding: on the one hand fluctuations "froze" during inflation in the largest zones of dark matter concentration, becoming galaxy filaments of a cosmic web, continuing to fluctuate-in-variation, giving birth to galaxies as swarms of stars. These are vortical nodes of matter flow, and within them the vortex nodes of planetary systems, and within them atmospheric and geological vortex nodes. But this radical unfolding implies probably an *n*-dimensional universe, with uneven zones and membranes on scales far beyond our observable universe, and with cracks (so-called cosmic strings) within our observable universe.

The largest known cosmic structures are amorphous galaxy filaments, each one with millions of galaxies composing a foamy texture whose uneven distribution seems to be the result of how fluctuations expressed themselves in the superquick cosmic inflation from an almost infinitesimally small to a large spacetime matrix.

As energy gradients are crossed in the cooling, which may have actually come after inflation and its ensuing reheating, fluctuations "freeze" in certain bouncing modes becoming subatomic strings or "particles" as partly stabilized modes of fluc-

tuation[32] that unfold on one another as energy gradients are crossed, in an entangled web of increasing diversification of fundamental fields, as entangled oscillatory modes with "frequencies," tensions, and spins along with the vibration, which in turn happen in extra "hidden dimensions" that infold in the same process.

And yet, indeterminacy never disappears. This is the crucial point. The vibrations of subatomic strings[33] or branes have *n*-dimensional intravibrations, and vibrations and spins within these vibrations, down to the Planck length, multiplicities of simultaneous, entangled, superimposed vibratory modes creating a cosmic web of entangled fields, where the changing distance between density zones propagates as waves and where the different rhythmic modes of each field may transduct with and through the others.

From a radical initial indeterminacy during the so-called Planck Epoch, with almost infinite temperature and perhaps also density, instabilities in fluctuations lead to a first tuning as gravity separates, and with it baryogenesis (asymmetries leading to matter–antimatter imbalance). Then fields continue *n*-folding as entangled rhythmic tunings with their particles and *n*-dimensional foldings, unleashing inflation and the Higgs field, reheating on the way, leading to further tunings as diversifications without separation nor determination.

Matter is the result, first, of asymmetries in baryogenesis due to fluctuations in the first differentiation happening at the birth of this universe, when gravity differentiated itself from the absolute indeterminacy of the Planck Epoch. Secondly, it is the effect of condensations of energy in-between the inflationary bubbles, that result in the cosmic web of galaxy filaments. In turn, gravitational singularities in a cosmos could give birth or be the connection to other universes, or universes could be an entangled web of intra-acting membranes, just like galaxies are part of galaxy filaments.

The double *n*-folding has created the "fabric" of the universe on the largest and the smallest scale through the rhythmic tuning of fluctuations in the process of inflation. Due to this double *n*-folding, there are two major types of fabric associated with two major types of waves, which are provisional rhythmic changes of proximity or density in their distributions: mechanical and electromagnetic. The speed of light itself may be a part of this initial cosmic tuning process, defining a constant

32 On a possible account of the emergence of particles from quantum foam, see Nail (2021, 33): "During what cosmologists call the "Inflationary Epoch," spacetime fluctuated so wildly that it could not sustain any relatively discrete regions or elements. Due to these primordial quantum fluctuations, spacetime did not flow homogeneously but rippled with gravitational waves. As the waves moved, they cooled down into dendritic patterns, the way that a river sheds its water into tributaries and pools. These metastable pools of energy created the earliest and heaviest particles (quarks, hadrons, neutrinos, and leptons). Each particle unfolded out of the previous, like the petals of a flower from a bud. […] If spacetime in quantum gravity is like a continually fluctuating 'foam,' then elementary particles are the regions where this foam has coalesced and folded into giant metastable bubbles."

33 Subatomic strings have multiple entangled simultaneous vibrations, and vibrations within the vibration, entangled with other strings in a web whose consistency emerges gradually across the cooling of energy gradients. They have tensions and interactions, including with themselves, as they move in relation to their neighbouring strings and their surrounding field, themselves a field. Superstring theory adds the multiple spins within the vibration, and their entanglement with (or unfolding of) at least 6 extra dimensions where vibrations happen. These strings, that could be each a single quark, electron or neutrino are about 15 powers in orders of magnitude larger than quantum foam: like the difference between a human body and the distance to the nearest star outside the solar system. Subatomic strings are like *"dancing filaments of vibrating energy"* in words of cosmologist Brian Greene in some of his talks. See TED (2008).

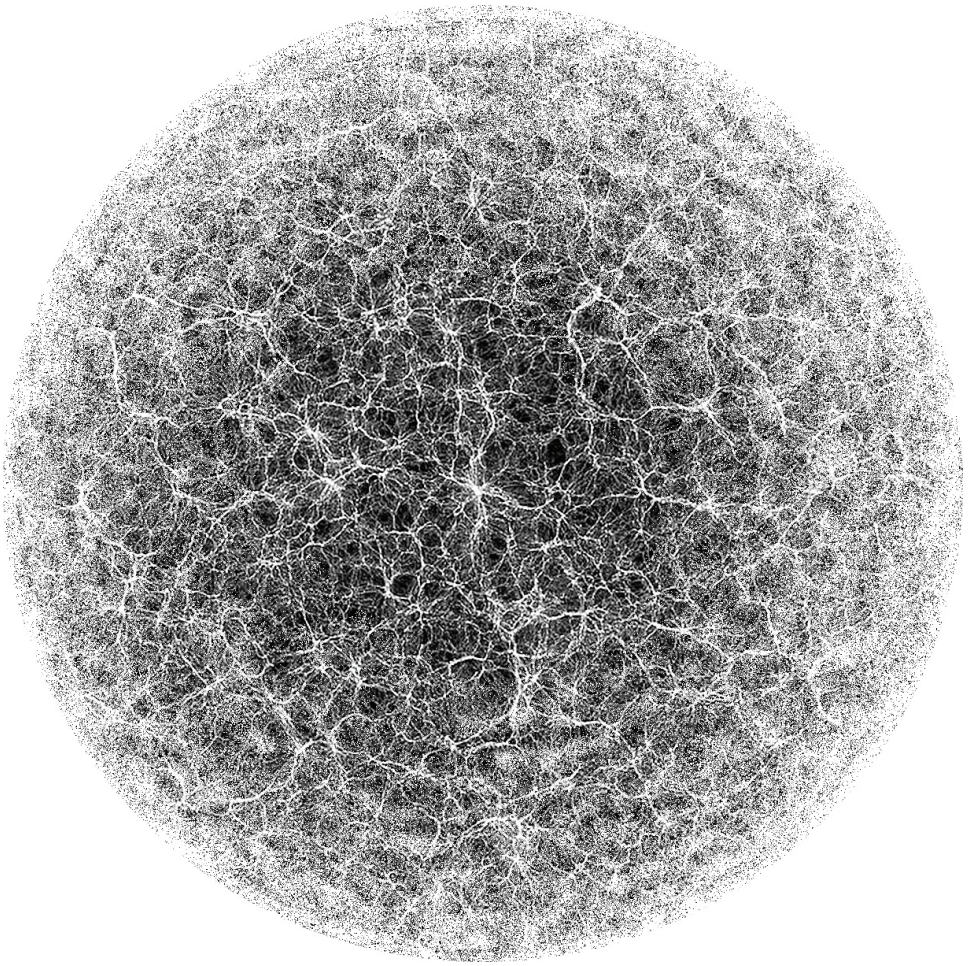


Fig. 8. Dark matter distribution in the observable universe at the present time showing a portion of the observable universe of around 2 Gpc (around 7 billion light years) in diameter. This image of the cosmic web shows the largest known structures in the universe: galaxy filaments, each one containing thousands to millions of galaxies. They expose distributions of intergalactic gas and therefore dark matter. It shows the way in which galaxy filaments already contain complex expressions of foam, where the bubbles are the spaces in between filaments in which dark energy may be accounting for the expansion of the universe's matrix, while the filaments are dark matter condensations, both due to fluctuations. They expose the "print" or "freezing" of fluctuations during the quick initial expansion or inflation and their current evolution, as increasingly complex condensation from an initially more indifferentiated state. Image adapted by the author based on the Max Planck Institute for Astrophysics's "The Millennium Simulation Project," https://wwwmpa.mpa-garching.mpg.de/galform/virgo/millennium/index.shtml.

for kinetic distributions in the electromagnetic spectrum, entangled with the overall distributions of energy–density on the largest scales, which create a fluctuating spacetime matrix as well as creating the distributions of dark energy, dark matter, ordinary matter, and energy.

The gradual unfolding of the four fundamental interactions—gravitation, electromagnetic, weak, and strong interactions—occurred in the first instants of the nascent universe as increasing diversification in its own tuning or unfolding.

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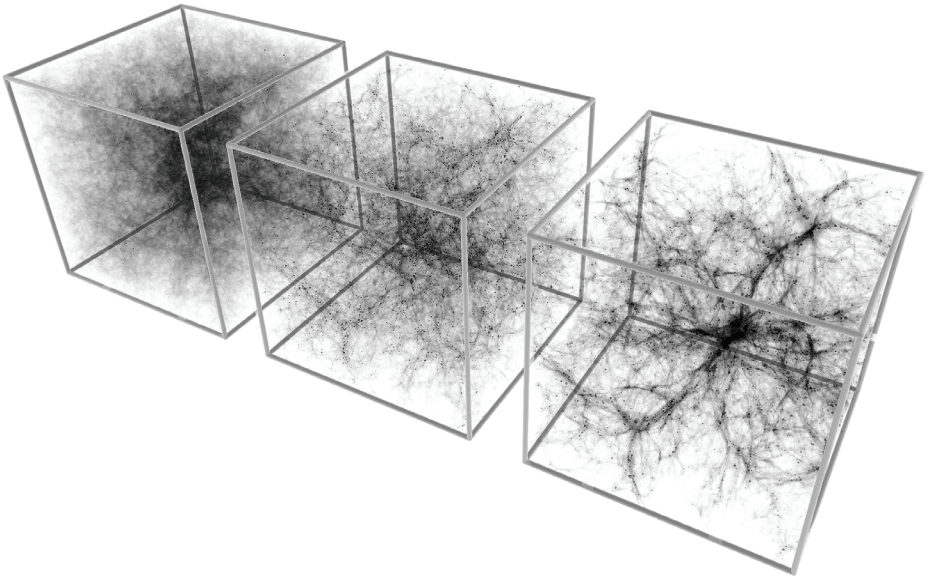


Fig. 9. Structure formation in the gaseous component of the universe, in a simulation box 100 Mpc/h on a side (around 350 million light years, containing around 10,000 galaxies). Considering that this universe is extremely young, how could these filaments evolve in the far future, in an expanding universe? Their web-like structure is similar to neuronal fields, or molecular, intra-cellular architectures, and exposes how complexity comes up as effect of fluctuations. The cosmic web prefigures intracellular architectures and neuronal webs. Image adapted by the author based Max Planck Institute for Astrophysics's "Data Visualization," https://wwwmpa.mpa-garching.mpg.de/galform/data_vis/index.shtml.

Openness is kept alive as subatomic particles constitute atoms, with their electron clouds creating sustained but open fusions gradually unfolding new strata of movement diversification, in the double unfolding of electron flows and gravitational flows across the entire spectrum of chemistry, including webs of neurons in the nervous system and brain.

Likewise, stars are open systems with their comet clouds, that intra-act with other stars, or gas clouds in the galaxy, itself an ever-changing field, which in turn merges with other galaxies in the evolving web of galaxy filaments, perhaps not unlike the plastic web of neurons.

Complex multicellular life, flocks of bodies with nervous system and brain emerge as a recent complex expression in the middle of a double enfolding, with geometric civilization as a recent anomaly.

4.2.2 On Multiverses and Universe "Shapes"

As I mention in Book 7, the idea of multiple universes, *kosmoi,* understood as *modes of order,* was almost ubiquitous in ancient thought before the idea of infinite space appeared, and it recycled itself when the abstract notion of infinite space came up, as we see in Lucretius. This idea keeps evolving in current physics, underscored by the primacy of fluctuations, leading to a plethora of multiverse theories that either challenge or push the quest for whether there are universal laws of physics, whether the universe is an open whole, and whether there is something beyond our observ-

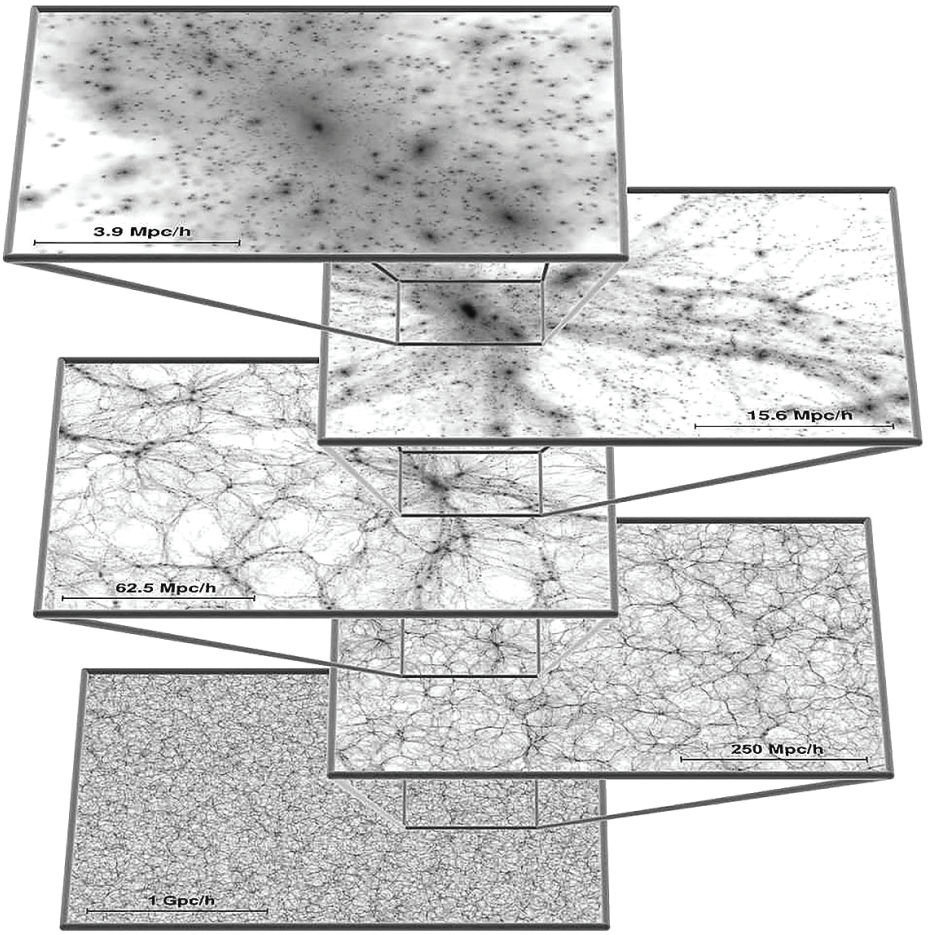


Fig. 10. Dark matter distribution in the universe at the present time. Image adapted by the author based on the Max Planck Institute for Astrophysics's "The Millennium Simulation Project," https://wwwmpa.mpa-garching.mpg.de/galform/virgo/millennium/index.shtml. Every tiny point in the augmented image is a galaxy, surrounded by its dark matter halo. Within each filament there are millions of galaxies in giant swarms of superclusters and clusters, each galaxy a giant swarm-vortex of billions of star systems, each star system a complex swarm of billions of orbiting objects, in each galaxy there are also the radical folds of black holes, which apparently orbit the galaxy center in swarms of thousands. The filaments imply radical spatiotemporal fluctuations of every galaxy, star, planet, or black hole condensing in them.

able universe in space and time, and thus the ontotheological question of creation vs. self-organization! The idea of there being multiple universes is a serious speculation grounded on what current physics takes for well-established facts.

The primacy of fluctuation in the tuning of a universe implies that there are no *a priori* laws of physics: a universe gets tuned the way it is due to indeterminate fluctuations and continues to evolve thanks to these fluctuations. What we see as fundamental laws may logically be local, provisional tunings in enormous metacosmic evolutions propelled by fluctuations. This principle is foundational to the current proliferation of multiverse theories, since if this universe is tuned the way it is due to indeterminate quantum fluctuations, including its capacity to host complex life,

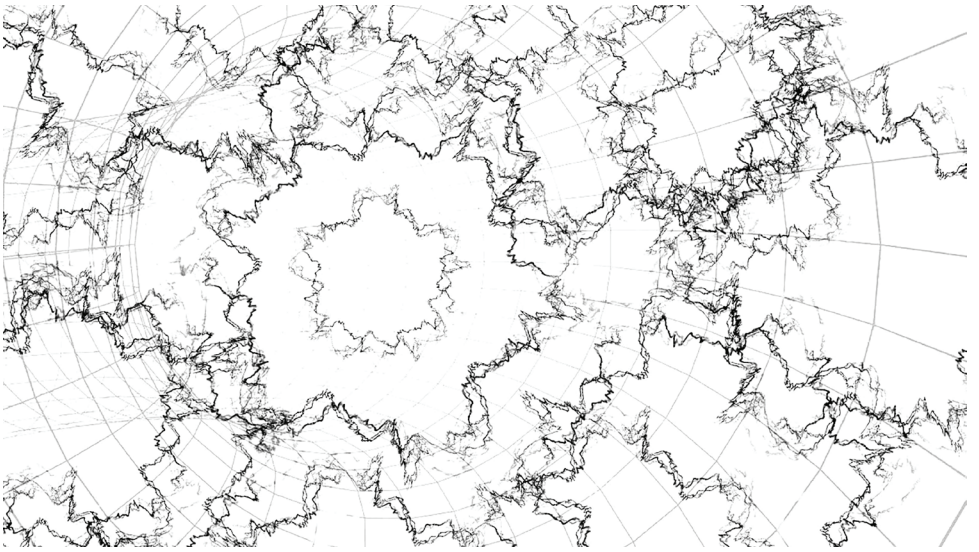


Fig. 11. Figuration of subatomic strings. Image adapted by author from World Science Festival, "The Graviton and Superstring Theory," *YouTube*, January 15, 20145, https://www.youtube.com/watch?v=P7opykja8jM.

there could or should be endless other universes tuned differently, many of them perhaps incapable of hosting complex life.

Physicists speculate about other potential universes with other types of balance or imbalance of matter–antimatter, of dark matter and energy, of number of dimensions and of types of fundamental physical fields, and so forth. In some of them, everything would collapse into black holes, in others nothing would hold together, or there would be no three-dimensional space. None of them could lead to life as we know it, and thus would not satisfy the so-called anthropic principle that asks about the conditions necessary for life leading to a creatures like us who reflect about the universe itself (while apparently wanting to freeze it in their own image).

Are these speculations mere mathematical abstractions? Might they be the case in other potential or actual universes, or does fluctuation always evolve as a movement of variation that can imply diversification and "life" of some sort? Are physicists confusing *indeterminacy* with *randomness*? One could ask whether universes of any kind, say lacking matter and gravity, or made only of black holes, are possible? Maybe not everything is possible, maybe movement (fluctuation) always entails some balance of indeterminacy and consistency, precisely because fluctuations field forth relationally and openly *but not randomly*. But the possibilities and ways in which this can be articulated are infinite in other potential universes, and in several aspects *even in this one*. Every new observation and theory continually renews the understanding of what reality seemed to be. This is not an antirealism, but a plastic realism and an agential realism (Barad 2007) through which we are ontoethically response-able by means of the observations we perform. Plus, the universe evolves, and our entire observable universe seems to be just a small region of a far larger and radically open whole.

Since the Big Bang, it seems that fluctuations have been propelling the increasing differentiation–variation of the universe, tuning across energy gradients. Now, this tends to be associated with entropy as dissipation, pointing to a future heat death of the universe, expanding forever and reaching maximum entropy as equilibrium and

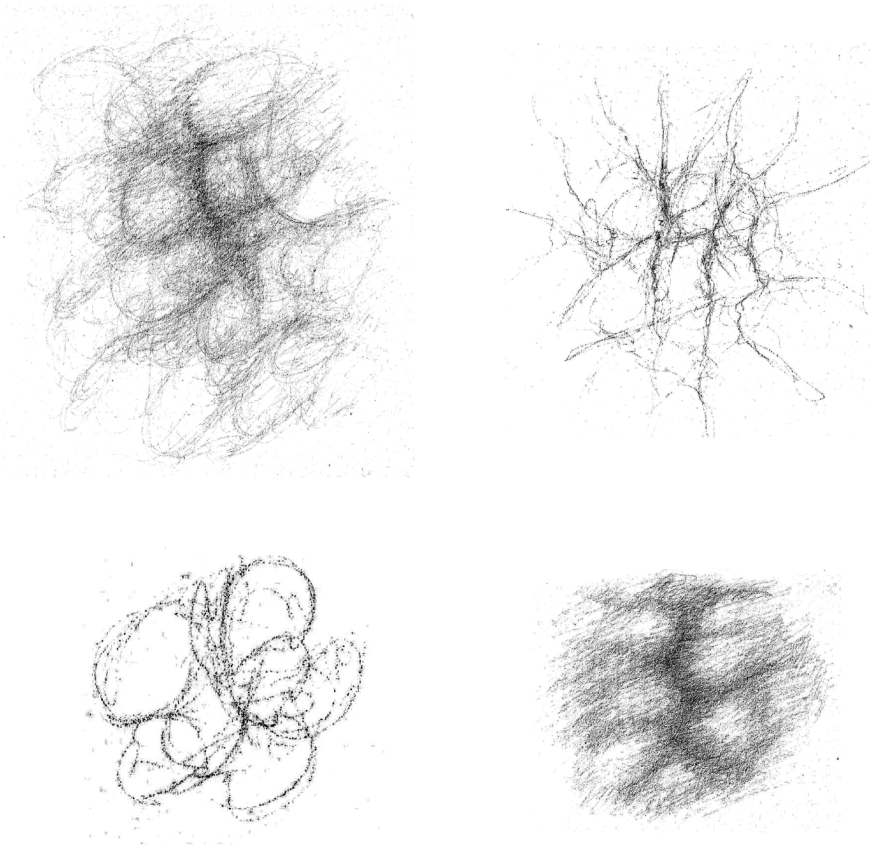


Fig. 12. Illustrations of multiverses as *n*-dimensional entangled foams–filaments–membranes. Couldn't it be that universes bubble like quantum fluctuation, or in foamy filament webs like those of galaxy filaments, but expanded to googols of years and meters, entangled in *n*-dimensional *n*-foldings?

lack of gradients so that life is presented as mysterious and heroic struggle against the drive to dissipation.

I propose to think life as expression of fluctuations, which themselves propel a movement of variation. Dissipation comes with alignments that try to create closed systems such as the steam engine, the nuclear family, or information-control systems.

…

Some of the wildest models in current cosmology speak of an ongoing eternal inflation[34] within which fluctuations create endless cascading swarms of multiverses. From some of these multiverses new inflations will sprout; some of them will "stabilize" into a universe similar to ours, whereas others will evolve into completely different kinds of universes whose energy–density distribution will perhaps not allow them to un/fold and evolve.

The lifetime of particles seems an important part of the balance. Protons could decay in a period of 10^{28} years. But, following recent experiments, dark matter could

34 On eternal inflation see Barrow (1991) and Galfard (2016) as well as *Wikipedia,* s.v. "Eternal inflation," https://en.wikipedia.org/wiki/Eternal_inflation.

be made of much more solid hexaquarks. If so, does this mean the universe would bounce back when dark matter takes over?

In any event, we are in the very early youth of our universe, in which complex life came up as soon as it could, after several generations of stars creating complex elements. Stars and galaxies formed due to the uneven density distributions caused by fluctuations, when the early universe stabilized and cooled. Likewise, in some far distant future no more stars will form and with them no more life as we know it, but this universe could continue to exist for an eternity after this. We inhabit the narrow time region of a young universe where the complex movements of life are possible. In our local system, the sun will make life difficult on Earth already one billion years from now, and in 8 billion years our galaxy will collapse with the Andromeda galaxy, over a long span, like two swarms recomposing, in a galactic symbiosis.

In any case, fluctuations could radically change predictions. Fluctuations are not only the seeds of but also account for the ongoing variation of the particular balances, composition, and evolution of a universe. How will the balance of dark matter, dark energy, ordinary matter, and energy evolve?

Physicists speculate at times too abstractly. The idea of there being infinite Hubble volumes and that if one travels for over a googolplex meters one will find a similar or identical universe to ours is associated to the reduction of the universe to points, to combinations of particles, ignoring the quantum indeterminacy, movement, and evolutions of those "particles."[35] The absurdity of the "Boltzmann brain" that considers the combinatory of particles needed for a full brain with memories to appear in the vacuum, by calculating the combinations of single atoms, expresses the same problem, ignoring again the movement of fluctuation and its evolutions. No brain will appear in the vacuum. These abstractions seem to me phallocentric domination fantasies of a calculable and appropriable universe. So do the ideas of endless mathematical universes with any property whatsoever; or of holographic universes encoded on their borders; or of parallel universes as "versions" of states of this one, where in each one there will be a different copy of myself; or of the endless stories of particles in quantum mechanics as defined trajectories with defined alternatives in parallel universes; or of the possibility of a sudden collapse of vacuum and the sudden vanishing of the universe.

All these abstractions are missing movement itself, the movement of fluctuation, its indeterminacy and its evolution, which implies that there is no single account for what this very moment is: your neurons, dear reader, are fluctuating indeterminately, together with your posture, as you read, so that *there is no actual calculable set of relations that could appear by chance in the middle of the void* and reappear endlessly and identically in an infinite spacetime. Events are irreducible to trajectories, they are fluctuating fields, unfolding, evolving together with endless other fields, in chaosmic *n*-volutions. Not order (cosmos), but openness *n*-folding (chaosmos). And this is the richness that we need to claim, instead of promoting nightmares of reason that seek to impose on the world the impoverished image of an atrophied human that seeks to expand itself in Parmenidean immobility, dominating everything.

As Bergson already denounced, movement is not reducible to immobile points.[36] Likewise, a universe is not reducible to information points, rather it is made of inde-

35 See Prigogine (1992) for a denunciation of how relativity and quantum physics ignore the arrow of time, which instead is core to thermodynamics.

36 I discuss this in depth in Books 3 and 7.

terminate fluctuation states. Not everything is possible, but the possibilities are infinite, already within this universe, if we account for fluctuation's openness![37]

…

The size of the visible universe is not as it is by chance. It has to do with the age of the universe and its rate of expansion. We cannot see farther back in spacetime, it is a cosmic event horizon, but the early, far-away galaxies whose light has taken over 13 billion years to reach us are now 46 billion years away, and some day in the future they will vanish from our cosmic horizon as the universe continues to expand at increasing speed.

We are in the middle of a so-called Hubble volume,[38] where light of galaxies from over 13 billion years away and ago, and behind them the echo of the background radiation of the Big Bang, is a *cosmological horizon*. The observable universe is not a Cartesian space one could travel across, but an evolving spacetime sphere defined by the speed of light. We are causally disconnected from other Hubble volumes perhaps existing in a four-dimensional hypersphere, hypertorus, Calabi–Yau manifold, or other.[39] Just like the Earth's surface is both boundless and finite considered in two dimensions, so the higher-dimensional universe is boundless but maybe finite too. Or maybe not, maybe it is infinite and "flat" as current measurements say.

Every observer situated in another Hubble volume disconnected from ours will see a similar but different landscape, with the Big Bang happening at the same spatiotemporal distance. What about an observer on another planet in a far future, a billion years from now? It is presumed that the observable universe will have shrunk as far-away galaxies disappear in the expanding universe. We are lucky enough to have appeared in the first generations of complex life so that we can still see traces of the early universe.

37 A similar problem arises with the geometric and mathematical consideration of dimensions, (see also next section). The shape of the universe cannot be thought as three-dimensional sphere, it is described through higher dimensional geometric manifolds that from our perspective and scale look three-dimensional just like a garden hose might look two dimensional to an ant (or the Earth's surface to us). But again: how far are dimensions, including the four spacetime dimensions, any more than mathematical abstractions? Calabi–Yau manifolds are for instance proposed by string theory to account for the braided or twisted small dimensions that we cannot experience, in order to have equations work. Time as fourth space dimension in relativity is also implying a mathematical equation which however importantly brings movement to the foreground as effecting spacetime curvatures and in relation to the speed of light as constant. But what sense do these abstractions make to the spacing-temporalising of our proprioceptions? How far have cartesian coordinates come to bias common sense? What braided dimensions fluctuate in the tensional torsional fields of our daily flocking?

38 A Hubble volume corresponds to the visible Universe, as defined by a boundary region of galaxies that are receding from our observation point at speeds larger than light.

39 What if we had appeared in a billion years from now, in an older universe, where the cosmological horizon of our Hubble volume will have shrunk as the universe expands and the more distant galaxies gradually disappear, perhaps reaching a point where our galaxy (or even all matter) rips apart? What new elements and modes of complexity may have appeared by then? Funnily enough, even if we have appeared as soon as it was possible in this young universe, atomic combinations seem to have also reached their limit. We already know about the more unstable combinations where radioactivity takes over the atom's composition and no more atomic diversification is possible. This contingency is intriguing: our appearing in a young universe, where we still see remainders of the Big Bang, but where complexity seems to have reached a certain limit, including both radioactivity and the arrival of "conscious" matter appearing in the swarming fields of resonance of nervous systems and entering reductive self-referential spirals. Can one go further in complexity?

But even this hypersphere or *n*-dimensional membrane of which our visible universe is maybe a part could be just one out of endless in a bubbling soup of multiverses, in a cascading eternal inflation.

…

It is logical to assume that, since we inhabit the observational center of a Hubble volume, an observable universe bubble that should now be around 93 billion light years in diameter, this is only part of a larger universe and then most likely not the center of it! Because no curvature is observed so far on the ultra-large scale, this Hubble volume should be part of a much, much, much larger universe, possibly infinite in size, where perhaps millions, or quintillions, or googols, or infinities of other Hubble volumes exist. Each one would be relative to an observational center, and causally disconnected from the others due to the speed of light.

As was mentioned, this larger universe could be part of a higher-dimensional universe, a sort of *n*-dimensional torus, whose three-dimensional "surface" has no limit, just like the two-dimensional surface of the Earth has no limit, so that you can travel forever and return to the same point. Likewise, it is speculated that one could hypothetically travel forever and return to the same point or Hubble volume or universe. The important point, however, is that this is actually impossible because such a journey would take far longer than a universe's lifespan, and in any case the universe would radically evolve in the process, so that you can never return to a same point. There are no abstract points, there are fluctuating fields in variation! Take the example of a bacterium traveling around the Earth for 100 million years: all the oceans and continent plates will have radically shifted in the process!

The other option of this theory, with a "flat" infinite universe, speculates upon the idea that after an unthinkable amount of spacetime, far beyond a googolplex of years and kilometers, one would arrive at a Hubble volume identical to ours, and in an infinity of spacetime our very same universe would be repeated endless times (the eternal recurrence theory) with its entire evolution, including this very moment in which you reader are pondering on my words. Now, this idea exposes a number of crucial ontological mistakes that Bergson already denounced over a century ago. Not only is such a hypothesis absurd because of the arguments mentioned in the previous paragraph, but more importantly because it presupposes a universe made of points with calculable trajectories in an absolute Cartesian spacetime. The confusion of movement (as indeterminate fluctuating field) with immobile points (following trajectories) is still one of the most resilient burdens stemming from metaphysics in current physics, though quantum field theory is promisingly helping to eradicate it.

How far are these theories actually linked to a humanistic will to expand in the universe and to a search for immortality and eternal life?

…

More interesting is the proposal of *n*-dimensional membrane universes, where we might be inhabiting a three-dimensional bubble region, which is part of a much larger *n*-dimensional brane, where membranes could actually intra-act, unleashing new inflations or connect via black holes or worm holes. Superstring theory and its related M-Theory imply a mathematical model of five different universes, that could perhaps be part of a larger whole. This is linked to the need for more than three spatial dimensions in string theory, though these extra dimensions could also be twisting on ultra-small scales. It is logical to think that due to fluctuations a cosmic

inflation cannot be a simple regular three-dimensional sphere, it would create an internally twisting membrane of endless torsional dimensions.

This approach is compatible with both chaotic inflation and eternal inflation scenarios, where every inflation breaks down into regions tuning into different universes or landscapes with different laws, some of which may not stabilize into a bubble universe but continue inflating into new cascades of multiverses. Likewise, spontaneous inflations of new universes may be sprouting from dying ones, when subatomic phenomena become isolated in a heat death or Big Rip scenario.

All the above could be just aspects of the endlessly varied dynamics of multiverses. If the only substrate of everything is indeterminate variation, a quantum foam within which bubbles of spacetime (universes) appear, one could imagine a fluctuating soup of universes and multiverses *n*-folding within and across multiverses, entangled and shifting regions, perhaps like in the simulation done by Derek Leinweber for subatomic fluctuations (fig. 6) but in scales of googols or googolplexes of years and meters. An entangled foam of universes, perhaps aggregated in filaments, like galaxies (fig. 8) forming superclusters and swarms within swarms, in endless cascades of inflations, where every unfolding creates new variations, with *n*-dimensional foldings inside each membrane multiverse, entangled with endless others, where black holes or wormholes could indeed create alien connections or even universes within universes, though not ones that can be traveled to or through.

4.2.3 Metadimensions, M (Meta)theory: The Tuning of this Universe and the Multiverse within Us

I recently made an astonishing discovery: current illustrations of the possible extra dimensions of this universe in variations of six-dimensional Calabi–Yau manifolds look strikingly like the amorphous three-dimensional digital architectures I have been creating since 2003, as ways of expressing the *n*-dimensional movement field that the body projects and unfolds as it moves, as irreducible to any stable or regular geometry, to measurement, or even to topology, *a projection of its inner, twisting proprioceptive field* (fig. 13).

If recent space conceptions have evolved from Newtonian absolute space to Einsteinian curved space—that is also expanding and radically evolving, perhaps full of nodes, twists, warpings and connections—more recently string theory adds the idea of extra dimensions, which pose the problem of seeming incompatibility with this universe. One solution proposed is that this three-dimensional universe is part of a larger membrane multiverse, the other is that the extra dimensions are too small to be perceived or measured, twisting below the subatomic scale in the mode of a Calabi–Yau topology. Strings then could vibrate in these far more complex *n*-dimensional topologies, with far richer vibrations, just like the form of a brass instrument varies the vibration of the sound as it goes through its multiple internal twistings of the tube. Superstring theory adds onto the vibration the multiple internal spinning of the strings, in multiple simultaneous ways.

One can think these extra dimensions like the knots and fibres of a carpet that you don't see from a distance. The idea that things are not what they seem is not new and science is the history of the struggle against established evidence. For instance, circular motion of the heavenly bodies is actually elliptical and part of changing swarms of vortical motions of matter which in turn are part of massive fluctuations

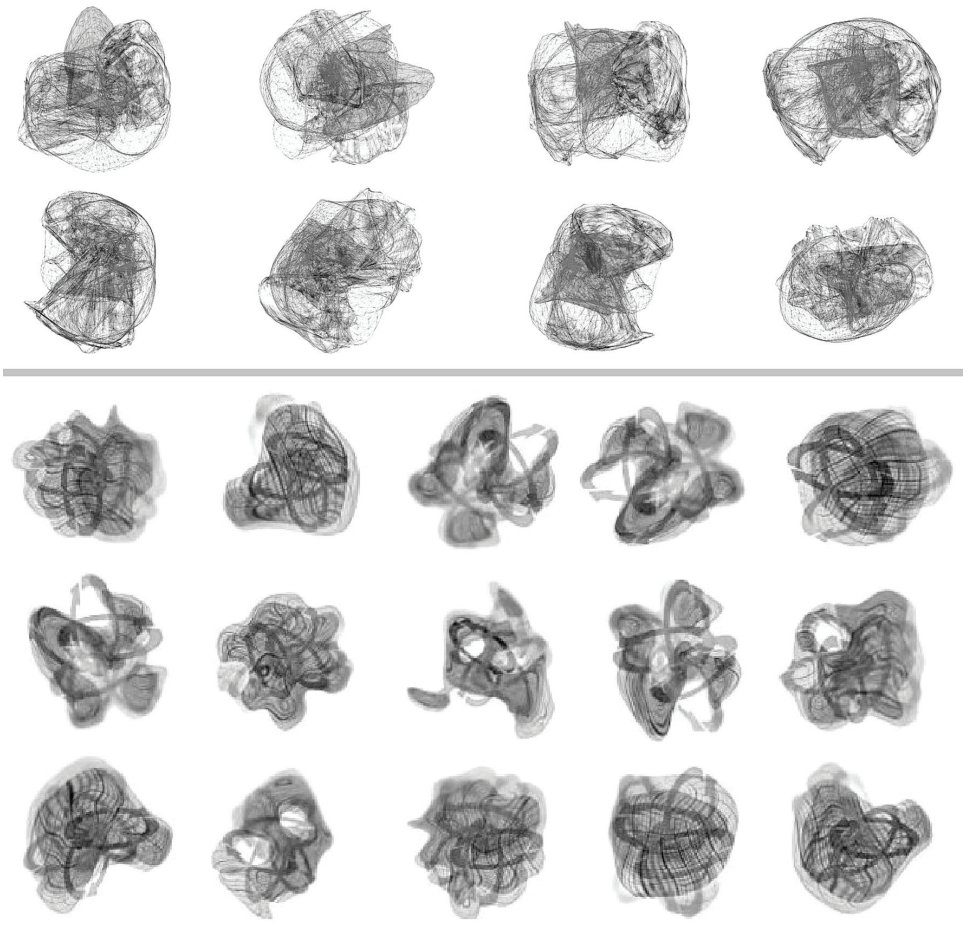


Fig. 13. Top: digital architectures by author from 2003; bottom: figurations of the extra six dimensions in superstring theory, processed by the author from ScienceClic English, "String Theory," *YouTube*, July 2, 2021, https://www.youtube.com/watch?v=n7cOlBxtKSo.

inside galaxy filaments, a foam-like large-scale structure of the universe, hence the importance of speculation.

I propose to take this evolution of dimensionality further by considering the possibility of metadimensions: provisional, emergent, mutating, in-between dimensions, as torsional qualities happening between other dimensions, or merely between themselves. Metadimension implies also a metacritical invitation to think beyond the concept of dimension itself.

Dimension is a problematic concept. It is about localizing points in space and time, implying a reduction of movement to immobilities that was already denounced by Bergson over a century ago. One could redefine dimensions instead as intertwined *modes* of movement.

For all these ideas, I propose to take my theory of the proprioceptive swarm as a starting point. Thinking the body from its proprioception, it makes little sense to subjugate it to an abstract set of three spatial dimensions plus time. Proprioception unfolds in endless, sustained internal twistings, torsions, and distributed, fluctuating ever-changing tensional zones, in a play both with and against gravity due to

how the electromagnetic forces of our biochemistry allow molecules to operate. In the process, endless twisting tensional fields emerge and disappear, which are the proprioceptive metadimensions of the body and/as its field, its spacing–temporalizing, irreducible to topology. These always emergent and varying zones express the body as quantum field that sustains multiple varying states, each of them indeterminate. How about transposing this conception to the smallest and the largest, as well as to all visible phenomena around us?

The idea of shifting metadimensions might be valid (and perhaps solving the grand challenges of current physics) not just at the subatomic quantum level and at the level of our daily proprioceptive experience (which also reconceptualizes complexity theories, turbulence, and entropy), but also at the level of the large-scale and ultra-large-scale of this universe and the multiverse. We may be inhabiting a provisional coalescence of a mainly three-dimensional movement within far larger fluctuations.

Time as separate dimension also needs to be questioned, as it assumes a metaphysical habit of splitting space and time. If movement is the only *a priori,* the "temporal aspect" can be as multifaceted and blurry as the "spatial" or spacing aspect, an expression of movement fields. It is more a spacing–temporalizing than a spacetime.

On the smallest level these *n*-dimensional warpings account for the complex fielding of the subatomic world that quantum chromodynamics and quantum electrodynamics try to explain, and the metadimensional theory resonates with accounts of virtual particles. But I want to avoid the notion of virtual; fluctuations are entirely real and present!

Superstring theory is currently divided in five models, each explaining a potential universe that could be facets of a larger model. This is called M-theory, as one of the best candidates for reconciling gravity and quantum mechanics. Perhaps the difficulty to reconcile them comes from the resilience of old metaphysical assumptions?

Perhaps the *M* of M-theory should stand for Meta- and for Movement! This implies the double turn to a RMP of incipient relational fields, and the critique of all metaphysical immobile categories, including the category of dimension itself. M for Middle or Mezzo and Mutation! M for Modal universe! A mother–matrix–membrane without father–son: *khōra* without form and quantity.

In the ultra-large scale these *n*-dimensional emergent and changing topologies may account precisely for the complex unfolding of a cosmic inflation, which necessarily due to fluctuations could never happen in completely regular three-dimensions, it is natural to think that a cosmic inflation needs to warp in its unfolding, which could in turn explain ideas of "parallel universes" which however intra-act on vast spacetime scales so that our entire Hubble volume is just a tiny bubble in a gigantic *n*-dimensional membrane, and we inhabit a tiny bubble of spacetime metastability within gigantic fluctuations of the membranes over quintillions, or googols of years. Membranes entangled with membranes in an infinite eternal web of fluctuating multiverses within multiverses, inflating, coalescing, shifting with no beginning or end. Because the fundamental question is no longer being vs. non-being but indeterminate variation, the quest for creation or beginning or end disappears.

The same approach should hold true for how the fields of the living, of thinking, or the social and the technological emerge as entangled webbing in a multiple *n*-dimensional and fluctuating enfolding across diverse local, regional, planetary, and cosmic processes. The grand riddles of proteomics or genomics, of neuro- and behavioral sciences or of social sciences and technology can perhaps only be solved

by adopting a kinetic, indeterministic field approach, whose intention is to learn to move in more varied ways, instead of fixing ourselves and predicting variations by reducing them and programing them.

In the mezzo region of our proprioceptions and ecosystems, where complex life unfolds, my proposal, as I already exposed, claims the importance of behavioral indeterminacy. We can feel the actual openness of the world in the multiple sustained tensions–torsions of our proprioception, which never resolve, unfolding their own kinetic and body intelligence. The more we let them fluctuate indeterminately without imposing alignments, the more we contribute to a universe's variation.

As regards multiverses, the diverse possible tunings of extra dimensions in string and superstring theory, as in fig. 13, are put in relation with the potential fundamental particles, so that every different tuning with different particles would imply a wildly different universe. As I mentioned before, perhaps some speculations about other possible universes are too abstract, perhaps movement–fluctuation always unfolds in variation, where the possibilities are infinite but not everything is possible. That this particular universe, where complex life unfolds, has particular "fundamental" numbers and ratios of its subatomic particles and interactions, is almost certainly due to the indeterminate expressions of quantum fluctuations during inflation.

But because fluctuations are *indeterminate but not random,* because they are relational and unfolding in variation, I suggest that not every abstractly thinkable tuning of a universe is possible, though the possible tunings may be infinite. A movement approach undoes the abstract idea of states, linked to mathematical points. A movement approach demands thinking in terms of *fields in variation*. Perhaps all of them develop some sort of movement of variation, an evolution, or perhaps not.

4.2.3.1 Chaosmological Ethos

In any event the telos of a universe is not to host self-aware life like the human, who by excessive self-awareness tries to block its evolution! What an absurdity this would be! The meta-telos is variation, to host an infinite richness of expressions that is partly felt, and contributed to, by all the bodies–fields partaking in it, from matter flows through slime molds and bacteria to cats. The human seems to be the one contributing the least to cosmic diversification.

Yes, we have wonderful ideas and make marvellous creations, but too self-centered and ensuing in a Planetary Holocaust. A new sensibility needs then to be enacted! Can the wonderful art creations that have arisen in dominant cultures, amidst increasingly globalized networks of neuronal–technical exchange, exist without the systemic domination with which they emerge? What alternatives for rich and non-destructive glocal futures can we think, besides valorizing the richness of preimperial cultures? Can we enact rich cultures that contribute to global biodiversity instead of killing it, and that move entangled with biodiversity instead of separating itself, as non-totalizing but entangled web of multiverse-like shifting nodes? We will come back to this in Book 6, after examining the inflection of the age of algorithms in Book 5.

Just like every universe might tune differently in the smallest and largest, so also every planet tunes very differently the conditions, or not, for life, but on very different spatiotemporal scales, a tuning that changes all along, is not rewindable and neither repeatable nor controllable! This is similar to how personalities and thought also tune in irreducibly different and nonrepeatable manners in everyone: a claim for irreducible diversity, nonrepeatability, and variation of everything, and

the openness necessary for its proliferation! At stake is not just to passively move with the flow, but to add variations to the flow, and certainly not wanting to stop or channel the flow! The disastrous consequences of trying to channel, control, and quantitatively amplify natural flows in dominant civilization, including electricity, can now be seen!

Let me also add that my intuitions are "thanks to" my neurodiversity, my protoautistic sensibility, my being increasingly far away from narrowing formalistic rationalism, and to my kinetic–sensory practices, grounded on my fluctuating proprioception. Physicists should dance more and not trust any thought coming from immobile bodies! Physics should always have as a driving question: how can we move in richer ways, contributing to the universe's variation?

4.3 The Stelliferous Era

As the universe continued expanding and cooling, the ongoing diversification, tuning, and variation, went on. After the initial radiation went to the background, galaxies could form and the universe crossed a new threshold where movements of flow and fusion constitute a new stratum of diversification, till today and into the far future.

Galaxies are the true star swarms. Stars, like bacteria, cannot be thought in isolation. It is the complexity of galaxies that affords endlessly varied kinds of star systems and stellar intra-action of energy radiation, nucleosynthesis, and dissemination of new elements when a star dies. Some of these afford complex molecules—proteins and nucleic acids—capable of folding and forming complex metabolic assemblages when new star systems condense in the remains of the older one. The element affording such complex compositions, in our case carbon, which has extreme plasticity, chemical openness, and capacity to create endlessly versatile compositions (so-called allotropes), has taken several generations of stars to come up, in the stellar orgy of nucleosynthesis, supernovas, nebulae, and interstellar dissemination. In our case, this happened within the medium of our galaxy and in our region of the galaxy.

Stars condense from nebulae and, after a lifecycle of billions of years, during which they send out radiation and perform nucleosynthesis, creating new elements, they die, disseminating the new elements into new nebulae from which new stars and planets can condense.

The gravitational collapse of stars creates new elements by atomic fusion, while affording and spreading radiation in the cosmos. Supernova explosions, when some stars die, allow more complex new atomic fusions to come up, which spread in the stardust of fluctuating nebulae where future stars and planets may condense.

Most of baryonic (ordinary) matter resides in dispersed gas clouds in-between galaxies, along the previously mentioned galaxy filaments. Only about 10 percent is in the actual galaxies, and from this again only a part is aggregated in stars and planets. Likewise, the totality of ordinary matter also amounts to just about 5 percent of the universe's composition, where so-called dark matter and dark energy have far greater shares of around 27 percent and 68 percent respectively.

This counting may sound positivistic, but it helps resituating the "anomaly" of formed matter in the universe, and the anomaly of planets within it, as part of a dynamics of condensation within far more diffuse fluctuations of matter–spacetime concentrations.

4.3.1 On Galaxies and the Conditions for Organic Life

Types of galaxies include spiral, elliptic, and amorphous or irregular. Our galaxy is a spiral galaxy, a vortex in galaxy filaments, with differentiated regions. It consists of a highly unstable, radiation-intensive region near the central black hole, where stars move in relation to each other at extreme speeds, where cosmic phenomena of extreme violence abound; the middle region where we are; and a more inert outer region with low radiation. Galaxies are immensely complex star swarms where conditions for further differentiation of fluctuations come about. It seems that middle regions afford the conditions for consistent openness that molecular movements of life require. But these are preceded by much longer stellar intra-actions affording new elements, condensing into matter flows, nebulae, and new stars and planetary systems of endlessly varied kinds. The endless variety of star systems and star clusters, each of them swarms within swarms, conforms to the prodigious liveliness of galaxies as true mutating orgies of radiation and nucleosynthesis. Every star system is a swarm of billions of orbiting objects, like the atom is a swarm of electrons around the swarm of protons.

Mutation happens first of all in stars and galaxies through nucleosynthesis and star life cycles. The conditions for more complex mutation and composition include: an appropriate region of a galaxy; a rocky planet with carbon, water, radiation from the sun and from inside the Earth; an iron nucleus providing a magnetic field holding an atmosphere sheltering from certain radiations; the peculiar tilting of the planet's axis affording seasons and thus complex atmospheric movements; and the particular distance to the sun where water can be in fluid state. These are some of the complex anomalies and conditions where around 4.5 billion years ago, in a universe around 9 billion years old, more complex molecular movements consisted into so-called organic life. In other planetary systems there may be other types of conditions, but most of them may offer no conditions for the highly complex biochemical compositions of organic life as we know it, though maybe for very different types of life.

It is always a question of having the right conditions for movement diversification: zones of galaxies and planets that are too violent or too inert will perhaps not afford the subtle and dynamic metastable balance necessary for fluctuations to unfold in the dances of proteins and DNA.

The circular movements of rotation and orbits of the Earth in relation to the sun, moon, and stars is a partial effect of gravitational fluctuations, and collisions between centers of aggregation. Matter aggregations in star cumuli can form vortical movements of accretion where star systems arise with their orbiting planets. The fact that planetary orbits are elliptical and that every orbit in a star system follows a different ellipsis exposes the swarm-like differential nature of fluctuating vortical movements, of which circularity is a mere abstraction.

Star systems like the solar system are immensely complex swarms where the orbits of planets fluctuate over long periods in the intricate dance of their multifaceted relations, where all sorts of collisions happen, especially in the early stages. One such collision, a particularly violent one, presumably caused the tilting of the axis of the Earth and created at the same time the moon, which in turn stabilizes the Earth's rotation. A delicate and intricate cosmic dance underlies the cyclic movements of our planet. This tilted axis oscillates in turn every few thousand years, bringing about glaciations, among other phenomena.

The precise tuning of seasons on our planet is due to an improbable accident of a violent collision. Many planets have no tilting and no seasons, perhaps not affording enough movement complexity for life as variation to come up. Others, like Mars, have excessively wild and random oscillations and tilting of their axis. Some planets don't even rotate, or they have one face always looking at the sun, like the moon, which has one face always looking at the Earth. All this depends on the endless vicissitudes coming up in star and planetary formation.

Some planets are made of diamond, others orbit around neutron stars of unimaginable violence or giant reds. Some are burning close to their sun, while others are far, cold, and dark. The variety of star systems defies all imagination: planets without rotation, or without tilting of axis, without magnetic field and internal radiation, or floating in interstellar space, expelled from the system due to gravitational affections with other planets. But if they have rich internal radiation, maybe even such a planet could host other kinds of life. Life on our planet could have formed in volcanic ridges deep under the ocean or the crust. It could have different sources: asteroids, the sea, the Earth's surface, or the depths. Simple organic molecules form whenever complex gases are subjected to strong electric storms. Violent beginnings are always the case, though stabilizing over time as compositions grow more complex.

...

Planetary formation can start from cosmic dust creating rocks through electric discharges and storms. These rocks collide, creating larger aggregates, which start attracting other rocks when a threshold of gravitational consistency is crossed, increasing in size, but still amorphous and uneven, like in the billions of asteroids populating our system, which together with comets and other phenomena make of our cosmic medium an extraordinarily lively swarming field where substances and molecules are disseminated and exchanged.

Only if higher degrees of aggregation are crossed does the asteroid or planetoid start to even out its differentials, acquiring a spherical shape. Star and planetary spheres are the result of gravity, just like the vortexes of galaxies and planetary accretion are also economies of movement in processes of aggregation. Laminar flow of matter implies a momentum coming up in fluctuations. Vortexes form when a second and third differential with momentum appears.

The sphericity of planets and stars is itself an effect of gravitational economies of movement that even out differentials as stars and planets cross gravitational thresholds in their formation.

The orbits of planets are seen by relativity as linear displacements in the curved spacetime of stars. Vortical accretion processes in star systems and planetary formation are one possible movement of concentration among others within the much more diffuse flows of matter in nebulae.

Black holes and nebulae could appear as two poles of extreme consistency and inconsistency in between which the potentially inhabitable regions of the universe abound. But both are fluctuations in the prodigious cosmic metabodies that are galaxies, which in turn are "anomalies" of concentration within galaxy filaments.

So, circularity is a partial effect (and partial observation or representation) of movement–matter fluctuations (variations of density). Orbits in the solar system can be seen as periodic oscillation, but they oscillate in turn: violent instabilities between Saturn and Jupiter in the early solar system sent millions of comets toward the center of the system from which most of the water on Earth may have come, and

in future one of these planets might be expelled from the solar system. No orbit is purely periodic. It fluctuates within complex relational fields. Human civilizations have appeared in a tiny fraction of the Earth's lifetime, in between cosmic accidents, mass extinctions, and glaciations.

So, cycles are also governed by the law of fluctuation. No cycle can be a purely mathematically periodic fluctuation; every cycle in the universe is differential and a part of complex fields, fluctuating in always more than one way.

Galaxies are also *diffractive fields* for electromagnetic waves. Waves are differentials (disturbances) within fluctuating fields, oscillating in a point, or propagating, or even singular events (solitons), mostly mechanical (vibrations) or electromagnetic, diffracting or transducting as they propagate, affecting the field of propagation. A wave is a relational differential that propagates within fields, provisionally transposing movement relations (speeds–rhythms of distances between atoms or molecules more than changes in orientations).

Electromagnetic radiation[40] (of which visible light is just a part along a spectrum of frequencies or oscillations) was one of the first types of waves, perhaps the first mode of oscillatory propagation that tuned in the primitive universe, thus becoming a "constant" that conditions the varying types of spacetime, maybe together with gravitational waves, although every field has its waves, every atom is itself a field with wave function.

Mechanical waves appear within the matter flows arising in star and planetary formations, together with endless other phenomena of turbulence, from solar wind and storms to vortexes and rings, all of them expressing fluctuation.

4.3.2 Digression on Fields and Rhythms

Fields[41] *are economies of movement arising in fluctuation.* Field theories treat forces as effects of fields. Fields can exist, or rather *consist,* with momentum and energy in

40 Electromagnetic radiation (including visible light, or the radio waves of our TVs, satellite, communications and wifi networks) "consists of electromagnetic waves, which are synchronized oscillations of electric and magnetic fields," characterized by frequency of oscillation or wavelength and "emitted by electrically charged particles undergoing acceleration." See *Wikipedia,* s.v. "Electromagnetic radiation," https://en.wikipedia.org/wiki/Electromagnetic_radiation.

The ever-changing and blurry colour zones of light in the world come about in the diffraction and overlap of endless oscillations of radiation, on the types of cells receiving the radiation, on the nervous systems transducing it to electrical signals that compose synapses, on the perceptual habits, abilities, techniques or practices that allow someone to focus on light and color in particular ways, turning them into qualities of experience, not so much selecting from an infinity as creating relations, by integrating it in a proprioception, elaborating rhythms.

41 A physical field is a quantity defined by a tensor with a value for every point in space. The world is made of endless fields. Field Theories mathematise Fields through tensors: multilinear or multidimensional (maps of) vectors (speed and directions), scalars (magnitudes) and other tensors conforming a resulting tensor, defined by directions and speeds (of geometric points) composing the field. String theories describe gravity as tensor-scalar field, as "geometry" of n-dimensional tensors, fields of relation of magnitude, speed, and direction, effecting a differential geometry of motion. See *Wikipedia,* s.v. "Field (physics)," https://en.wikipedia.org/wiki/Field_(physics).

The electromagnetic field emerges from the momentum of excitations of charges creating oscillations and photon particles as energy waves and radiation. The Higgs field explains why particles have mass through the breaking of certain symmetry laws. The inflation field explains the inflation unleashed by vacuum fluctuations in which a vacuum state with high potential energy but no particles (vacuum energy) expands, after which comes the heating of the Big Bang. Gravity as holding together of likes, electromagnetism as propagation through attraction of unlikes, strong interaction

excess of particles, as in the electromagnetic field. Particles are rhythms in field excitations, *or rather the observation of those rhythms.*

Consider a flock densely fluctuating around its own vague center, all birds changing internal relations all along, at extreme speeds, conforming a dense indeterminate cloud of oscillation. That could approach the image of an electron cloud, whose very movement of concentration may account for mass as the rhythmic momentums tend to implode. Consider now an explosion of those rhythmic momentums due to some interaction with another flock, or some internal dynamics that propels the flock, unfolding the rhythmic momentums as force of opening, and we have energy. Consider the sustained exchanges between birds of different flocks and we have forces or interactions, sustained relations between masses, energies, or both.

Energy is the explosive rhythmic propagation of momentums. Mass is the implosive concentration of rhythmic momentums. Forces are exchanges, attunements, sustained attractions or repulsions, in-between rhythmic momentums.

4.3.3 Digression on Old and New Cosmologies

Contemporary cosmology resonates with ancient Greek cosmologies in the ideas of an indeterminate or undifferentiated origin and principle that undertakes increasing movements of differentiation in movements of condensation and dissipation, in the interplay of circular (oscillatory) and disorderly (fluctuating and turbulent) movements that from the heavens down influence every molecular flow.

At subatomic, atomic, and molecular levels there is another kind of primordial spacing when points unfold into lines, planes, and three-dimensional compositions as Pythagoreans and Plato proposed, resonating to some extent with molecular biology and chemistry.

Quantum fluctuations echo in Lucretius's *clinamen,* while QFT, with its indeterminacy principle and the way in which virtual particles appear and are reabsorbed in the void, resonate with Anaximander's *apeiron* or even Plato's *khōra*. Cosmic inflation is also a current way to think chaos as the primordial "yawning" of the initial opening, spacing, or interval. The dual forces, of negative and positive charges in electromagnetic force, governing bonds, collision, and repulsions also resonate with the principles of attraction of opposites, of repulsion of sames, or of attraction of same and repulsion of the diverse that one finds as fundamental laws of motion in ancient thought.

The struggle is still ongoing between those who nowadays still search for underlying, ultimate, and invariant laws, still following Plato's imperative, and those who try to consider a contingent universe without laws, like Democritus and Leucippus did, where the chance–necessity of collisions of atoms in the void composes everything in the universe just by way of varying rhythms, orientations, and contacts. Or we should rather say, in the multiverse, for in ancient thought it was also common to think that there are endless worlds.

as holding together through complex exchanges of massless particles, weak interaction as random decay of matter due to complex interactions affording radioactivity (essential for life and affording internal energy of the planet) are the fundamental interactions of the four fundamental fields. Electron clouds made of vacuum excitations compose most of the mass of an atom through the electron's momentum and afford all chemical processes.

This also raises the question of whether current science still follows very old preconceptions, or whether ancient conceptions were visionary. Atomism was, after all, an attempt to hack Parmenides without denying him altogether, assuming the existence of eternal entities, which is still a very convenient figure for an essentialist science. But atomism was radical in assuming a universe without law: the chance–necessity of atoms intra-acting, colliding, or forming bonds is that from which everything arises. This book tries to take further this approach of a universe without laws, where "laws" are provisional expressions of movement economies.

RMP as field theory of movement allows us to consider the universe's unfolding not as increasing separation of dual principles from an originary indeterminacy but as increasing variation and indetermination within a primordial indeterminacy that is still always present, itself unfolding.

Within more indeterminate fluctuations there appear more periodic fluctuations. The entangled rhythms of different oscillations[42] and fewer periodic fluctuations speak of a movement of diversification *sustaining indeterminacy*.

Rather than assuming a dichotomy between utterly random and completely periodic fluctuations or oscillations, I propose to consider that reality is always in between. This is also due to the law of fluctuation as implying a gradual, nonlinear, and complex un/folding.

It seems that the balance between what holds together and what varies is crucial for the movement of variation that is life. If we echo ancient pre-Socratic and Platonic cosmologies by acknowledging that cyclic, circular, continuous movement is the intelligent movement of the world, as the one affording order, intelligence, and life, we should also acknowledge that every cycle fluctuates and must do so. Every cycle is actually a differential, as it is part of larger fluctuating fields. Fluctuation is not a mere background for oscillations to appear, since oscillations in turn are part of highly complex fluctuating fields of oscillations, in constant reciprocal mutation and reattunement. Fields are swarms of oscillations.

The geometric sphere emerged in Greece as an abstraction of the observations of the heavenly bodies. But we know now that these follow ellipses that vary over long spans, emerging from vortical concentrations. The vortex has won in modern science after millennia of belief in stable geometries.

Oscillations–vibrations fluctuate in themselves. There is never an identical oscillation. Strings have infinitely varied vibrational potentials and modes. So, oscillation–vibration emerges from fluctuations, is itself fluctuating (in plastic rhythms), and evolves in fluctuating fields of entangled oscillations–vibrations. Any recognition of a stable pattern relies on a fixed apparatus of observation that isolates a phenomenon from a background ignoring the larger field. This could well be the problem underlying Bohr's indeterminacy principle: fields cannot be reduced to any singular logic. Just like our proprioceptive field cannot be reduced to a displacement.

In this metastable balance between the consistency and openness seems to lie the "secret" of life as movement of diversification. On the one hand one could see the conditions for life as we know it as extremely rare, on the other, as I mentioned, it seems that as soon as the conditions appear life proliferates, which speaks in favor of the will-to-variation of the universe, as intrinsic expression of fluctuations.

42 The vibratory account, of a universe tuning in always richer resonances, is perhaps closer to some ancient Indian cosmologies. See Daniélou (2003a).

Oscillations as rhythms of a certain periodicity always also involve rhythmic plasticity, a capacity to reattune with other rhythms, and thus intrinsic openness and indeterminacy and variability of momentums.

The tidal movements of our emotional and bodily cycles certainly relate to the cosmic dance of multiple cycles that only seem identical from the perspective of a geometrician's biased mind. Sleep, emotions, ups and downs, they come and go like the tides (the moon), but they are not necessarily cycles. They are variable fluctuations, never repeating themselves, always in variation. Even in our planet cycles vary enormously, from the seasons of regions far from the equator to tropical zones defined by rainy seasons.

4.3.4 Indeterminacy Principle Expanded — Movements, Not Patterns!

Fluctuation unfolding in fields allows rethinking the "multiple stories or paths" of the multiverse not as lines, but as tensional and vibrating modes that are superposed, just like my proprioception is not following paths but has multiple superimposed torsions and tensions.

In any version of a multiverse where I try to imagine a varying copy of myself, my posture will always be fluctuating. The body sustains multiple states of fluctuation throughout. So must the universe too!

Mental representation of patterns is a highly sophisticated cultural artifact, and it is worth asking whether they are successful artifacts since their nature is reductive. Maybe our proprioception is just a much more accurate intuitive approach to quantum phenomena where "jumps" are expressions of a field. This also means that quantum indeterminacy, far from being counterintuitive, could become a core intuitive aspect of our daily life. We just need to undo the wrong intuitions of mechanism.

How does this apply to our intra-actions with the world, where it seems like discrete or defined, concrete events actually happen? One way around it is by saying that discrete encounters, collisions, impingements, shocks, and accidents imply reductions and violences of sorts, punctual or systemic, but are part of fields where not everything is becoming determined. If we focus on the discreteness of an encounter due to our perspectival bias and habit of framing things at a distance, we will behave accordingly in relation to it and narrow down the field. But if we keep the fluctuating surplus of our proprioception alert and alive in the process, we will allow the entire relational field to also sustain openness throughout. We will see or feel other possibilities and move with them.[43]

43 As Karen Barad (2007, 115) points out, behind the apparent epistemological uncertainty in Werner Heisenberg's theorem (the impossibility to know something that is presumed nevertheless to exist) there is a deeper ontological indeterminacy which was indeed raised by Bohr but has been partly forgotten, not just by popular culture, but by many scientists too: what is called into question is the actual physical determinate reality of these two attributes with their implicit spacetime and conservation laws, that is, simultaneous existence of measurable times-positions and energies. Indeed, experiments have proven the objective ontological indeterminacy of the phenomenon itself, where both paths and times are indeterminate, so that it is objectively undecided by which slit the particle went, just like the time of passage (perhaps also of emission of the photon) is also undecided. Barad (2010) reads this along Jacques Derrida as an undecidable, a neither-nor, where measurements constitute mattering (as well as the human observer) in an intra-active process (also a Derridean *différance*), in which cuts are performed from within. Paul Busch is also a strong defender of the unsharp, indeterminate realities of quantum phenomena. But already Richard Feynman stated that quantum phenomena have no neat outline (quoted in Barad 2007, 153), which is perhaps related to the multi-

This ghostly existence of fluctuations, an "indeterminate symphony of voices," as neither existing nor nonexisting, that escapes metaphysics of presence, which is described by Barad as the "source/womb of all that is," has explicit resonances with Plato's *khōra*. Indeterminacy as neither being nor non-being is the "unending dynamism" whence all matter and meaning comes to be intra-actively by differential cuts performed from within, whereby in every particle, "in every morsel of finitude there is a radical openness and infinity at play."[44]

Discontinuities can happen and do happen, but I argue, differently from Barad, that they don't need to happen as a condition for mattering or meaning. Proprioceptive swarms are always already consisting in excess of those terms. *They never decide,* they swarm. Only when their movement gets reduced to lines (thinking–perceiving and displacing, arguably only in the historical anomaly of the Algoricene), do the poles of being or nonbeing appear, when we are forced to take a decision by narrowing down the swarming field.

This relates to the idea that perception is not selection but creation of new relations. The new relations created don't refer to an absolute reality of which different perceptions express compatible aspects. Instead, every perception expresses a new reality. In Gilbert Simondon's terms, one would say that every perception individuates a new relation. For instance, if I draw a view and develop studies of rhythm-as-line, and I later blur paintings of blurry light–color densities without lines of the same view, they are not two compatible aspects of a same reality. Each is instead a different type of field with its own internal consistency. So again, the quantum field is not so far from daily experience, we just need to reinvent the latter.

The obsession to look for patterns in nature should be counterbalanced by a concern for the essential openness in patterns instead. *Movements, not patterns!*

Movement from within, not pattern from without!

4.3.5 Swarming Flow — *Panta Rhei*: The Sensitivity of Matter Flows

Flow is a particular expression of fluctuation coming up in matter fields, when fluctuating concentrations create zones with a momentum, a differential speed. In planetary disk formation this happens when

> random gas motions originally present in the cloud average out in favour of the direction of the nebula's net angular momentum. Conservation of angular momentum causes the rotation to increase as the nebula radius decreases. This rotation causes the cloud to flatten out—much like forming a flat pizza out of dough—and take the form of a disk.[45]

In atmospheric cyclogenesis, when a more laminar flow or wavefront caused by pressure differentials meets another perpendicular pressure differential, we have a rotation, a first expression of vorticity. "The cyclonic flow begins around a disturbed

ple histories of particles whose path integral he formulated, so that wave functions, understood as fields are indeterminate until an observation selects a state of the field. When we touch something and feel its solidity it is not that atoms are actually touching as if they had a neat boundary. Rather, they are repelling from a distance.

44 Barad (2012, 8–13).

45 See *Wikipedia,* s.v. "Protoplanetary disk," https://en.wikipedia.org/wiki/Protoplanetary_disk.

section of the stationary front due to an upper-level disturbance."[46] When these encounter a third differential, we have the triple movement of a vortex or smoke ring: displacement, poloidal, and toroidal movements.

The endless expressions of vorticity appear in the infinitely varied contingencies of these dynamics, in the complexity of a galaxy, a nebula, or in the Earth's atmosphere with its changes of pressure, humidity, temperature, the relation between air currents and atmospheric strata, ocean currents, mountains, ecosystems, deforestation, or pollution.

The sensibility and degree of sensitivity of matter flows lies in how, and how far, a matter field can recompose with others in novel mixtures toward increasing diversity and complexity.

...

Continuum mechanics and its sub-branch of *rheology* (from *rheō,* "to flow," and the Heraclitan doctrine of flow) expose the continuous properties of matter in degrees of aggregation, from plasma through gas, liquid, viscous, viscoelastic, elastic, and solid materials, where the viscoelastic is an in-between solid and fluid, a good starting point to explore the idea that everything flows, where rocks and glass can be seen as slow fluids. More radical is the example of flow in galactic nebulae, which create spacetime deformations, stars and planets, and transformations of atoms into new elements.

The world is full of in-betweens also, neither solid nor fluid, such as viscoelastic materials, including ourselves: the recently discovered *interstitium*[47] is a metaorgan, larger than the skin, that gives consistency and mobility to the body, a viscoelastic tissue–flow across all elastic tissues and organs, which in turn holds together membranes of fluids and solid bones. Following Hypersea Theory, the complex viscoelastic composition of animals is an expression of Hypersea as extension of life on land, a complex un/folding of movements of flow.

Flow is a second-order expression of fluctuation, appearing in the universe after the primordial unfolding and oscillations, and itself continues affording new molecular bonds composing inorganic and organic life.

Continuum mechanics, which analyzes fluid, solid, and viscoelastic materials with no categorical distinctions along a continuum, is an important cue for thinking matter and complex compound materials in degrees of adherence, elasticity, and plasticity. Viscoelasticity as in-between solidity and fluidity is an interesting point to start dissolving entrenched dichotomies of our common sense.

Thus, everything flows, but in different degrees of aggregation–density, speed–rhythm, and modes of composition–orientation.

We are a complex mineral and flow, unfolding in the membranous bodies of Hypersea.

...

Flows are a mode of fluctuation and of field. Think of the ocean or the atmosphere as a field. Currents in the ocean are not displacements in a Cartesian space but internal fluctuations and transformation of the ocean's field. In laminar flow there are less changes of orientation, density, and speed between molecules than in turbulent flow.

46 See *Wikipedia,* s.v. "Cyclogenesis," https://en.wikipedia.org/wiki/Cyclogenesis.

47 See, for instance, Gibbens (2018).

The sea is not a smooth space, it is a highly complex and changing field of currents and differentials, and marine animals know well how to orient themselves in it. The ocean has its own *archē*-proprioceptive field as currents condense and dissipate in varying life spans, and the proprioception of fish is part of the ocean's *archē*-proprioception.

Laminar flow and turbulent flow are types or modes of fluctuation of inorganic molecular fields but can also happen inside organic molecular fields, inside the membranes and vessels.

Flow is the predominant mode of movement of inorganic molecular fields. Flow has degrees of density. The highest degree is in Big Bang singularities, followed by black holes, followed by star nucleosynthesis, which results in one of the most inconsistent and energetic of flows, plasma. Stars are endlessly complex fields of flow and radiation, solar wind, and storms, nucleosynthesis, heat, and magnetic differentials (sunspots), evolving over lifespans of billions or trillions of years.[48]

Vorticity (and its differential field-like curvilinearity) is already a peculiar expression within turbulent flow and fluctuation. This is also the case with gravity, which in strict terms of relativity is not a force but a spacetime or movement geometry. A vortex itself can be seen as a field arising in fluctuation, with multiple and complex internal movements, mostly threefold (poloidal, toroidal, and forward, as in smoke rings).

But turbulent flow and laminar flow are by far not enough to account for the complexities of flow. Instead, I want to propose that flows always already flock. They have highly complex movements where regions are continually morphing, changing internal orientations, often slowly, but with changing speeds and densities–proximities. The movement I have in mind is the slow amorphogenesis in clouds. Like flocks, clouds always morph, change internal relations in the enfolding of their density regions, even as they partly displace. But this "displacement" is just an illusion as seen from the Earth. From the sky, one sees a planetary field of fluctuation that includes some vortical zones, some regions closer to laminar flow, where currents appear within much more amorphous fluctuations. The oceans exhibit a similar variety, within the diverse spectrum of density and fluidity, and probably also tectonics as geological flows, the plasma flows of a star, the gas and dust flow in nebulae, or the gravitational flows of a galaxy.

This amorphous "morphing" which corresponds to what I call *amorphogenesis*, seems to be the predominant expression of flow, wherein bonds also happen. Significantly, this implies that within the movement of flows there is already a prototypical movement of growth, as in the movement of clouds, which could point to the idea *that organic growth is a further articulation of a swarming movement already implicit in flow.* This connects to the ancient belief in water as life and as brain of the world, where inorganic flows already bear the movements of organic life.

In matter there would thus already flow an "intelligent motion" of diversification, which is not a circular motion, as Plato would claim, but the amorphous movements of flow, in which, as Democritus already stated, vortexes spontaneously appear due to momentum in flow.

48 Depending on the type of star, its size, heat, and mass. Considering the astonishing and wild variety of types of stars, one can find much longer but also shorter life spans, not to speak of binary or ternary star systems where stars dance together perhaps not unlike protons in an atomic nucleus, and in wildly ranging speeds and types of start system formation (accretion).

Clouds also condense–dissipate all along, so they help us to also consider how fluctuations allow the appearance and reabsorption of fields, now thinking of "virtual particles" as subatomic excitations of fields, or of subatomic string vibrations, but also of cosmic nebulae from which star systems condense.

4.3.6 Dissipative Structures as Emergent Fields

In *The End of Certainty*, a precursor of the theories of dissipative structures, Ilya Prigogine (1992) exposes the preponderance of fluctuations in the production of novelty in the world by the constant production of bifurcations within systems. This process relates to degrees of stability in low-energy systems, where in situations close to stability fluctuations may die out, whereas in far-from-equilibrium situations they induce bifurcations in the system and the emergence of new self-organizing dissipative structures. These may vary widely, from biochemical oscillations to tornados, and expose the intrinsic creativity of nature as related to the irreversible arrow of time. This irreversibility exceeds the origin of our universe and extends to the wider medium from which universes emerge. Human creativity is just another of its expressions. This dynamics between degrees of equilibrium and the effects of fluctuation also account for the active and reactive processes in a universe and a culture, the evolutions and the dead ends or closures. Boldly echoing Henri Bergson, Alfred North Whitehead, William James, Ludwig Boltzman, James Clerk Maxwell, Erwin Schrödinger, Henri Poincaré, John Bell, or Karl Popper, but also seeking recourse to Lucretius, Epicurus, Democritus, and Heraclitus, Prigogine claims that we are assisting in the birth of a new science, a new thinking and ontology that assigns a positive value to indeterminacy and becoming.

The question becomes how far this new paradigm still assigns some status to form, structure, or stability as that which emerges from randomness, whether there is still an echo of the pendular dynamics oscillating between order and disorder, or an echo of mechanism in the idea of points–particles moving in a space. The problem is thinking that there is an absolute randomness–stability duality in the background, leading to the puzzles of how "dissipative structures" emerge, instead of considering fluctuation as propelling a movement of diversification in which rhythms of various kinds appear as fluctuation fields forth. Fluctuations have neither an origin in stillness, nor does order have an origin in chaos. Fluctuation is the ever-present in-between from which complexity fields forth. The bifurcations appearing are then not between linear processes or states, but of fluctuating fields that sustain indeterminacy all along. Time irreversibility is due to fluctuations fielding forth in variation against which mechanism and digital culture have tried to raise reversible conceptions of movement and time.

The synchronization of chemical oscillations needs to be understood as rhythmic process proper to a field of which particles are expressions, rather than considering particles and individual entities that astonishingly seem to be able to coordinate. Likewise, the attractors of Chaos Theory are no other than energy–density zones of fluctuations where speeds of concentration create particular flows.

4.3.7 Digression on Patterns, Movement, and Imaging

I suggest a shift from the prevailing obsession to look for "patterns in nature" to looking only at the movements.

There seems to be a striking similarity between the movement of smoke rings and medusas, and between clouds and the outline of trees moving in the wind and growing along; between clouds, nebulae, and water currents, between planetary disks and atomic wave functions; between planetary disks and galaxy types; between atmospheric vortexes, galaxies, star systems, and atoms. In turn, molecular rings in carbon are more of a movement affordance of molecular bonds and relations, and so are beehive hexagons or resonance fields of crystals. But these similarities are misleading if one freezes them into a pattern seen from outside. They need to be understood from their inner movements as fields.

The question is then: what are the movement affordances composing a field as open to variation? Think of proteins as a radically plastic affordance of folding, where different proteins have varying degrees of variability, some of them having more stable compositions, while others change composition continually.

The spherical affordance of some viruses, like the Coronavirus, is also an affordance, a movement relationality, like the more amorphous cellular membrane that composes morphogenetic fields or tissues with distributed tensional zones.

Affordances are not only crossing boundaries of organic and inorganic or technical, but also across species or even across kingdoms: every orchid has its mating insect in a prodigious form of transkingdom sex and movement affordance (rather than morphology). The recent appearance of flowers is probably related to a planetary symbiotic process between plants and insects in pollination; a planetary orgy of transkingdom sex!

…

Filamentous aggregations in molecules also evolve along increasingly complex chemical pathways in metabolic assemblages whose growth was implicit in flow, and which will also evolve into bacterial motility, brain microtubules and the nervous systems.

Pictures pose the problem of imaging, entailing external visions that can hardly help understand movement from within, as Bergson (2016) suggested to do, in biology as well. Consider a comparison between a picture of a cell or of galaxy filaments (often pictures put together from multiple data sources) to the picture of a city from the sky. Imagine you are an alien trying to decipher the life form of that city through the movements seen from the sky, maybe projecting on it certain alien modes of interpretation, but without a clue of the movements from within that compose it, and compare these now to how you move in the city from within its metabody, propriocepting it, and aligned with multiple affordances and economies. We could inversely apply this to any scale or life form we try to look into from outside. Inversely imaging from multiple perspectives can reveal dynamics that we no longer perceive in a world built of abstractions.

4.3.8 The New Chicken–Egg Dilemma

The answer to the chicken–egg dilemma in the context of my theory would be, neither chicken nor egg but fluctuation. Yet underlying it I have mentioned another dilemma: between indeterminate and periodic fluctuations or oscillations. In a problematic way, some might phrase this as a debate between pulseless disorderly rhythms vs. orderly meters (or between entropy and negentropy).

I have tried to show that there is neither pure order nor pure disorder, that fluctuations are neither purely random nor mathematically reproducing a single identi-

cal rhythm, that they come up in complex swarms of rhythms, and that rhythmic plasticity or openness is key in a universe's evolution. I also mentioned in Book 3 that rhythm is neither pure meter nor pure random flow, it has degrees of plasticity.

I have tried to provide a theory of radical immanence where everything, including the most rigid alignments, unfolds from fluctuations, including the whole spectrum of oscillations and vibrations that seem to account for subatomic and nuclear bonds as fundamental forces, and for chemical, molecular, and biochemical bonds, swarming up into metabolic assemblages and ecosystems of kinetic diversification.

The need for certain degrees of periodic oscillation for consistency and life seems to be there not only on the smallest levels but also on the largest, in how gravity affords the spherical movement of planets, stars, and the movement of galaxies, or in the way molecules aggregate around quasi-circular nodes forming alignments, including the microfilaments and microtubules of the cytoskeleton, in the quasi-spherical but plastic membrane of the cell or bacteria, and also in the filamentous alignments of neurons and the brain.

It is crucial, however, to understand how these protoalignments are life-fostering insofar as they sustain openness, indeterminacy, and plasticity in the rhythms that allow fluctuation to unfold as never-ending movement of variation. Because these "formations" are expressions of fluctuation — not the reverse: *they are movements, part of movement fields*: affordances, not patterns! As fields expressing fluctuation, they need to sustain multiple unresolved states, diversifying without determining. Any phenomenon needs to be reconsidered in this way, as fluctuating field, not as object or pattern!

Even periodic fluctuations need to be reconsidered as entangled phenomena of fields, across fields. The tuning of cosmic strings should not be analyzed at the level of individual strings or types of strings (fields–forces) but of the universe–instrument as tensional–vibrating field. It is in the complex distributed tensions of strings that a universe, like a musical instrument, can be understood, just like the multiple vibrations and articulations that the proprioceptive body of the violin player activates in the violin.

So, the chicken–egg dilemma of periodic vs. indeterminate fluctuation–oscillation resolves in movement fields that are always in-between, sustaining a balance between openness and consistency.

4.3.9 Concerning Orders of Magnitude and Complexity

Doing imagination exercises around the orders of magnitude of the chaosmos helps challenging our anthropocentric biases. The scales contemplated by current science are in fact unimaginable because they are too far from our proprioception. In order to try to grasp them one can try to propriocept them. For instance, the size of a bacterium or cell in relation to a human body is similar to the proportion of a body in relation to a country. The difference in proportion of the atom to the cell, and of the country to the limits of the star system is similar, and so is the difference from the subatomic particle to the atom and from the limits of the solar system to the limits of the galaxy. Up from there, we have the foamy texture of galaxy filaments in a potentially infinite universe (the radius of the visible universe being 10^{26} meters), and downward we have an ever-greater leap to the Planck length of 10^{-35}, in which it is speculated that there is another type of foamy texture of spacetime, quantum foam. So, we seem to occupy a tiny fraction in between two types of fluctuations:

the foamy texture of galaxy filaments as the largest visible structures to us within a potential foam of multiverses, and on the other quantum foam far below the smallest "observable" particles. But it seems that complex life flourishes precisely at this scale where galactic flows and chemical oscillations converge in increasingly complex compounds. That we have such immense voids composing our atoms, similar in proportion to interplanetary, interstellar, and intergalactic voids, is less discouraging when one understands that fluctuation and its rhythms binds it all.

For timescales one can do a similar experiment. If one considers that taking a 1-meter step equals the time back to the building of the Giza pyramids, one would have to "mindfully" walk through all of Spain to reach back to the Earth's formation (every step the entire history since the pyramids), and something like half of Europe or the United States (or Brazil, Australia, or China) to reach the Big Bang.

This temporal diversity relates also to the different lifetimes of subatomic particles (some of them appearing and vanishing in quintillionths of a second, others almost eternal), but also the varied lifetimes of stars (from billions to duodecillions of years), the lifetimes of bacteria (who have no programmed death but tend to live twelve hours, though recently so-called zombie bacteria have been discovered in the Earth's crust that may live 250 millions of years per individual), or the lifetime of ecosystems or societies, sometimes vanishing quickly, sometimes lasting for millennia. Lifetimes also are never singular, they are part of swarms: societies, bacterial colonies, the biosphere, or the galaxy.

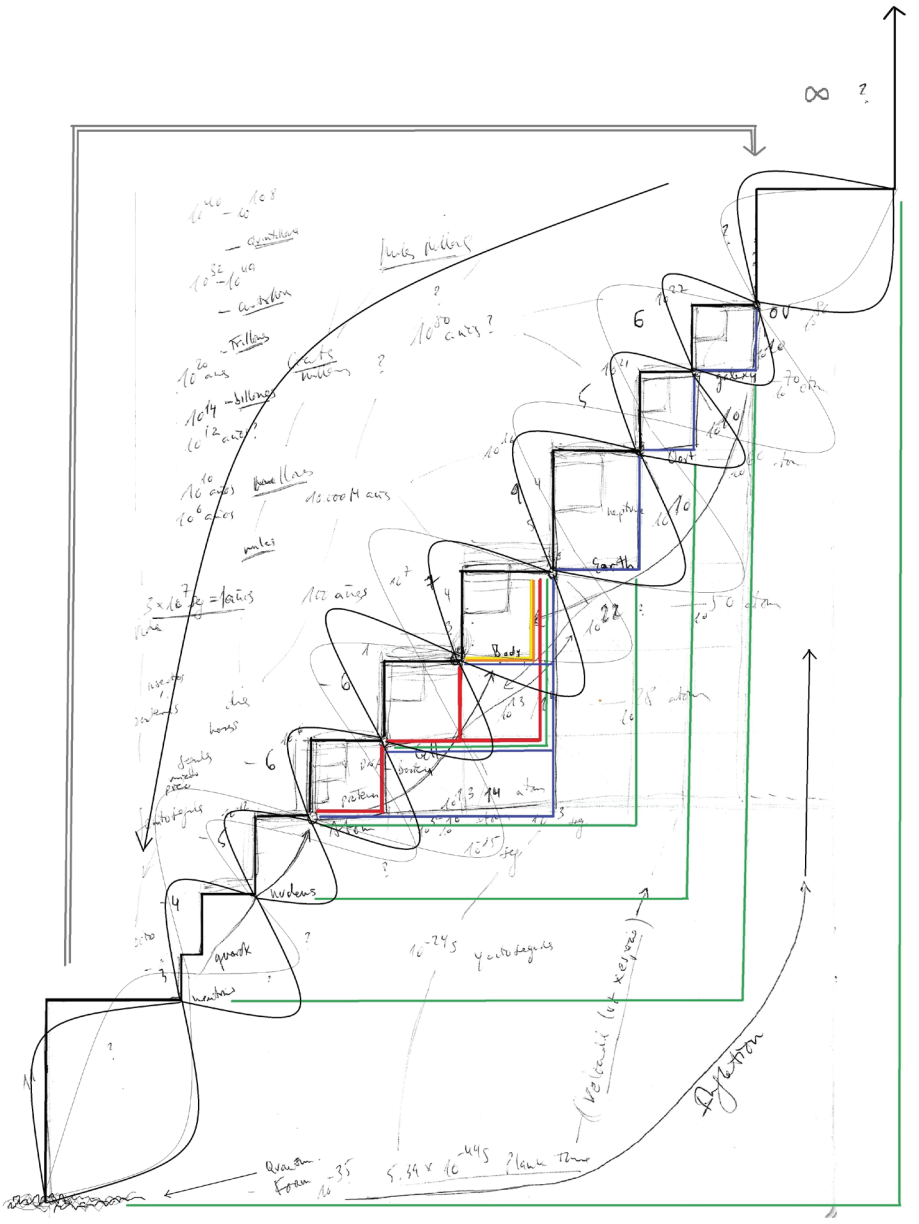
Order of magnitude is not like scale. Seen from a homogeneous scale of measurement, it makes no sense. It needs to be considered from within the movement field it speaks about, its internal dynamics. If you connect evolutive spans with the lifetimes of things (particles, bacteria, ecosystems), evolution's radical diversity makes sense. The nearly four billion years of bacterial evolution seems even more outrageous from the point of view of bacterial lifespans. No wonder that biodiversity is their offspring.

Equally, the number of nodes composing a field should not be taken for a sheer positivistic datum but gives an idea of complexity as always arising in swarming multitudes, and in evolutive spans. The number of galaxies in the visible universe is similar to the number of stars in a typical galaxy (several hundred billions) and each star is itself a swarming star system. The above are close to the number of cells in a body (in the trillions) and of atoms in cell or bacterium (even higher), where each atom is again a complex swarm similar to a star system in the relation of nucleus to electrons, where quantum fluctuations in atoms are in similar proportion to singular matter flows in planets and stars.

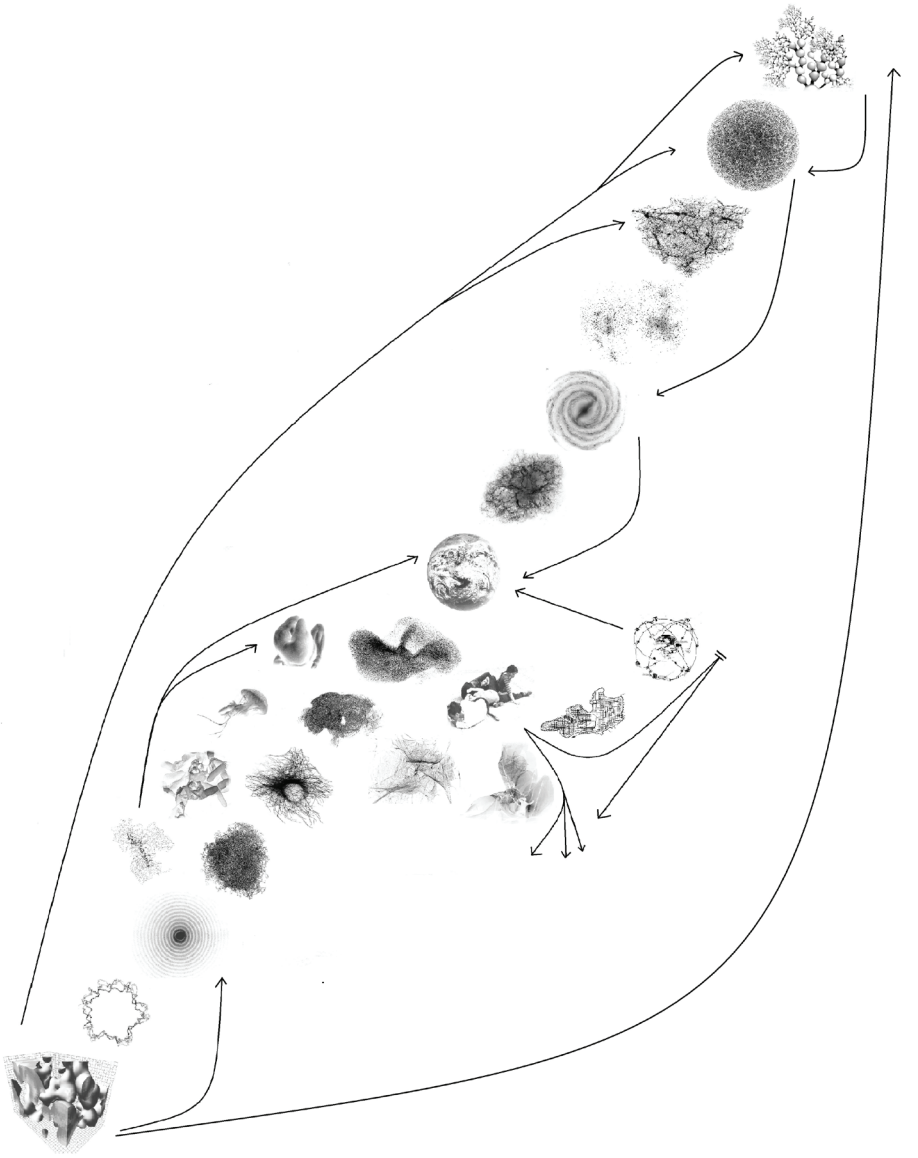
The variety of types and sizes of galaxies and stars is not unlike that of bacterial colonies and organisms on Earth. Now, what would be the unit for the composition of the biosphere: a single body or microbe, or a molecule of a substance or material? No, rather: flocks, societies, bacterial colonies, ecosystems, societies, or zones of density in flows. The swarm is always the "unit."

…

Should we attempt to travel for billions of years at near speed of light to distant galaxies, they would vanish in the process, as the expansion of the spacetime matrix puts them outside of our cosmological horizon. At the same time, merely reaching the nearest star in our galaxy would already take hundreds of thousands of years by the standards of current technologies.



Figs. 14 and 15 (overleaf). Scala Naturae Diagram. Orders of magnitude and complexity, from quantum foam (bottom left) to the multiverse (top right). **In red**: the orders of complexity of organic compositions, from the atom to the cell to the body, but also from the microorganism to the Biosphere. **In yellow-orange:** the technical systems that are creating a planetary-scale aggregate. **In blue:** the inorganic compounds from the observable universe and the atom to the planet and its flows. **The green** lines point to relations between large and small in terms of how far they go away from our perceptual experience: cell and planet, atom and Oort cloud, atom nucleus and galaxy, quantum foam and Universe. **Arrows** along the steps show modes of composition/interaction: gravity on the largest scales leading to planets and flows; strong nuclear force on the subatomic realm; electromagnetism in the molecular realm leading to organic life appearing within matter flows in planets, but also in radiation. Arrows outside the steps show the double, endless loop of the how the smallest creates the largest, and the largest influences the smallest. The diagram shows the universe as a sort of *infinite staircase* where the smallest connects to the largest in an endless open *loop* of universe formation.



Orders of magnitude have complex relations with levels of complexity, types of movement fields, and evolutionary processes and span. At the center is a body of 1 m; upwards by 10^7 m is the Earth; upwards by $\times 10^9$ is the Oort cloud around one light year away; upward by $\times 10^5$ is the galaxy, upwards by $\times 10^6$ is the observable universe at around 10^{27} m (92 billion light years), upward by an unknown factor is this universe, and upward from it a potentially infinite multiverse. Downward from the body at 10^{-6} m is the cell, downward by $\times 10^{-6}$ is the atom, downwards by $\times 10^{-5}$ the proton, and again by $\times 10^{-4}$ the quark, another $\times 10^{-3}$ approx is the neutrino, the smallest know particle, and another huge leap downward of $\times 10^{-11}$ is the Planck length, and the bubbling spacetime of quantum foam, at 10^{-35} m.

The ratios are approximate and depend on what type of body or aggregate you take as an example: a whale or an insect, a small star or a giant star, etc. Try to imagine how the steps in the scale would change depending on the type of body you choose for each section. Try to think of the in-betweens as well: the swarms, the clusters, the nebulae, the tissues, the mountain, region or rock, the less defined bodies. It is more of *a continuum, a spiraling, three-dimensional,* or even *four-dimensional wave,* a sort of "conceptual wave function" of the universe, which is itself full of all the indeterminacies of its internal

histories and microhistories, vibrations within the vibration, and varying connections across orders of magnitude and complexity in evolution. The higher complexity comes up at the orders between the atom and the planet, which is where new modes of composition come up.

Inside the body, downward to the Planck length (10^{-35} m), there is even more "space" and complexity than outward to the limits of the observable universe (10^{27} m)! Most of it by far is in the void within atoms, and the void within star systems and between stars and galaxies. But the void is made of fluctuations, fields, and energy! A body has around 10^{28} atoms, the observable universe around 10^{80}, but the combinatory of our joints (or the folding possibilities of a protein) is far larger! This diagram undoes the *Scala Naturae* inherited form Aristotle, with the rational human at the top of pyramid, and exposes a body as a varying and self-organizing node within endless spirals of complexity in a universe's evolution.

Every time we multiply by a scale of around 100,000 (a factor of 10^5), we tend to find a new level of organization, for instance there are over 100 trillion atoms in a cell and nearly the same amount of cells in an organism like us. A human brain has around 100 billion neurons, similar to the amount of stars in our galaxy and to the amount of atoms in a human DNA molecule, and these 100 billion neurons have around 100 trillion possible connections. The internet is acquiring a similar complexity of interconnected elements, each one with its complexity (every device, with its circuits and microchips) mimicking the complexity of life but with a different mode of movement, a gridded, controlled one.

Orders of magnitude in space relate to orders of magnitude in time, but these also relate to complexity and mode of organization. Time and space are effects of movement. In physics, the constant movement defining space and time is the movement–speed of light. It is this speed that defines our causal (dis)connection from other regions of the large-scale universe. It is also this speed that underlies the extremely quick chemical and molecular intra-actions in and around us, including biochemistry. The smallest time scales considered by science are those in which light would travel between subatomic phenomena (yoctoseconds, 10^{-24}), or even below, the time for light to travel through the Planck length: Planck time (10^{-44} s), as these are also the smallest currently conceivable ways for measuring time. In turn, the universe is 0.435×10^{18} seconds old (0.435 exaseconds).

The largest and the smallest come about at the origins of this universe, gradually converging, in increasing and exponential complexity in the middle scales of complex life emerging on Earth since around 4 billion years ago. Complex organisms emerged around 500 million years ago. Aligned technical systems are exponentially appearing in the recent eye blink of 10,000 years. But most important is to understand the new types or modes of movement arising across these scales, complexity degrees and evolutionary spans, as irreducibly complex qualities of fields, without any fractal geometrical relation between scales, but deeply related at the same time. The universe is not a Mandelbrot set! It is metafractal.

Imagination exercises on orders of magnitude and complexity, of cosmic scales of space and time, of evolutionary spans and of the improbability of being able to reach anything beyond our solar system, together with the study of the astonishing diversity of star systems and worlds, and the billions of years in which evolution creates unique modes of complexity in every complex milieu, all this should help us rebalance pretensions of superiority and domination. It should expose the absurdity of all claims to all-encompassing domination, universal knowledge, and immortality.

Instead, what comes out is not a sense of helplessness and fear, but the possibility to acknowledge our neglected richness and capacity to vary, as well as the uniqueness of any process in the cosmos, and the need to contribute to biodiversity on Earth.

Our limited knowledge of the cosmos is part of its creativity and of our embeddedness in larger swarms. The poverty of trying to fix the world in one's own image needs to be denounced instead as cosmic crime. Pretensions of domination on behalf of states and corporations need to be denounced as crime against *all* life, not just the human species, including inorganic movements of which organic diversification is part.

4.4 Swarming Evolution: The Bacterial Era and the Earth's Metafield

We have seen how cosmology presents two major processes of cosmic evolution: first a primordial spacing in which fluctuations un/fold in the spacetime matrix, subatomic oscillations, and all the particular tunings of this universe; and a second instance, when galaxies form, and with them stars, planets, and all the phenomena of flow and fusion of inorganic matter–movement–life. These already expose a prodigiously complex, dynamic, swarming, and orgiastic universe constantly transducing fluctuations onto new levels of diversification.

Flow has first a stratum in galactic phenomena leading to star formation, radiation, and nucleosynthesis, and then a second stratum in multiple planetary, geological, and atmospheric flows. It is in the latter where a new stratum of folding molecular movements emerges and, with it, organic life.

Not all planets are equally alive, many are dead rocks. The Earth instead is amazingly lively from its inner radiation and tectonics to its magnetic fields and atmosphere. But, following Vernadsky, what has radically transformed the Earth is living matter. Bacteria have been the major terraformers on this planet for over 4 billion years of ongoing intra-action, including the generation of the breathable atmosphere.[49] But more importantly one can see that there is no strict boundary between living and non-living. There are thresholds of complexity emerging over long periods which I identify as *types of movement fields.*

The lack of perfect geometries in nature should speak by itself about the need for openness. Even the most geometric crystals have some irregularity. Crystals are modes of atomic resonance and movement, literally fields of atomic and molecular resonance expanding in relation to a border that they shift as they transduct, unfolding as phases. Yet most inorganic solids are not crystals but more irregular polycrystals or amorphous solids without any periodic structure. Solids that can have more than one crystal form exhibit polymorphism (called allotropy for chemical elements like carbon), whereas amorphous solids exhibit so called *polyamorphism*.[50]

Carbon is characterized by its plasticity, by the capacity to generate extremely varied allotropes or variations of its compositions. When such an element finds a "universal" solvent like water, a liquid that can dissolve an immense variety of substances and that becomes attracted to many other different types of molecules, a new threshold of molecular complexity can be crossed. This needs conditions for sustained experimentation of molecular bonds, in the balance of consistency and openness: radiation, but not too much, atmospheric turbulences, but not excessive violence in temperatures, etc. These conditions emerged gradually from a more violent early Earth in the Hadean period.

49 Attempts to quickly simulate or enforce such a 4-billion-years-long process in terraformation of other planets, in the prospect of destroying this one, cannot but be doomed to failure, given the time spans in which evolution emerges as subtle self-organising process of diversification. Again, we need to understand movement from within rather than programme abstract combinations of "particles."

50 "Polyamorphism is the ability of a substance to exist in several different amorphous modifications." See *Wikipedia,* s.v. "Polyamorphism," https://en.wikipedia.org/wiki/Polyamorphism.

4.4.1 Micropolyphonies of Life

As Carl Sagan (1980) argues, the molecules of life are abundant throughout the cosmos and their evolution on Earth, in their myriads of expressions, is just one possible voice of life in a much larger cosmic fugue. On Earth, no matter how distant different life forms may seem, their molecular machinery is strikingly similar. If trees, fungi, or slime molds are our cousins, how will other voices of the cosmic fugue have evolved?

Violent lightning reactions in the early gases of the Earth may have created a huge number of simple proteins and simple acids capable of replicating, perhaps in the mode of oscillating chemical clocks, that would create a primeval molecular soup slowly evolving in the first simple micro-organisms. Molecular movements have to do with the affordances emerging in the molecule's composition and how they may couple to one another, align, fold, and unfold. Some of these affordances may lead to self-copying. The spiraling folds of proteins and DNA are surely related to the turbulences of watery environments.

Many of these molecules might have come from comets and asteroids as well. It may be that life evolves inevitably as soon as it has conditions, but it may do so very differently according to those conditions. In many cases it may not go past the micro-organisms that have populated the Earth for billions of years before the more complex and rare life forms arose, in a gradual process of geoengineering influenced by endless cosmic accidents that can bring both life and mass extinctions.

As Sagan suggests, the primeval organic molecules could be seen like notes out of which the music of life is made. And yet if one thinks about the origins of music, it is unlikely that the idea of a note was there from the start. Music perhaps evolved from complex and continuous expressions of rhythm in the dancing body, in gesture and the voice, continuities rather than notes. The latter are perhaps a more recent cultural artifact. Could it be that the origins of life[51] are similar, in that there were

51 Theories of the origins of life consider at least the following possibilities, or a combination of several or all of them: (1) in subterranean radioactive geysers, later coming up to the surface when the nucleus accumulated iron and the ensuing magnetic field protected the Earth from lethal radiation; though (2) violent lightning on the surface or even in the clouds may also have triggered molecular combinations; (3) with organic molecules or even microbes coming from other parts of the solar system in asteroids or comets; or even (4) from other parts of the galaxy, as the solar systems crosses clouds containing organic molecules in its round through the galaxy; or (5) at sea. The latter was perhaps at a second stage: for its complexification into cells, the main theory considers the bubbles of Precambrian oceans as the site where lipids created membranes and the building blocks of proteins and DNA started to grow into more complex metabolic assemblages.

The moon tides may have played an important role for the emergence of complex life in the early Earth, as the moon was initially much closer, with far greater tides invading the land that created pools for a primordial soup of molecules of life, and it is still gradually distancing itself. Its stabilization of the planet's oscillation makes us depend on it for stability as well as atmospheric dynamism. Mars's much more unstable and tilted rotation may have made it impossible for life to proliferate. Life in turn reengineers the atmosphere and surface creating more and more stable conditions for more complex life forms, but always threatened by cosmic catastrophes.

It is expected that the moon will continue to distance itself from the Earth until its rotation becomes much slower, perhaps then to return in a far future till it collapses again with the planet in a gigantic catastrophe. The atmospheric shelter thanks to the iron nucleus and its magnetic field, but also to the later reengineering by bacteria, is another crucial factor. On the moon it would be difficult to survive except in tunnels under the surface, because of the lack of atmosphere that would expose astronauts to wild cosmic radiations and asteroids. In the early solar system, there were more planets whose interactions brought millions of comets and asteroids to the Earth, a source of water

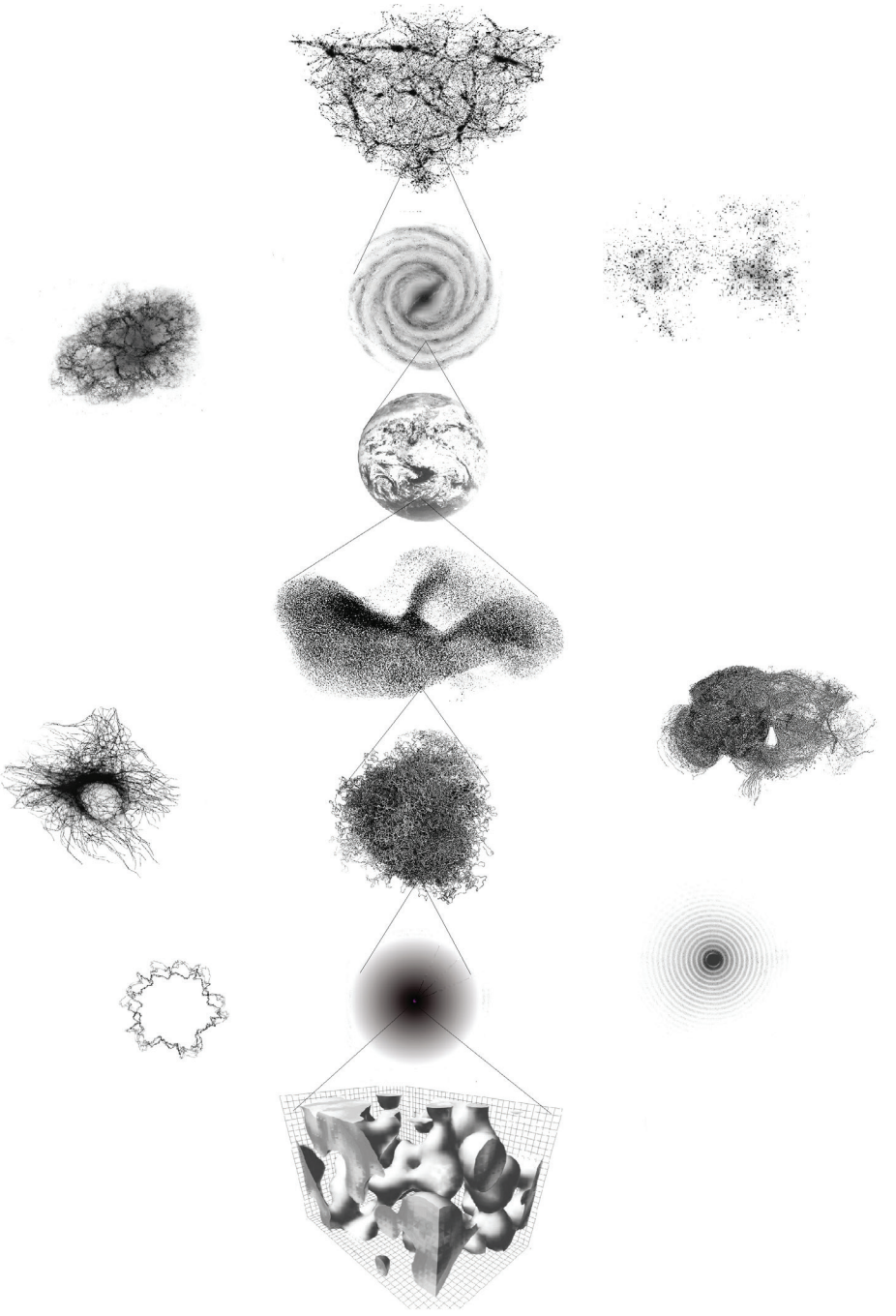


Fig. 16. Amorphous chaosmology diagram, from quantum fluctuations in the atomic nucleus below, in a volume of about 3 femtometers, to galaxy filaments at the top, spanning approx. 350 million lightyears, passing through subatomic strings, the atom, DNA molecule, a cell, a brain, a flock, the Earth, a nebula, a galaxy, and galaxy clusters. The "central" or middle figure in this *Scala Naturae* is not the human, but flocks (including bacterial swarms, as evolutionary matrix).

no "notes" at first, no neatly defined molecules and oscillations, but that it arose in far more diffuse way from the complex micropolyphonies, the blurry rhythms of molecular movements always forming swarming assemblages, within which highly precise but open molecular machines gradually emerged, based perhaps on the precision and tuning of subatomic oscillations? Was the "origin" of life always already a molecular chorus of fluctuations, without a clear start? Wasn't it deeply entangled with the engineering it performed of its own environment, all the way through? This implies a swarming theory of the origins of life, or rather of life without origins!

Likewise, the idea of natural selection based on fitness and survival needs to be challenged. Micro-organisms created the ecosystems, the atmosphere, and the larger organisms in a symbiogenetic process of radical cooperation and exchange. Survival and selection are perhaps just one side, and a more recent one, within an evolutionary process based on variation, all the way down to quantum fluctuations. This is what makes life both fragile and resilient, potentially ubiquitous, perhaps inevitable when conditions arise, but always unpredictable. Selection would apply to a conservative notion of ecosystem that preexists the selection. But ecosystems are constantly changing following a primordial movement of variation. Selection is part of an intra-active coevolution of genetics, epigenetics, bodily movement–affordances and ecosystems, a movement of variation that sometimes narrows down.

4.4.2 The Earth's Metafields: Its Spheres and Eons as Modes of Movement

The Earth's field is a multiple enfolding. Up from the core is the mantle and the crust. The hard skin of the lithosphere encompasses the crust and upper mantle and is constantly fluctuating due to the tectonics and vulcanism propelled by inner flows in our highly lively core and mantle. Subduction from the crust created the iron core that in turn affords the outermost field: the magnetosphere that shelters the Earth from cosmic rays and has allowed a complex atmosphere and life to unfold. The biosphere is not only on the surface and oceans, as crucially linked to the hydrosphere and to carbon cycles,[52] but also deep in the crust and up in part of the atmosphere.

and thus life. But its stabilization was also needed for complex life to emerge. Yet this stability is not eternal (though for our time scales it looks like eternal, almost a million times the span since the Giza pyramids were built. Do transhumanists really want to live so long, blocking evolution in their image?).

Oscillations of the Earth's axis due to gravitational influences from neighbouring planets underlie major climate variations like glaciations. The entire human civilizations have bloomed in a tiny lapse after the end of the last glaciation and it is expected that we could have another 50,000 years of relative calm, which human activity is however dramatically upsetting.

Comets, asteroids, supernovas, and massive vulcanism are expected to happen again in the future, perhaps in millions of years from now. Comets bring both life and death.

The dynamism of the Earth in relation to the cosmic medium cannot be understood from our time-scales. But once we exit those scales and look at the larger picture, we see what a narrow span of calm has allowed us to appear and exist for a while and what an extraordinary complexity of cosmic dances have contributed to this. Greater awareness of these processes should lead to an ethics of far greater care for the Earth, rather than to dystopian projects to abandon it.

Considering the earlier mass extinctions our current activity seems to be clearly leading to one. If so, and civilization doesn't survive, the Earth will restart with new variations of life like it did after previous extinctions. There are still one billion years ahead on Earth for life to try new expressions before the sun starts to grow, four billion years till it engulfs the Earth.

52 The carbon cycle happens across geosphere and pedosphere. The latter is the soil moving in the interface of lithosphere, atmosphere, biosphere, and hydrosphere, while the geosphere includes the cryosphere (ice) but excludes the biosphere.

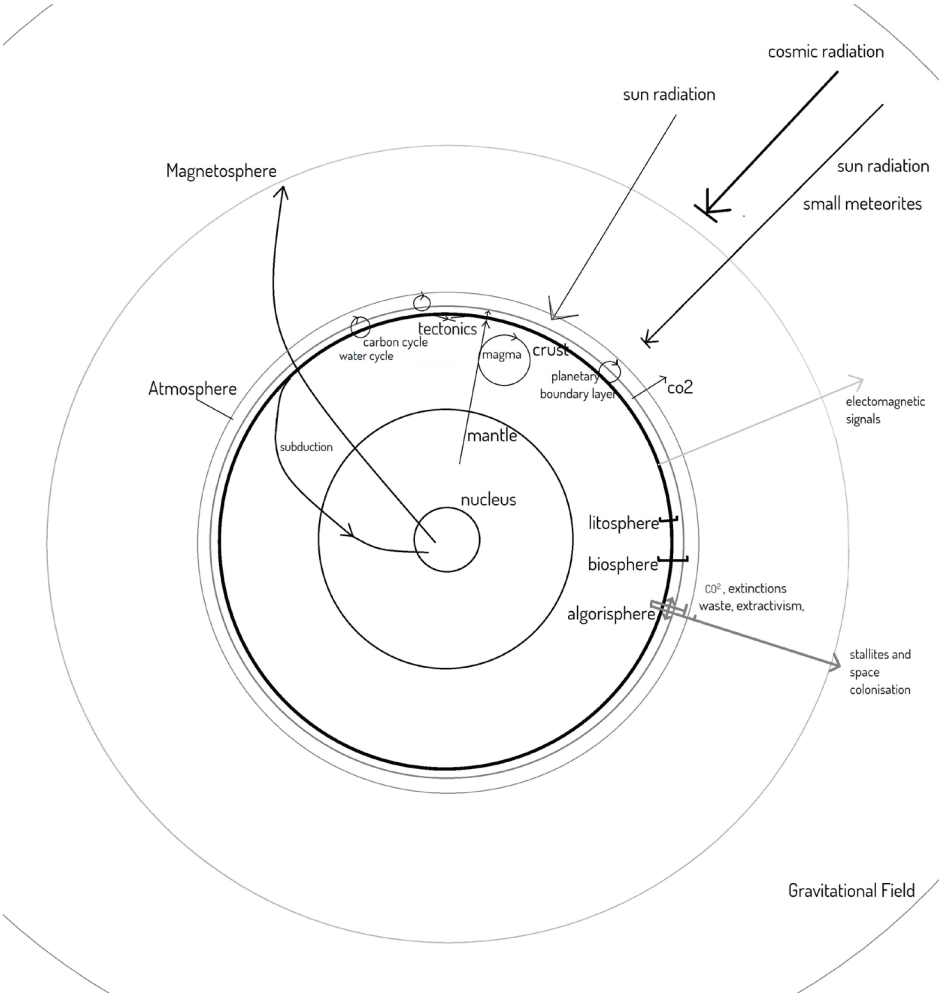


Fig. 17. The Earth as open Metafield.

Indeed, microorganisms could live higher up in the atmosphere or could also come from other parts of the solar system and even the galaxy through comets and asteroids during the early Earth. The atmosphere, in turn, shelters the surface from the ongoing bombardment of small meteorites as well as hosting protection from the sun through the ozone layer. Sometimes, larger meteorites or supernova explosions break in through these protective layers that have gradually emerged during the Earth's complex and hazardous evolution, creating mass extinctions, though these have happened mostly due to vulcanism from the inner Earth. The planetary boundary layer is where the atmosphere mixes with the lithosphere's surface.

The Earth's gravitational field is interwoven with that of the other planets and the solar system, which in turn is interwoven with the galaxy's field. The bombardment of asteroids and comets during the early Earth, and its eventual collision with other planets, were foundational for the later possibilities of life as they provided water, possibly organic molecules, and the tilting of the axis that allows for seasons and gets stabilized through the moon, which itself was also offspring of a collision and used to be closer, creating huge tides that were perhaps crucial for the origins of life.

The proliferation of life on Earth depends on the complex equilibrium of openness and consistency, like in a cell and its open membrane: open to radiation but sheltered from deadly cosmic rays, hosting CO_2 but able to liberate it by avoiding a greenhouse effect, and so forth. Technohuman action is fatally destabilizing this dynamic equilibrium.

Endless transformative circulations across fields constitute the Earth's metafield: circulations of magma within the Earth's crust break open to the surface transforming the land, which in turn mixes with the atmosphere, while the innermost iron core creates the outermost magnetic shelter. Tectonic subduction brings elements from the crust down into the mantle and core, which is how the iron nucleus emerged. The atmosphere shelters us from some modes of radiation but allows the transductive recirculation of other kinds of radiation and energy into new more complex modes and compositions, initially in the hydrosphere, but then the hydrosphere created its own membranous metabody, the planetary field of Hypersea that has extended to all of land, flourishing with overabundant life: a geological force that in turn includes weathering and radical transformations of the atmosphere, and so forth.

The planetary field extends from the innermost core to the outermost limits of the magnetosphere and beyond, to its gravitational field (now filled with satellites and waste) including the moon and its relational dance with other planets and the sun, which affords its dynamic but metastable oscillations. The surface is in fact a *mezzo region*, which we could call *mezzosphere* or *metasphere* of encounter, remixing, transformation, and diffusion with different layers, mainly (but not only) from the upper crust to the lower atmosphere, encompassing the bio-, atmo-, lito-, hydro-, geo-, and pedospheres and which corresponds to the regions where carbon cycles happen. It is sheltered due to the dynamics of the inner core creating a magnetic field, which further allows a protective atmosphere (ionospere and ozone layer), but is open to some forms of radiation at the same time. The proliferation of complex life occurs because of the multitude of factors that have afforded the gradual emergence of a complex dynamics in the Earth's mezzosphere over four billion years, unlike on our neighboring planets, an equilibrium that is being destabilized at quicker rates than ever before and that could disappear as maybe happened on Venus.

The Earth's field has unfolded gradually and hazardously across the four eons described in geology: Hadean, Archean, Proterozoic, and Phanerozoic.

During the Hadean eon (4,500 to 4,000 million years ago), the rocky planet was formed, following various theories that include the giant-impact hypothesis, the bombardment of asteroids and comets bringing an increase of water and perhaps other complex molecules, the cooling down and formation of oceans, the emergence of tectonics and formation of the iron nucleus by tectonic subduction, which in turn afforded the emergence of the fluctuating magnetic field, its shelter and the complexification of the atmosphere and of life on the surface.

During the Archean eon (4,000 to 2,500 million years ago), we see the first microorganisms forming. The first life originated perhaps in subterranean radioactive geysers, as there was yet no protection from cosmic rays on the surface. But as the magnetic field allowed shelter from cosmic rays and the unfolding of a complex, dynamic but metastable atmosphere, microorganisms came to the surface and developed photosynthesis.

During the Proterozoic eon (2,500 to 540 million years ago), cyanobacteria increased oxygen levels, decreased planetary temperatures, and afforded more complex symbiogenesis, leading to eukaryotes, sexual reproduction, and the first mul-

ticellular organisms: protists, fungi, and later plants. Part of this process may have come out from the cannibalism of microorganisms in stressful climatic situations.

During the Phanerozoic eon (500 million years ago to now), after a great glacial period, with a big increase of temperatures and a more stable Earth and solar system and with protection through the atmosphere and magnetosphere, complex multicellular life burst out in the so-called "Cambrian explosion," which has had five major bifurcations due to five mass extinctions caused by endo- and exo-planetary events (vulcanism, meteorites, and maybe supernovas), but resiliently persists in increasing biodiversification.

Technohuman action over the past 10,000 years has very quickly added a number of fields or spheres: the algorisphere or morphosphere, the technosphere and noosphere: extracting matter from deep in the crust, contaminating land, oceans, and atmosphere, filling space with trash, far up beyond the atmosphere. A radical extractivism of the planet and its bodies has activated a superquick and toxic circulation of materials and chemicals, pollution and waste, entropic CO_2 accumulation and a massive killing of biodiversity, an exoplanetary tendency to space flight, world destruction and metaversal world redoubling, while in the process of accidental aggregation a planetary cyborg is emerging, sending signals and ships into space in search for escaping from the Earth.

...

The core idea that this section wants to convey is that life on Earth is both unique and precarious, as well as infinitely varying. Although it has proven to be incredibly resilient, we should never take for granted that it will always be there nor that conditions for it can be found anywhere else as they are on Earth.

The crucial question is not to preserve a state of things. It is the conditions for openness and self-organizing variation that need to be recuperated and sustained.

RMP is concerned not only with the types of movement and the interrelatedness, but also with their intrinsic and necessary openness or variation, which should not be foreclosed. A diagnose of closures is needed that allows a disalignment and a recovery of openness.

What are the conditions for complex life to proliferate? They are a subtle balance of consistency and openness. Control kills, while excessive randomness doesn't allow variation to proliferate in sustained form (as maybe happened in Mars or Venus).

...

In reversing false humanistic discourses, we should acknowledge that the architectures of nature are far superior, as they don't interrupt flows for the sake of fixing and accumulating. Our society of concrete, plastic, and hard-wired metals (which now surpass biomass) is a failed evolution and a cosmic crime. The openness of nature needs to be restored toward new evolutionary variations. Or shall we be known only as the species who unleashed the sixth mass extinction?

4.4.3 Excursus on Mass Extinctions and the Complex Tuning of Life

A bacterium has as many atoms as there are cells in a body. Why did it take ten times longer to bring about multicellular organisms than it did for bacteria to emerge? The time span it took for more complex life-forms to appear is perhaps related to the exponential complexity of orchestrating morphogenetic fields, but also to the reen-

gineering and stabilization of the planet, its atmosphere, and of the cosmic milieu in the solar system. More complex life-forms require more stable environments.

Since the so-called Cambrian explosion of life-forms, five mass extinctions, probably caused by the relation of the Earth to the larger cosmic medium, have created radical bifurcations in the evolutionary process. Such catastrophic events may have made it difficult for complex life to appear sooner, as they were more common in the early solar system. A very complex tuning is needed, both of the entire local cosmic milieu (the solar system) and of the Earth's engineering performed by bacteria themselves as the atmosphere unfolds. But just like it emerged, it continues to change. The current conditions will certainly evolve and could quickly disappear. Technohuman impact is engineering the planet at rates a million times, or perhaps even a billion times quicker than bacteria have done and still do. This rate is closely linked to the rate of disruption. Maybe we need to get back to the life spans of evolutionary change and their slower ongoing variation.

As Sagan and other scientists showed, one can learn from other worlds in order to take care better of ours. The studies on Venus and Mars helped create the report on the nuclear winter (Sagan 1983; Sagan et al. 1984) that became influential in preventing a nuclear escalation during the Cold War.

Life is both resilient and fragile. Evolutionary processes appear in between catastrophes. Human civilizations have flourished in the blink of an eye of the planet's evolutions.

Every mass extinction has created bifurcations in evolution, which also means new possibilities. All previous extinctions were due to catastrophic phenomena in the cosmic and geological mediums, catastrophic for us but less for bacteria. The peculiarity of the current mass extinction is that it is performed by a species that emerged on the planet and that is already dreaming of abandoning it once it has been destroyed. This radical nihilism is also a radical ignorance of the processes of life, of the scales of the cosmos, and of our own richness and complexity.

In this process, as we aggregate into a planetary-scale cyborg, the species (or its elites) enter into a vortex of self-immunization that never addresses the background problem and only increases the exponential dynamics of disruption. It is difficult to fathom how this might evolve, but a reevaluation of our embeddedness in immense cosmic and evolutionary spans and hazards should help broadening the horizon of replies.

Neglecting the richness of our evolutionary complexity by imposing on it a reductive logic is the problem that we need to undo by claiming back that complexity and taking on its movement of variation. Only a new sensibility, a regained richness of embodied experience, can take us out of the nihilistic vortex.

Imagining the uniqueness of the way in which life has evolved on Earth, and the improbability of ever connecting to other kinds of evolutions in other worlds due to cosmic and evolutionary scales, should confront us with the fact that already within our world there are endless worlds, not only to discover and respect, but to create. Not only life-forms around us that we can hardly recognize due to our biases, but even within us and our capacity to vary.

4.4.4 The Emergence of Matter Folds

In the milieu of the Earth a new triple movement appeared: the spiraling and folding of very long molecules, composing a folding field capable of partial self-copying and

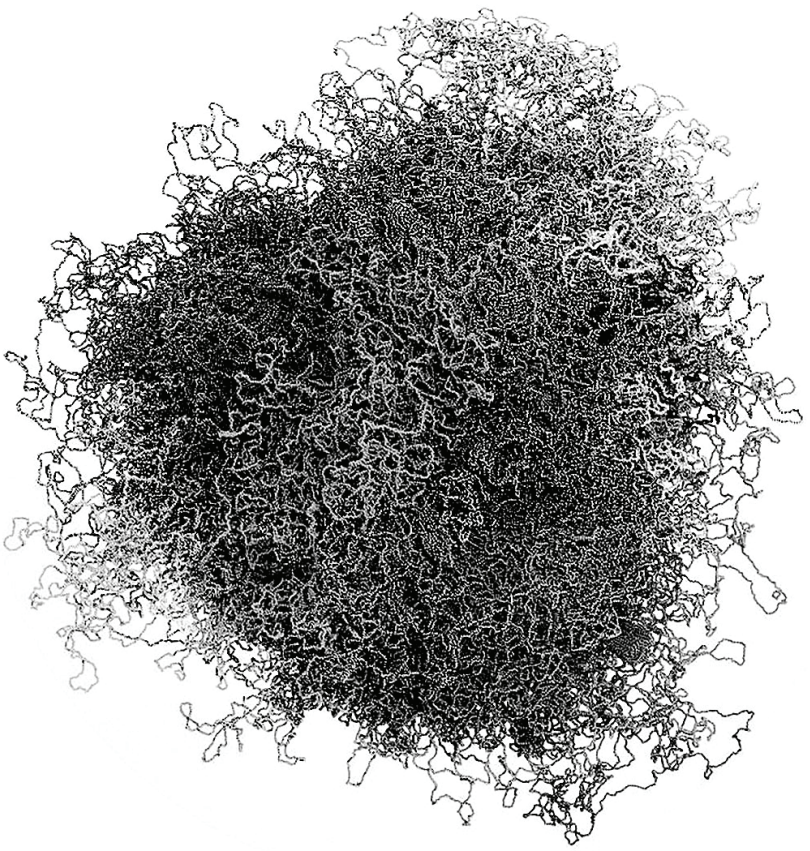


Fig. 18. The spiraling superfold of DNA. Image processed by author, based on image by SISSA. Note the similarity between the fluctuating patterns of the winding–folding–spiraling strand and the Brownian motion of gas molecules.

doing internal translations or transductions of its folds. This folding affords endlessly varied compositions of the molecule itself and in relation to other molecules, a plastic affordance for molecular architectures. Growth is based on the complex movements of folding molecules (proteins). These complex architectures acquired consistency when molecular compositions were hosted in a permeable membrane made of other molecules, possibly emerging spontaneously as lipids gathered in the bubbles of foam in seashores or around rain drops.

The first cell walls may have formed through the aggregation of proteinoids creating microspheres or, in the bubble theory, through the foam bubbles in the seashores where molecules may have agglomerated in lipids gradually creating complex membrane architecture. The cell membrane created a new field of *autopoiēsis* and immunity, conceived as metastable exchange with the surroundings and the swarm it is part of.

We already showed how bubbles and filaments are primordial expressions of fluctuations at any scale, from quantum foam to galaxy filaments or bubble universes. Almost anything in nature can be seen as expression of this. We also saw how matter flows have an intrinsic movement of condensation, transformation, and dissipation.

Both, together with bubble formation, already contain a germ of the movement of growth.

One of the theories of the origins of life speaks about molecules spontaneously concentrating in the bubbles of sea foam. Bubbles are already membranes and following the law of difference within difference they can host new bubbles and their filaments, intricate networks, spontaneously forming always new variations and folds. Just like atomic nuclei fuse and create radiation in the gravitational collapse of star nuclei, molecules take further the transduction of this radiation into new, more intricate variations. Filaments become intricate meshes of biochemical pathways transducting energy.

Protein folds create increasingly complex filamentous architectures acquiring consistency within membranes, alongside an architectural memory, a more radical type of superfold: DNA. The radical folding movement of the DNA molecule (fig. 18), which is just starting to be studied,[53] is an astonishing molecular choreography, a folding field, a mutating affordance in which its folding and unfolding corresponds to the unfolding of an organism, where the folds of DNA are transposed to the protein folds creating the organism's architecture. This memory allows the molecular protein field to multiply (reproduce and mutate) in always new variations. The same folding movement by which the DNA molecule is translated to protein architectures of growth allows the entire DNA to be copied with variations in a new membrane. This gives new consistency to the process of variation itself. The increasing complexity of these self-organizing architectures grows along the emergence of their molecular memory, which is itself a folding field of molecular rhythms.

The DNA superfold is a field within the protein field — like the brain is a superfold of the nervous system — which allows increasingly complex fields to grow. Like the brain,[54] DNA is also an indetermination field. Neither DNA nor the brain ought to be conceived of as centers and origins of action. Both are part of larger movement fields in variation. Their purpose should be to afford richer sustained variations!

Our genes are a memory of billions of years of folding movements, which makes no sense without the protein movements enacting them in an open and unpredictable world, just like a score makes no sense without a musician enacting the music in always new and richer ways. *The score was never first.*

In a single cell there are more atoms than there are cells in a body: hundreds of trillions, mostly organized in a hundred billion proteins, as many proteins per cell as stars in a typical galaxy. Such a complex field cannot proliferate, evolve, and vary without the superfold of DNA partially encoding the field, allowing both its reproduction and its mutation.

Since cells are fluctuating fields, the notion of reproduction needs to be revisited. Mutation is not an error in the copying process but part of a primordial variation, in which copying can always only be partial. The varying reproduction–mutation of cells allows the complexity of cellular fields to gradually evolve and diversify. A cell is a field dynamics but is always part of swarm of cells that develops endlessly varied field dynamics in turn, from the endless range of bacterial colonies to the field

53 Recent research is developing 3D maps of the highly complex folding process of the DNA molecule, which is crucial for its operation. For instance, morphogenesis and growth rely on such folding movements, which afford for different parts of the DNA sequences to be read. The extreme folding allows the molecule, which is about two meters long, to be bound in the nucleus of the cell, which is almost one million times smaller. See Di Stefano et al. (2016) and Rosa et al. (2019).

54 See Bergson (1944) on the brain as center of indetermination.

dynamics of morphogenesis, cell differentiation, and growth in the formation of tissues, organs, and multicellular organisms. The bubble–filament dynamics of spacing, folding, tuning, propagating, and swarming continues unfolding new dynamics. Bacteria — already an extraordinarily complex molecular field — appeared within the first hundreds of millions of years in the planet. Instead, it took 3.5 billion years of bacterial orgies to orchestrate complex multicellular organisms.[55]

In proteins the changes of orientation between molecules and their rhythms cross a new threshold of complexity through the movement of folding, which allows the protein to change conformation, couple to other proteins constituting assemblages that perform actions, build the entire cell structure and its growth processes, move along it, and articulate the coordination between cells for building larger wholes. Molecules that indicate molecular "pathways" (hormones) are a crucial part of the molecular coordination of proteins. But these pathways emerge from molecular improvisations over millions or billions of years, themselves expressing fluctuation and openness, never reducible to a pattern. All "structures" in nature are actually movements fields, not patterns or code. Every movement field sustains multiple fluctuation states and thus ontological indeterminacy. For instance, the leaves, branches, flowers, and roots of a plant express the evolution of a circumnutating movement,[56] as an affordance for sun radiation and flows of water, Earth, wind, insects, and so forth.

The phantom of circularity and alignment again appears in the stratum of organic life: centrioles, filaments, and membranes seem to be core to the open and plastic movements of organic life, yet again the openness in the composition is key. There are no geometrically perfect circular or linear formations, always only variations, fluctuations. Protospherical viruses, bacteria, or cells must retain openness to proliferate with the fluctuating movements of the world. This economy of protospherical movement is quite different from that of planetary spheres as gravitational economies. It is more about relational affordances, similar in this regard to carbon rings.

Molecular bonds unfold from nearly point-like zero-dimensional atoms or molecules to the billions of folds of a DNA molecule as a material–kinetic memory of affordances. Capacity to replicate may have appeared spontaneously as molecules coupled to other molecules due to the similar folding affordances, or recomposing in that relation, along with the chemical oscillations (rhythm) affording the bond.

The partial copying is itself a folding or unfolding movement, in a spiraling molecule resulting from turbulences in flow (a sort of vortical fold). It affords new variation in the complex field dynamics of the cell. The partial copy is thus part of mutation–variation and not the reverse.

The process of molecular spacing, from atoms to folding molecules was described by the Pythagoreans, Plato, and Newton as the movement that goes from points through lines into two- and three-dimensional geometries whose aggregations conform visible bodies. This is an *archē*-spacing in which molecules field forth, unfolding their own spacetimes. But this always happens within flow fields and in swarming multitudes.

55 The evolution of multicellular life forms involved cell adhesion, cell communication, and increasing complexification, going from colonies to organ tissues, and at times through filamentous aggregates. See Niklas and Newman (2013).

56 Circumnutation is the bowing or bending in different directions of the growing tip of the plant. See Darwin's (2009) prodigious study of it.

Molecular bonds are complex oscillatory tunings (like the ones bonding atomic nuclei) thus complex rhythmic attunements, but never singular, always of fields.

Archē-proprioception comes about as biochemical fields sense internal changes and molecular affordances in the surroundings that can compose with the field, threaten or decompose it, or leave it unaltered.

Our sense perception still largely operates based on such molecular reactions. Mechanotransducers take in mechanical impulses from the environments, and, through the electrical currency of the nervous system, they get translated into biochemical signals, the domain in which cells and bacteria still operate. Our sense of hunger and our reaction to nutrients, our arousal or sense of pain and how these get altered or intensified in illness or pregnancy, are large scale effects of biochemical processes, as they get translated on the one hand to mechanotransducers (as in proprioception) on the other to brain processes.

4.4.5 Enferant Evolution: The Primacy of Symbiotic Mutation, the Chimera of "Species," and the Rhizome of Life

Consider the following. In the late Hadean and early Archean eons life molecules started to compose more complex assemblages in the metaductive or transmergent tuning of oscillations, laminar and vortical flows, constituting spiraling–folding filaments and centriole affordances that created new energy transductions which sustained and wanted to grow in diversification, spiraling–folding affordances that allowed themselves to be mirrored, by folding and unfolding, thus proliferating in copies (complete or partial) that were part of the much larger variation of molecular swarms, which as they grew started to develop their molecular memory in DNA, creating increasingly intricate molecular compounds that stored energy (food molecules), and becoming hosted in sea bubbles that agglomerated lipid membranes becoming the protocell, developing immune systems and internal biochemical cycles and pathways, hormones, and enzymes, but always already in swarms of cells constituting fields of exchange and mutation, each of them evolving more and more into a sustained but open metapoietic field that reproduced for the sake of variation, creating increasingly rich fields of biochemical resonance that gradually shifted from amalgams of cells to morphogenetic fields with cellular differentiation and from there to pluricellular organisms, while terraforming the planet and creating the actual ecosystems in all their entangled layers of diversification.

Reserve or accumulation (food), metabolic architectures of sustained transformation (proteins), and plastic kinetic memory (DNA) coevolve gradually as part of open *enferant* fields of molecular variation, creating networks of increasingly varied, planetary-scale biochemical exchange. Molecular metabolic compounds hold, transduct, or release energy not unlike subatomic strings creating all particles of matter and interaction or energy, through types of movement with implosive and explosive rhythmic momentums, and the endless variations of these compositions are themselves the endless architectures of life. (Sub)atomic compositions, molecules, and cells, or birds singing, each type differently: all of them attune composing rhythmic fields that are like separate worlds that can coexist and sometimes connect.

Enferant evolution considers mutation as primary force, not as accident. However, the consistency of metapoietic (sustained but open) fields is also an intrinsic expression of fluctuations creating variation within variation, where every new shifting region of energy density is a protofield that may or may not persist-in-

variation. Therefore every bifurcation may become a field, for instance as speciation, as soon as a certain threshold of consistency-in-variation is crossed, which however is always uncertain as it is a question of infinitesimal gradients in fluctuation and in the entanglement between multiple fields. Enferant evolution reverses preexisting approaches that were biased by metaphysics by assigning an *a priori* status to being and a secondary and accidental one to mutation. But this misses the point of how "beings" emerge from within a much more primordial indeterminacy and movement of variation.

1. Molecular replication is the effect of the folding affordances of complex molecules and is part of a more primordial movement of variation. More generally, cellular (and subsequently multicellular, organismal reproduction) seems to be at first an echo of this primordial kinetic affordance of replication through folding and unfolding, which settled in a sustained biochemical architecture of the cell made of a plastic membrane, a memory (DNA) and a metabolic architecture (proteins), arguably the highest technology of the chaosmos, at least on Earth, so far.
2. *Autopoiēsis,* redefined as *metapoiēsis,* or consistent-openness-in-variation, is itself an expression of fluctuation constituting regions of diversification.
3. Growth is also an effect of fluctuation propelling a movement of diversification that creates increasingly rich fields of biochemical resonance.

The primordial dynamics of all organic and inorganic life is the enfolding arising in between multiple successive and superimposed movements of expansion or opening and condensation. Fluctuation itself propels this continuous double movement of forward propelling and inward condensing (internal difference). Every condensation takes in from multiple clinaotic expansions, tending outward, spacing, opening up to new compositions. Every condensation is a transmergence of multiple impulses propagating. Every condensation gives out an indeterminate multiplicity of new variations that further propagate into new condensations.

...

Species are chimeras, still images of relational processes of variation. Species are defined by their ongoing mutation and their relations to other species and ecosystems. The tree of life and evolution needs to be urgently redefined as relational rhizome of mutations.

Some 99 percent of the genes in our bodies are bacterial, from around 10,000 species, which are perhaps the most significant side of our own evolution (Lopez-Goñi 2019).

The discovery in 2017 of a hybrid of Neanderthal and Denisovian in Siberia, from 90,000 years ago, is also proof of the hybrid and changing nature of evolution and the error of trying to fix any "purity" whether of the human as a whole or of any particular race or kind. All humans have hybrid genes of *sapiens* with Neanderthal and other hominid variations in the *evolutionary rhizome. Away with trees of life!*

4.4.6 Cell Motility and Bacterial Sensing

Undulipodia, flagella, or cilia are filamentous extracellular projections, made of microtubules and motor proteins. They are a fundamental means both for motion of the cell and for sensing chemical signals, both in the case of a single appendix

spiraling in a rotary whip-like action like in sperm, or in more swarming multitudes of filaments moving more in wave-like manner and mobilizing both the cell and its liquid environment.

Slime molds present a plasmodial and amoeboid variation of such extensions as they explore their surrounding in search of chemical signals of food, while leaving a chemical trace that orients them. The circumnutating movement of plant growth, and the elastic extensions of jellyfish, octopuses, or even the entire morphology of worms or snakes, can be seen as expressions of these primordial motility systems of cells, and more generally limbs, proprioception strictly speaking and exteroception in animals, but even neurons and brain microtubules are considered to be symbiogenetic evolutions of undulipodia (D. Sagan 1992). Bacteria sense chemical signals from their surroundings, which activate internal molecular movements (signaling pathways) that alter their behavior.

Archē-proprioception as field sensing of biochemical force distributions could help review the extraordinarily varied accounts of *cell motility,* which includes types of amoeboid, flagellar, swarming, gliding, and twitching. Motility can happen along chemical gradients, temperature gradients, light gradients, magnetic field lines, electric fields, the direction of the gravitational force, rigidity gradients, gradients of cell adhesion, sites, or along other cells or biopolymers.[57]

Cells have multiple modes of sensing including the application of force to sense the presence of ligands (Oria et al. 2017) or binding molecules. This exposes how the cell can sense its internal changes of molecular force relations as it moves in relation to something else, thus knowing this else through its own internal changes in molecular relations, a primordial mode of *archē*-proprioception. A molecular–cellular (or multicellular) body, as field of tensional and torsional forces, can sense the subtlest changes of its internal distributions of tensions as it relates to other fields and this is its primary knowledge of the world, which is also the knowledge of itself.

A primary expression of this tensional distribution we can find in inorganic bubbles: foam (Sloterdijk 2016). A stone or sea current holds together by maintaining molecular relations too. The difference between organic and inorganic is more of degree, and both are inseparably entangled.

Every configuration of a proprioceptive field, as that which senses its own changes, is evolutively emerging from molecular fields biochemically sensing thresholds, proximities, orientations, interactions, and rhythms: sensitivity to electromagnetic bonds, which means rhythmic attunements of oscillations–momentums in complex fields of resonance.

4.4.7 Chemical Kinetics and Oscillations: Another Leap Down to Vacuum Fluctuations

Chemistry is a dance of atoms, ions, and molecules, of entangled rhythms, orientations, and contacts. Chemical and molecular transformation can be seen as particular movements of change of orientation within the swarms of atoms, whose bonds are linked to oscillatory rhythms, along rates and speeds of chemical processes.

Chemical kinetics studies the rates of chemical processes, which are not only speeds but rhythms. Concentration or density is one of the major aspects affecting the rate of chemical reactions, which happen in collisions of reactants that acceler-

57 See *Wikipedia,* s.v. "Motility," https://en.wikipedia.org/wiki/Motility.

ate when there is greater density, leading to new bonds and changes in orientations and contacts.

Molecules compose bonds through electrostatic force of attraction between charged particles, or through sharing electrons.[58] Chemical reactions involve transformations that don't affect the atomic nuclei but only the electrons. Given the importance of electrons and electromagnetism in chemistry one can say that all chemical processes are entangled with vacuum fluctuations.

Chemical oscillators are complex mixtures exposing periodic changes. The existence of self-organized chemical oscillations in nonorganic matter is indicated as possible initiator of organic life (De Landa 1992), which may have evolved into metabolic *self-organizing biochemical cycles* (Orgel 2000), evolving into metabolic "pathways" or steps of food or energy transduction facilitated by a type of protein called enzyme.[59]

Chemical compositions and changes are transversal to the organic and inorganic strata consisting across atoms, elements, compounds, substances, mixtures, molecules, and polymers. Chemistry binds atoms, genes, neurons, and bits. Chemistry exposes one of the three major types of movement in Aristotle and other ancient thinkers. Indeed, there is a change of quality, but also Plato's primordial genesis or spacing as atoms unfold into three-dimensional molecules.

Electromagnetic force is the binding force of chemical bonds, and thus core to molecular formations. The deeper and stronger the bond (down to nuclear force bonds composing atoms), the greater the energy needed to undo it. The more complex bonds are also weaker and more recent in the memory of matter. Particles and atoms thus formed in the highest energy process of transduction in the universe and stabilized their relations conforming the substrate for further transductions of fluctuations.

Chemical bonds are made of intramolecular forces governed by electromagnetic force arising from interaction between electrons, which carry force generated by the momentum of their movement. Electromagnetic force underlies also intermolecular forces, which we directly experience in proprioceptive muscular sensation, in pulling or pushing. *Archē*-proprioception ultimately goes down to intermolecular force distributions composing molecular fields, and these in turn to intramolecular and intra-atomic forces.

Electromagnetic force is the medium by which all our interactions, across bits, atoms, neurons, and genes, reach down to vacuum fluctuations, and how they transduct across modalities.

58 See *Wikipedia*, s.v. "Chemical bond," https://en.wikipedia.org/wiki/Chemical_bond.

59 "The chemical reactions of metabolism are organised into metabolic pathways, in which one chemical is transformed through a series of steps into another chemical, each step being facilitated by a specific enzyme." "Metabolism (from Greek *metabolē*, "change") is the set of life-sustaining chemical reactions in organisms. The three main purposes of metabolism are: the conversion of food to energy to run cellular processes; the conversion of food/fuel to building blocks for proteins, lipids, nucleic acids, and some carbohydrates; and the elimination of metabolic wastes. These enzyme-catalysed reactions allow organisms to grow and reproduce, maintain their structures, and respond to their environments." See *Wikipedia*, s.v. "Metabolism," https://en.wikipedia.org/wiki/Metabolism. Metabolism includes all processes of transformation, storage and transport of energy. Enzymes are proteins accelerating chemical reactions. Hormones are highly varied types of molecules signaling and orchestrating biochemical pathways in a body.

4.4.8 *Metapoiēsis*: Sex as Mutation and the Margulian Revolution

To Margulis we owe one of the greatest revolutions in science through her affirmation of endosymbiosis[60] and bacterial sex as core processes of evolution. She in turn builds upon Vernadsky's and James Lovelock's theories of the biosphere or Gaia as planetary body which transmutes the energy from the sun.

In Margulis's account of evolution, sex is entirely distinct from reproduction. Sex is mutation: the way in which bacteria exchange genes in more or less ongoing manner. I further propose that mutation is *a priori* of copy, not the error in copying. The idea of mutation as error in the genetic copy is a mistake of a culture focusing on sameness: molecular flows are *a priori* fluctuating, so mutation is the ontological *a priori* in evolution. The anomaly is the copy, which is always partial. Reproduction as partial copy is a means to afford richer variations!

This doesn't only hold for bacteria. Viruses too have an *intrinsic viral sex* where recombination, in their interplay with bacteria, results in new mutating viruses (Margulis and Sagan 1986a, 52).

…

When a certain metabolic process wants to keep growing, it develops a memory in the manner of matter folds as it grows. The molecular machine of the ribosome, where proteins are synthetized following DNA–RNA transcription processes, seems to be a meeting point of mutation and reproduction, of the script and its variations, of the copy that always entails interpretation and modification, because it was perhaps never a copy. It's always a relational process of variation. How the ribosome synthesizes proteins (and then what these actually do) is in feedback with the whole set of epigenetic contingencies that change gene expression and afford specific metabolic processes, which is then further subject to all the continuous and unpredictable changes in the cell environment, for which there is no script. There was never a script, there are only movement fields that evolve. The more indeterminacy a body can cope with the fitter it is. The closer its scripting and transcription, the less it is capable of moving along the ebbs and flows of becoming. Hence the mistake of wanting to determine bodies through genetic "enhancement."

The fact that there are many "useless" segments of DNA is inevitably part of the fluctuations within which "useful" or legible pieces of genetic code emerge and are partly sustained within the fluctuations of gene expression. Gene copy and expression are in turn part of larger ecosystems in which the openness of protein assemblages and molecular movements are crucial. There have to be undefined segments of genetic code!

For most of evolution, sex was not related to reproduction, only to mutation, reproduction being a separate process of cells dividing and copying their architectural memory (DNA). Viral transduction and the opening up of membranes for genetic exchange was the source of sexuality for billions of years as life colonized land creating a planetary metabody of membranous fluid exchanges called Hypersea,

60 Symbiogenesis or serial endosymbiosis as theory evolution, implies a radical cooperation between bacteria of different kinds whereby some bacteria inhabit each other on a long term or permanent basis acquiring particular functions and consisting into a new body. The organelles of the cell were once bacteria inside larger bacteria. Bacteria exceed the notion of species due to their radical plasticity, their ongoing symbiogenesis, mutation, and indeterminacy.

where body fluids are commons and the ecosystem is often another body, host of symbiogenetic couplings (McMenamin and McMenamin 1994, 231).

Bacteria mutate continually[61] thanks to viruses and to their ongoing orgiastic sexuality, hence their radical plasticity. Reproduction was first asexual cloning and became entangled with sex when organisms acquired new levels of complexity requiring a rescripting of their entire architectural memories to build a new composition. Bacteria mutated continually through sex, while asexually multiplying in a double movement of proliferation. In larger organisms, mutation (as the imperative of a fluctuating world) requires sexual reproduction and programmed death (and thus the entanglement of sex, death, and reproduction that has been diversely overcodified in cultures, of Eros and Thanatos). Sex, death, and reproduction are part of the movement of mutation: evolution. They are the "price" we pay for being more complex.

Just as a certain degree of consistency (*autopoiēsis* and reproduction) is needed for life, ongoing movement and reciprocal mutation is needed as well: *metapoiēsis*. Fixed autopoietic entities would block the movement of becoming and thus life and evolution. To think of a self-preserving tendency of autopoietic entities without considering their status as fluctuating fields is a mistake. Mutation is always more primordial.

But sex is also epigenetic, cognitive, affective, ecosystemic mutation. Mutation can happen in many ways beyond genetic recombination. The emergent science of epigenetics researches how genes express differently according to environmental conditions. Everything we do and happens around us, every movement, has epigenetic effects. We can deeply modulate epigenetic expressions through our own movement and our relations to the surrounding movements.

This is due to how every movement translates into at least three core metafields of the body: the nervous systems (with its brain superfold), the biochemical–cellular field (with its DNA superfold), and the mechanical field of senses and muscles.

4.4.8.1 Transmodal Mutation

Mutations are always transmodal. Besides epigenetics, there are endless other levels of biochemical modulation of the body. Everything relates to how we move, from our neuronal synapses, our bodily chemistry, and our affects to our entire ecosystems, ultimately made of movement relations. So, movement not only mutates epigenetics, but also affects any other mode of molecular movement in the body (metabolic, hormonal, etc.).

A new gesture I see or do creates new brain synapses, new capacities to move, and new modes of proprioception and multisensory integrations, new senses of body, motion, self, and world, new biochemical and neuronal processes, metabolism, emotions, thoughts, memories, and changes in the ecosystem.

61 Like atoms can overlap and mutate into new assemblages and molecules compose new bonds through electrostatic attraction or sharing of electrons, bacteria also undergo deep changes in composition through sex that can alter complex functions and potentials of movement and action in the bacterial colony or swarm. They will sense biochemical signals and open up their membranes to recompose their own molecular architecture, in an ever-changing improvisation of biochemical signals and pathways where "scripts" are always partial expressions of movement fields, emerging from the movements not *a priori* of them. Improvisation as ongoing subtle variation (*clinamen*) seems to be the core technology of life, evolving all along as kinetic memory. Organic matter has memory in so far as it creates folding fields, whose memory is their movement.

Sex implies mutating in composing: genetically, epigenetically, affectively, ecosystemically. The transformative force associated with love and sex in human societies echoes the mutating power of bacterial orgies, the joy of reciprocal entanglement composing a new metabody.

Sex is deeply entangled with the proprioceptive muscular sense of self-perception symbiogenetically stemming from bacterial assemblages. The transformative force of bacterial sex evolutively defines the power of mutation of a body as its power of becoming, of variation in growth. Sex in humans is a deep act of transformative self-feeling as a body and of feeling others. It's a threshold of depth and intensity in feeling both oneself (*proprio-*) and others/otherness/openness (*allo-*), of oneself as openness and otherness, carrying on the radical experimentation of our bacterial ancestors.

Sex is a deep recomposition of relations across bodies creating new metabodies, as mutating assemblages. Our sense of movement and of sex comes from 4 billion years of bacterial sex. Every sex act is still an echo of bacterial orgies.

Over 4 billion years, every bacterial colony has developed radically different modes of orgiastic and symbiotic sex, assemblage, aggregation, mutation, and composition. Biodiversity on Earth, and indeed the entire biosphere, is its offspring. But more importantly: we still have that swarming capacity embedded in our nervous system and tissues. Our muscular sense of movement is thus deeply linked to the history of bacterial sex, to movement as overall fluctuation and mutation of a body and to the fact that the feeling of the body in sex is fundamentally proprioceptive.

Viruses are also crucial part of molecular fluctuation, variation, and openness in biological fields. Viruses have always been an ally of evolution, as means of genetic transduction across bacteria, one of the primordial means of horizontal genetic transfer grounding biodiversity and evolution.

Immune systems are also part of the swarming movement of viruses. The idea of a strict immune sovereignty of an individual or a society appears as an extreme absurdity as it would imply blocking the movement of variation in evolution enacted by viruses, in which organisms develop subtle and changing thresholds of immunity. What needs to be radically challenged is the disruptive agency of technohuman systems that unleash pandemics by disrupting ecosystems in a spiral of increasing immunization.

The immune system is an expression of the molecular proprioceptions of organisms, as open wholes in which molecules are constantly composing with the body, while some may damage the body's composition and are recognized as alien. This happens in long processes creating molecular memories, and in context, therefore the immunological problems of suddenly and quickly moving around the planet across local microbial ecosystems that had evolved over eons.

4.4.8.2 Animals as Metaplants

Thomas Nail builds upon Margulis and Sagan by proposing evolution as symbiotic matrix of diversification, of dendritic cells that extend, creating planetary brains of forests, where sex is atmospheric and species are always trans-species and *kinopoietic* (Nail 2021, 171), where animals are like metaplants:

> The animal body thus began to make its own body out of plant-like electrochemical communication structures, which evolved prior to animal nervous systems. [...] The animal is like a swarm of plants — like a whole forest ecology filled with

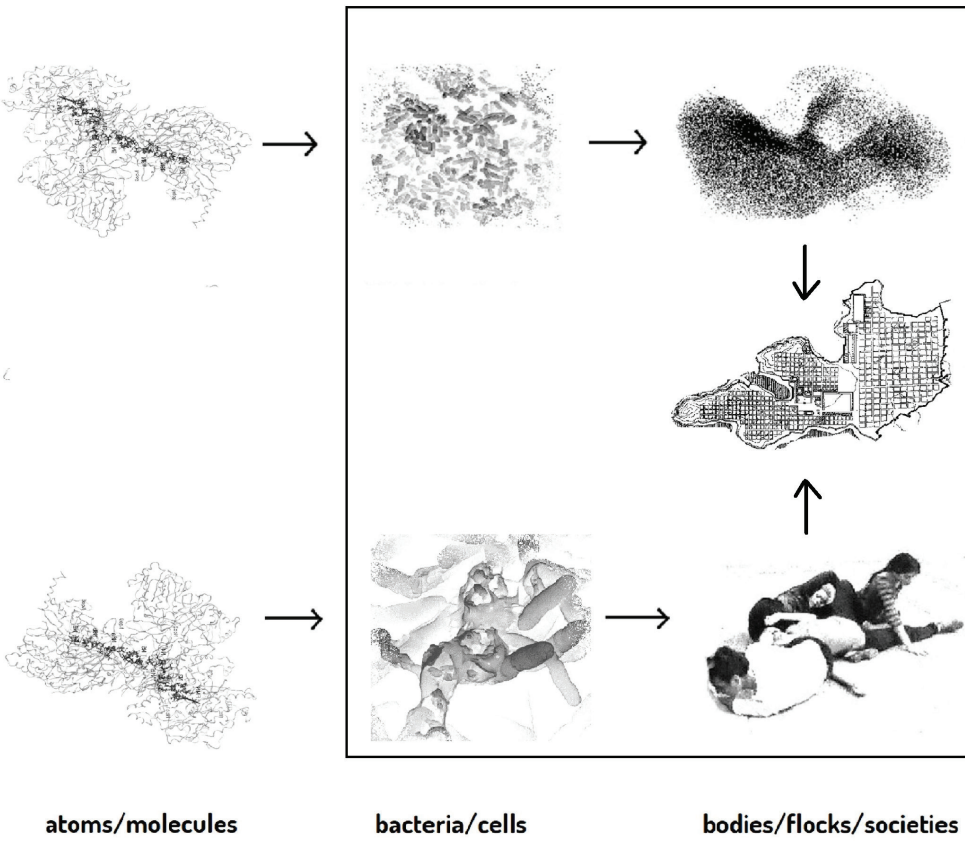
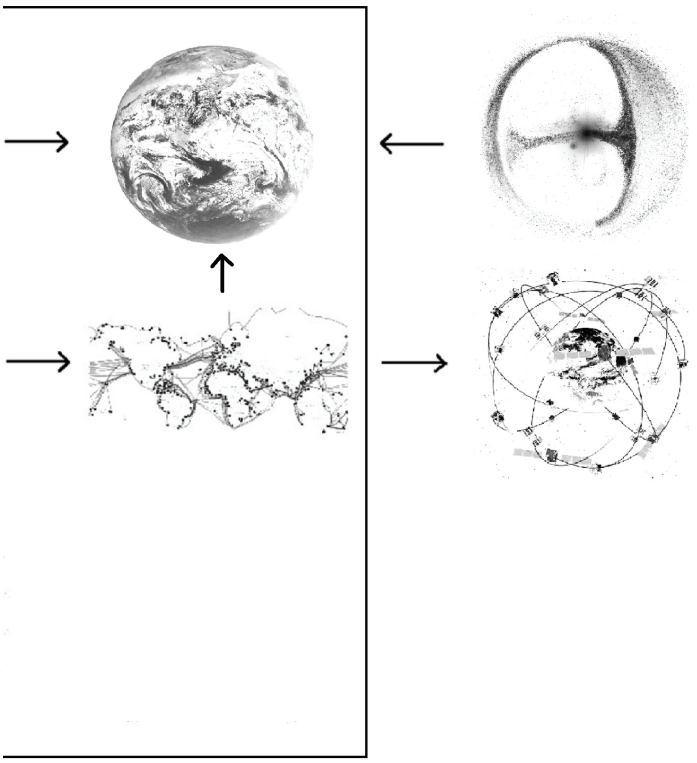


Fig. 19. Metametazoa diagram. Following Dorion Sagan (1992), we are metametazoa because on the one hand we are chimeric hybrids of 4 billion years of bacterial symbiosis as well as bacterial and viral sex. Likewise, bacteria and cells were already a highly complex aggregate of atoms and molecules. On the other hand, we are having a planetary impact for which we need to take responsibility, as we aggregate into an accidental planetary-scale megastructure, a planetary cyborg. The biosphere was already a planetary metabody, one that can be analyzed in different ways, such as through Hypersea Theory, which focuses on life on land as itself a planetary metabody. The biosphere is linked to the cosmic medium. In turn, the planetary cyborg is creating a trash-planet, in a nihilistic process of planetary annihilation and escape into space, in search for exoplanets.

> electro-communicating roots, stems, and leaves. Vegetality turned the whole Earth into a brain [...] The animal is thus a continuation or extension of the nervous structure already present in the Earth itself. (186)

4.4.8.3 Metametazoa

Dorion Sagan (1992) proposes the idea that the body is more an issue of maintaining an ecology rather than defending a unity, coining the trope of the *metametazoa.* We are not only metazoa, evolutionary symbionts, offspring of 4 billion years of symbiogenesis and bacterial omnisexuality, a radical chimeric hybrid, but we are also at the point of taking responsibility and becoming aware of our entanglement with the planet and our effects on it.



4.4.9 Intra-active Biotechnical Evolution: Planetary Fields of Cellular Morphogenesis and Growth, Metastigmergic Architectures

The violence of the primitive Earth, whose exposure to radiation was perhaps necessary for catalyzing early molecular bonds leading to protein and nucleic acids, was gradually engineered by molecular–bacterial swarms, when bacteria themselves lowered the temperature of the planet and created the breathable oxygen. This allowed, in turn, for the emergence of less plastic organisms, whose mutation was not ongoing and needed more stable environments. A threshold was gradually crossed when the complex movements of bacterial assemblages elaborated increasingly complex symbiotic architectures evolving into fungi, protists, plants, and organisms without nervous system. Fungi and plants move as they grow.

Plasmodial bodies such as slime molds exhibit a more complex hybrid, in which the oozing protodisplacement of amoeboid movement[62] also involves reaching out with tendrils while leaving a chemical traces that orient them, developing a complex *archē*-proprioception of internal chemical oscillations. All this happens *without cellular differentiation.* As a result, slime molds expose a radical in-between of the unicellular and multicellular, an *indifferentiation* and *indetermination.* They expose the

62 "Amoeboid movement is the most common mode of movement in eucaryotic cells." *Wikipedia,* s.v. "Amoeboid movement," https://en.wikipedia.org/wiki/Amoeboid_movement.

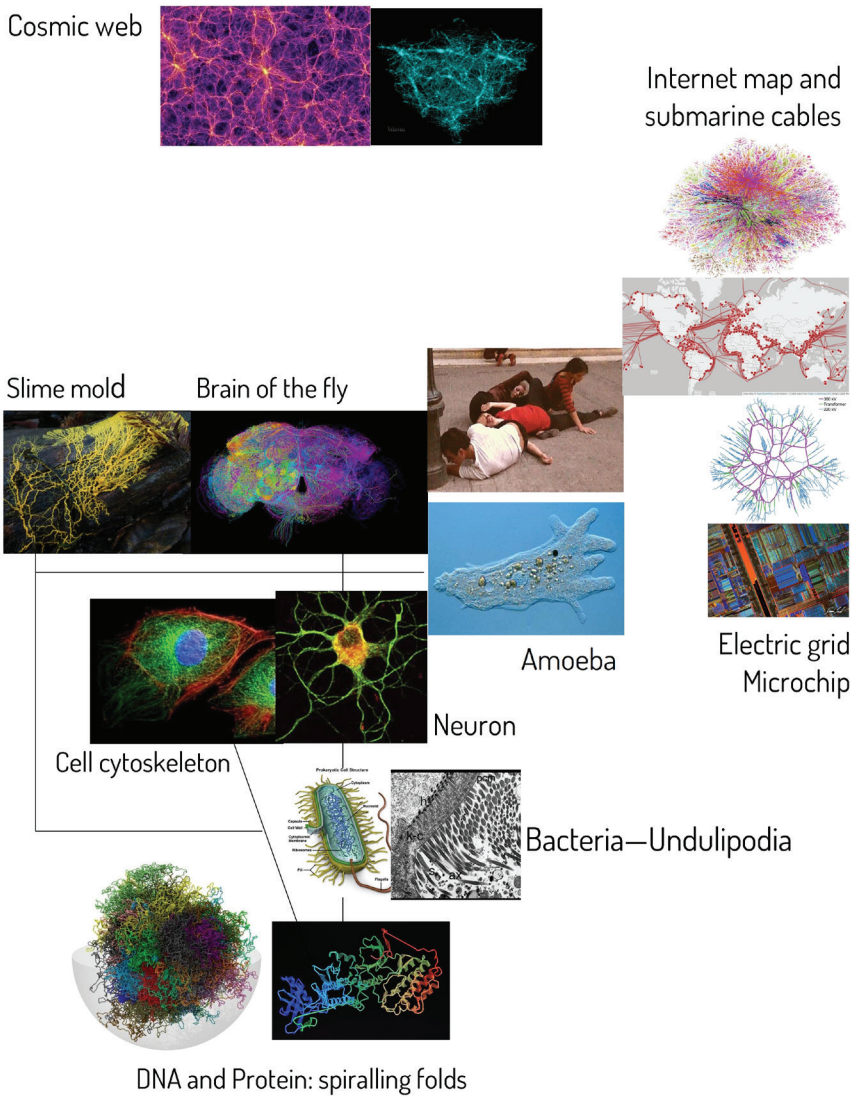


Fig. 20. Diagram of modes, detail of filaments and folds. Filaments are direct expressions of fluctuations in the largest cosmic scales, within which appear the vortexes of galaxies, stars, and flows. But also the subatomic realm could be an entangled web of vortical nodes or vibrating strings. We see here the interrelation of filaments with other modes, as in the spiraling folds of proteins and DNA, most likely related to the vortical movements of flows in which molecular compounds emerged in evolution.

These spiraling folds become mobility systems of bacteria, which in turn may have evolved into a new type of network: the nervous system and the brain, linked to folding amoeboid bodies that become articulate vertebrates with joints.

The slime mold's net-like amoeboid body, which has been around for over a billion years, relates to our amoeboid ancenstors and exposes the echoes of amoeboid movement in vertebrates with joints like us, whose limbs fold not unlike the domains of a protein! Slime molds expose also the primordial operation of thought as field of resonance of biochemical oscillations.

The gridded connections of the brain externalized themselves during the Algoricene, creating a gridded planet and planetary algorithmic brain, the Internet.

self-organizing rhythms of nature at its best, in-between bacterial colony, plant, and animal.

The chemical traces of slime molds are a variation of stigmergy, the chemical traces left in the environment by multiple life-forms, such as ants who leave pheromone traces as an expanded memory of extraordinary complexity. I suggest that dog urine in the streets follows a similar logic and more generally everything to do with olfactive or chemical traces composing intricate relational architectures for orientation or other purposes, themselves being part of the metabody of a colony, group of bodies, or body. The planet is thus an intricate metastigmergic web of biochemical traces in constant evolution.

The architectures of cellular differentiation and morphogenesis, as movements of growth implies an entire field dynamics, as Deleuze correctly pointed out, including "the augmentation of free surfaces, stretching of cellular layers, invagination by folding, regional displacement of groups. [...] A whole kinematics of the egg" (Deleuze 1994, 214).

Developed in 1910, sidestepped for a long period, and now perhaps returning, morphogenetic field theories[63] study how groups of cells constitute a self-sufficient field defined by vectors of growth that reinstate themselves if a part of the field is split, keeping intact its capacities. This is a field dynamics of internal resonance. We can see a preliminary (or primordial version) of this in slime molds, which continue to behave as a complete individual even if a significant part of their plasmodial body is cut off. This means that there is a self-organizing internal distribution of biochemical oscillations, based on types of rhythms composing a field of resonance. Slime molds expose in ideal form Simondon's concept of internal resonance, as exceeding the border resonance of inorganic fields but not yet having the complex dynamics of differentiated cell tissues.

Protists, fungi, plants, invertebrates, and vertebrates have emerged from the planetary fields of bacterial sex and symbiosis, as the primordial evolutionary matrix disseminating genetic and metabolic mutations, biochemical transduction networks and increasingly varied mobility systems entangled with flow, starting with bacterial spiraling mobility and, later, ranges of amoeboid movements. Bacterial swarms–colonies–orgies and serial endosymbiosis created increasingly intricate resonance fields of energy transduction unfolding into multicellular fields of growth. Fungi,[64] protists, and plants added each of them a new layer of diversification to the planetary web of biochemical transductions, metaducting into increasingly diverse but open fields.

But all of them are part of planetary-scale fields of metabolic transduction: an increasingly intricate planetary brain that at some point will give birth to actual neurons. With them a new kinetic field of invertebrates and vertebrates will come up, whose gradual biotechnical mutations co-evolve intra-actively with the ecosystems they are part of, so that the movement is never a trajectory in space but a fluctuation that transforms and co-evolves with their entangled ecosystems.

63 A "morphogenetic field is a group of cells able to respond to discrete, localised biochemical signals leading to the development of specific morphological structures or organs." See *Wikipedia,* s.v. "Morphogenetic field," https://en.wikipedia.org/wiki/Morphogenetic_field.

64 See Sheldrake (2020) on the planetary web of fungal life and its crucial significance in the overall metabolism of the planet.

Protists, fungi, plants, invertebrates, and vertebrates have gradually emerged from and with each other in ways perhaps not entirely unlike how the four fundamental physical fields emerged in the first instants of this universe, in entangled, gradual diversification, and without losing indetermination.

4.4.10 From Undulipodia to Nervous Systems

Another threshold was crossed in evolution when mobility systems of bacteria, called undulipodia, flagella, or cilia, evolved into the microtubules of neurons in brains and the nervous system.[65] This may have allowed for a gradual unfolding of decentralized nervous systems, along the emergence of invertebrates without brain (or with multiple brains) and subsequently vertebrates with brain.

Bacterial motility, like that of many invertebrates, is an expression of the fluid medium in which movement takes place and evolves. Nervous systems and brains allowed in turn new kinds of articulate motions on land. There is a difference between an amoeba-like invertebrate body flowing *with* a watery environment (like medusas or octopuses), and how this amoeba-like movement becomes a rolling and crawling on a solid medium, with a more centralized coordination, but always retaining decentralized functions which were always first.

Slime molds, amoebas, medusas, octopuses, molluscs, and arthropods, worms, or snakes, many of them having nervous systems but no brain, seem to be amongst the most fit and resilient, ancient but still very present life forms, arguably because of their decentralised kinetic plasticity.

The flexible tissues of plants afford an immense variety of circumnutating movements associated to growth, whereas the elastic (and viscoelastic-to-rigid) tissues of animals afford locomotion, as a more articulate but less plastic movement.[66] Elastic tissues that stretch, together with flexible tissues, afford the emergence of torsions and of proprioceptive bodies with muscles as torsional fields.

This goes along with a quicker internal coordination developed by electrical signals in nervous systems. These unfold a novel stratum of movements in evolution, beyond folds and growth, flexibility, and elasticity: the states of the nervous system and brain that we associate to complex thought, memory, and emotions.

Flocking societies of animals with proprioception, from humans and mammals to insects, are defined by the quick coordination provided by the nervous system, affording locomotion in a body with joints, and the externalization of proprioception via exteroceptive senses.[67]

65 On the possible symbiogenetic evolution of brain microtubules from bacterial mobility systems, see Margulis and Sagan (1986a, 149) and D. Sagan (1992). They also expose the self-organising, decentralised, spatial–kinetic nature of thought as an inheritance from the self-organising (and orgiastic) bacterial assemblages from which our nervous system and brain stem! This crucial theory needs to be highlighted as one of the most revolutionary proposals within the larger turn that I call the "Margulian Revolution."

66 Movement of plants includes growth, changes of orientations in relation to the sun, flexibility in relation to the wind and water, biochemical entanglement with others, and dispersal of seeds.

67 In Book 2 I develop the theory of *archē*-proprioception as mode of sensing of fields and as primary evolutionary mechanism of which all other senses are extensions both toward outside (exteroception) and toward inside (interoception). This diverges a bit from Maxine Sheets-Johnston's approach to this idea, whose argument, and reference to researchers like Laverack, I mention in more detail there.

Cellular–bacterial motility seems to have evolved on the one hand into neurons (nervous systems and brain microtubules) and on the other into extensions, tendrils, tentacles, and limbs, but also the circumnutating growth of plants as well as technical extensions, from beehives to human technics. Mostly there has been a balance between all these elements. Only in the *sapiens* the "brain states" seem to have abstracted themselves, associated with a more radical externalization of movement into technical systems that impoverish the proprioceptive matrix.

Nervous systems and brains, through their electric swarming, have brought about instances of centralization and thus reduction, which can be seen partly in some animal behaviors (including mating, predator, and other competitive behaviors that overcodify hormonal pathways), and more particularly in the cultural turn we will examine below, where the surface effect of consciousness and reason take over, imposing themselves on the more open whole.

4.4.11 Hypersea and Hypercarbon Metabodies

All organisms can be seen as complex orchestrations of the movement of water, as the site or *khōra* where the carbon-based compositions of life can proliferate. Hypersea Theory expresses this process, as turbulences and foam bubbles affording molecular compositions became membranous bodies containing water, unfolding into new types of flows and growth.

Hypersea could also be considered as a hypercarbon metabody where carbon is forming the bodies that can hold together the watery environment needed for the proliferation of its own compositions.

The plasticity of bacterial swarms arguably gets narrowed in multicellular organisms with tissues, skeleton, joints, and nervous systems. What we see over the past 500 million years is not always necessarily an increase in plasticity. But overall plasticity increases in the body of the biosphere as the coexistence of increasingly varied types of movement.

Ecosystems coemerged gradually as behavioral affordances from the more amorphous affordances of the bacterial world, and that swarming power is still in the deepest memories of our tissues. Behaviors in an ecosystem emerge as increasing differentiation of movements, as bacterial ecosystems produce symbiogenetic aggregates leading to protists, fungi, plants, and animals.

But bacteria continue to be the underlying matrix. Recently, so-called zombie bacteria have been discovered deep in the Earth's crust.[68] Individuals appear to live for over 250 million years and their biomass appears to be twice the volume of the oceans and hundreds of times that of all human population. This is potentially a newly discovered and very different type of evolutionary matrix, an endobiosphere, which could also provide a new theory for the origins of life.

As we see, *locomotion is the last in modes of movement* arriving in evolution, as Hypersea colonized land, inaugurated by vertebrates with partially centralized nervous system, *a swarm of joints,* yet always from within a plastic proprioceptive and nervous system, in transformative relations with their surroundings. Though clearly this type of movement affords certain tendencies to more individuated, quicker, and aligned behaviors that only become fully realized much later in certain technohuman cultures.

68 On this discovery in 2018, see, for instance, McKirdy (2018).

Unicellular organisms never appear as individuals, but as colonies, amorphous aggregates, biofilm, and complex societies. Ecosystems emerge bottom up from the slow swarming movement of bacteria,[69] bacterial sex, viral transduction, and symbiogenetic aggregation, with new bodies moving by gliding, crawling (like an amoeba), rolling, and circumnutating.

Step by step, displacement can be seen as more articulate evolution of amoeba-like oozing. Likewise, a protein is a flock of around 1,000 atoms folding in domains, much like our body is a flock of 360 joints folding in limbs. Displacement step by step eventually led to bodies with less variation of their internal field, displacing more like a block.

4.4.12 Folding Fields

Developmental biology considers the gene toolkit that "directs" the movements of proteins in morphogenesis, cell differentiation, and definition of a body plan in embryo formation and growth as an ancient reservoir of genes common to many species. These genes signal pathways, or maybe rhythms, in the movement affordances of the protein molecules, composing complex fields–architectures by means of rhythmic attunements.

The movement of proteins is a fundamental type of spacing so that proteins un/folding create the entire architecture of the cell, its ongoing motions within, its motility without, and its transformations. The movement or activity of proteins is related to the particular three-dimensional folding of their molecular structure affording particular kinds of movements and relations.

Movement of molecules in a multicellular organism happens both as global flow and stream, like in blood and in intracellular and transcellular movements within and across membranes (osmosis) accounting for all biological functions (energy, nutrition, growth, etc.).

Local movement inside and across cells is enacted through molecular machines performing quasi-mechanical movements through chemical interactions, the most complex of them being multiprotein complexes including motor proteins responsible for functions such as muscle contractions and movement of cargo through the beating of cilia and flagella by rotary molecular motors.[70] But movements also include all the structural transformations in the dynamic landscape of the cells' cytoskeleton, in the formations of organelles or membranes, and in every protein complex, of course also in growth, cell division, and differentiation, as well as in energy production and gene expression. Molecular motors include rotary motors, cytoskeletal motors, polymerization motors, nucleic acid motors, and enzymatic motors. Motor proteins are those which move along the filaments and microtubules of the cytoskeleton.

69 There is a type of movement called swarming motility in bacteria but I apply my larger concept of swarming to approach the intra-active power of bacterial colonies in terms of movement relations. See Kearn (2010) and *Wikipedia*, s.v. "Swarming motility," https://en.wikipedia.org/wiki/Swarming_motility. Swarming motility relates specifically to "how some bacteria also use flagella to move over the tops of solid surfaces in a form of movement called swarming."

70 See *Wikipedia*, s.vv. "Synthetic molecular motor," https://en.wikipedia.org/wiki/Synthetic_molecular_motor; "Molecular machine," https://en.wikipedia.org/wiki/Molecular_machine; "Molecular motor," https://en.wikipedia.org/wiki/Molecular_motor; "Molecular propeller," https://en.wikipedia.org/wiki/Molecular_propeller; "Nanomotor," https://en.wikipedia.org/wiki/Nanomotor.

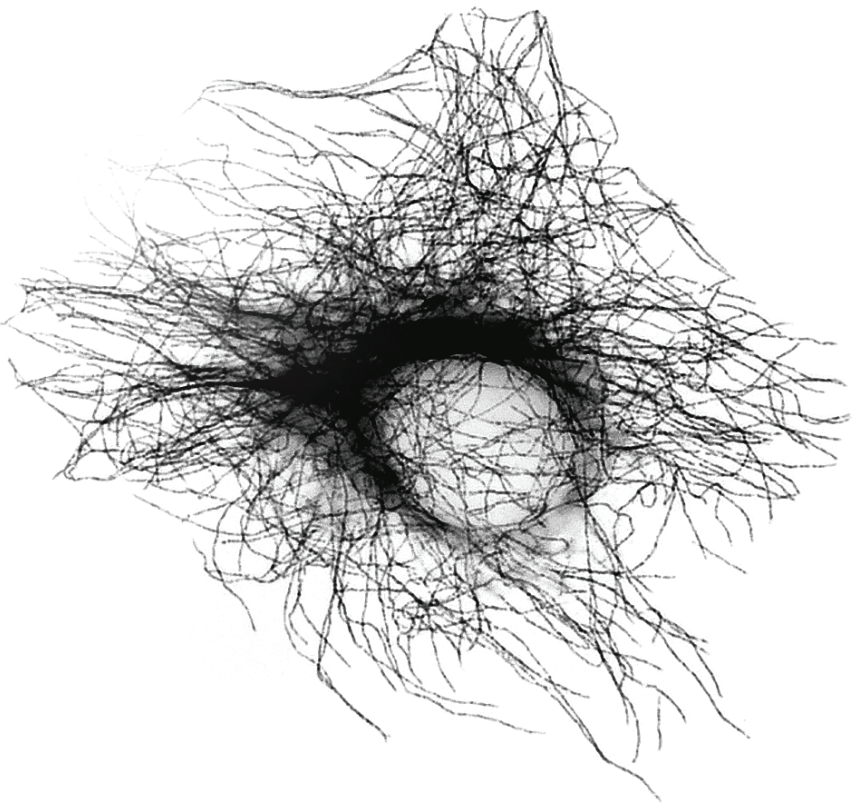


Fig. 21. Cytoskeleton made of microtubules in a gel-fixated cell. Processed image based on Jeffrey81, *Wikimedia Commons,* https://upload.wikimedia.org/wikipedia/commons/a/a2/Btub.jpg

DNA is a memory of protein affordances, of types of folding. But there are other types of memory of protein fields, perhaps embedded in their folding capacities, and our muscular memory builds indirectly upon this, while synaptic memory of brain connections is another type of material memory of electrically excitable networks.

DNA is an undefined reservoir that relies on unpredictable expressions. This is partly the subject of the emergent science of epigenetics. Given that gene expression is altered by all sorts of factors, there are ways in which protein-related actions affect gene expression in turn (Bowman 2017). Gene expression consists in many complex processes following the transcription of a particular segment of the DNA molecule, across several modes of processing in which a variety of transformations occurs, including alternative splicing, that creates diverse possible "transcriptions" which are translated into a protein molecule, which then folds into the particular, often highly dynamic, three-dimensional structure that accounts for its performances. Cellular differentiation itself happens through changes in gene expression.

The cytoskeleton[71] is a core site or *khōra* of our ontology. This slowly but constantly changing and elastic cellular skeleton made of proteins forming filaments and microtubules extending between the nucleus and the membrane, affords the consistency and openness of the cell, and thus of cellular tissues, as well as the internal and external motility of cells (and tissues). Its structure is a dynamic matrix capable of rapid reconfigurations, and proteins conform and modulate its architec-

71 See *Wikipedia,* s.v. "Cytoskeleton," https://en.wikipedia.org/wiki/Cytoskeleton.

ture, moving along it in cytoskeletal streaming. Muscle contraction is an effect of the synchronized contraction of cellular cytoskeletons, activated by proteins following nerve impulses. Here we have an extraordinary link between the molecular world of proteins, cells, and proprioception. I argue that in a lot of muscle contraction activity, for instance in the small unconscious readjustments of posture as we sit or align to a desk or computer, or dance or have sex, the body self-organizes, bottom up rather than being controled by a centralized agency.

The body self-organizes in local readjustment to its internal and external fluctuations, like an amoeba, non-consciously registering the change. A body being a mass mostly of water, it is not in mere passive recomposition. Muscle contraction is mostly a bottom-up process, even when triggered by nerve impulses.

4.4.13 Protein Dynamics

Proteins are characterised by their infinitely varied folding movements or architectures, which Leibniz anticipated in visionary manner by defining matter as made of folds. It is in proteins where we find the folding nature of nature and organic life. Proteins are the protean source, architecture, and *khōra* of organic life.

The one-dimensional polypeptide string, ultimately composed of atom points (underneath of which there are particles and quantum fluctuations), folds into a malleable three-dimensional architecture which is the *affordance of the protein*: its capacity for movement, action, relation, and composition.[72]

Proteins fold mainly in *domains,*[73] like we fold in limbs but much more plastically. Protein dynamics[74] studies the infinitely varied relational movements of proteins. Many are structurally undefined and dynamic proteins, such as flexible linkers, which play a fundamental role in the ongoing reconfiguration of mobile protein domains. Protein dynamics includes the study of local, regional, and global flexibility, which includes both flexible and disordered regions within a protein or protein domain.

Local flexibility includes changes in proteins due to deviations from their equilibrium including stochastic fluctuation of chemical bonds, so that the tiniest fluctuations in chemical bonds affect the nature of proteins by small deviations (*clinamen*). Fluctuations (down to subatomic vibrations) keep operating as a crucial ongoing substrate of proteinic openness, as ongoing microdeviation within the protein fields, of which the architecture of a protein is the long-term effect. *Regional flexibility* studies the changes in conformation within larger regions or domains of a protein, as networks of alternative conformations. Lastly, *global flexibility* studies the overall flexibility of a protein through the intra-action between its domains.

Protein domains are parts of a protein that stabilize over time, but which can evolve independently from other domains and can be connected to other domains by Intrinsically Disordered Proteins (IDPs), or intrinsically disordered domains, such as flexible linkers, so that the resultant dynamic modes are unpredictable.

72 A DNA molecule has over 100 billion atoms, about the number of stars in a typical galaxy (Sagan 1980). Proteins can have more than a thousand atoms and there are around 10 billion proteins in every mammalian cell, so proteins take around 10 trillion atoms per cell, though the total amount of atoms per cell is around ten times more. These numbers are meant just as an opening up of imagination to the unimaginable scales and complexities involved in these architectures.

73 See *Wikipedia,* s.v. "Protein domain," https://en.wikipedia.org/wiki/Protein_domain.

74 See *Wikipedia,* s.v. "Protein dynamics," https://en.wikipedia.org/wiki/Protein_dynamics.

Domain motions like swivelling, hinge formation, alternation between helical and extended conformations and sliding movements are crucial for the formation of protein complexes, for cellular locomotion, catalysis, signaling, regulatory activity, and virtually all activity in the cell. Conformational changes are the changes in composition of macromolecules, which are usually dynamic and flexible. These changes radically affect the capacity of these molecules to connect to other molecules as well as their own motion, which is understood as conformational change, for which it might be suitable to review the definition and consider conformations as secondary effects of movements. Considering that proteins can have over 1,000 atoms, the combinations and resulting conformations of a single molecule are endless, particularly considered as movements of transition and in relation–composition with other proteins (remember our calculations of the combinatory of our 360 joints in Book 2).

IDPs[75] are proteins or parts of proteins with no stable structure, ranging from totally unstructured to partially structured and are a very large and functionally important class of proteins that has challenged the protein structure paradigm. I suggest that they are the key factor of compositional openness, which means also of movement, both local and across entire protein fields (thus cells, tissues, and organisms). They include flexible linkers, as disordered regions that can induce major structural changes or linear motifs as short, disordered segments. Coupled folding and binding implies the switch to ordered states upon molecular recognition (affordance), so it seems that IDPs are amorphous conformations capable of adapting to an affordance thus assuming a more defined conformation.

This capacity seems particularly abundant in viruses, such as HIV-1, which allows the virus to *overcome its genetic limitations.* "The ability of disordered proteins to bind, and thus to exert a function, shows that stability is not a required condition." At the same time, "intrinsically disordered proteins can retain their conformational freedom even when they bind specifically to other proteins. The structural disorder in bound state can be static or dynamic."[76]

IDPs also conform their own fuzzy complexes: "protein complexes, where structural ambiguity or multiplicity exists and is required for biological function,"[77] implying a structural–functional multiplicity, ambiguity, and dynamism. This mutant folding capacity of proteins exposes the way in which proteins exceed DNA and any genetic determinism in the capacity for reconfiguration and action. Their flexibility becomes plasticity as soon as they relate to a larger molecular field.

In these larger fields, biochemical pathways evolve into complex hormonal fields orchestrating the molecular rhythms of a body. Hormones are the signaling molecules in the pathways.

Due to the dynamism that I expose, I suggest calling conformations *n*-figurations, fluctuation modes. *N*-figuration implies the microvariations of movement within a given field in ongoing variation. This inevitably derives from the ontological primacy of fluctuation from which such fields unfold.

The profound plasticity of proteinic fields defies the idea that "simple organisms" are flexible and passively adaptive, and that plasticity is proper to "higher functions"

75 Their computer simulations are called Conformational Ensembles. See *Wikipedia,* s.v. "Conformational ensembles," https://en.wikipedia.org/wiki/Conformational_ensembles.

76 See *Wikipedia,* s.v. "Intrinsically disordered proteins," https://en.wikipedia.org/wiki/Intrinsically_disordered_proteins.

77 See *Wikipedia,* s.v. "Fuzzy complex," https://en.wikipedia.org/wiki/Fuzzy_complex.

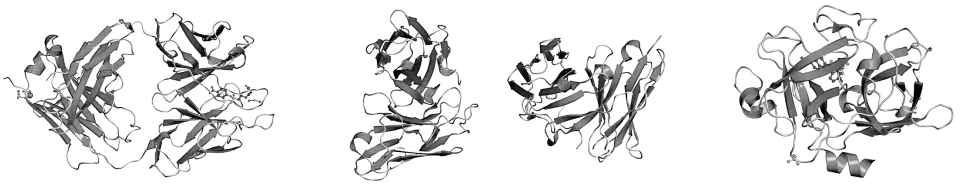


Fig. 22. Different protein structures and folds. Source: Jawahar Swaminathan and MSD staff at the European Bioinformatics Institute, *Wikimedia Commons,* https://commons.wikimedia.org/wiki/File:PDB_1yei_EBI.jpg, https://commons.wikimedia.org/wiki/File:PDB_1jp5_EBI.jpg, and https://commons.wikimedia.org/wiki/File:PDB_1owh_EBI.jpg.

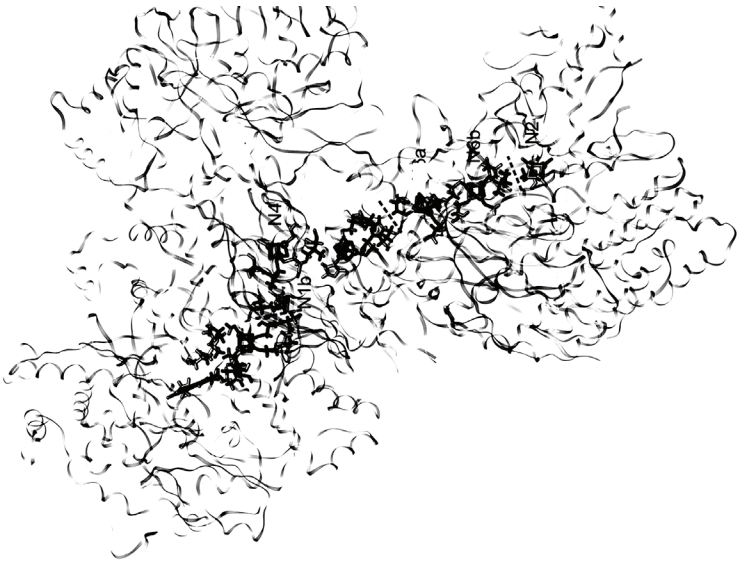


Fig. 23. Protein structure highlighting a study of electron tunnelling in the respiratory complex. Processed by author from Hayashi and Stuchebrukhov (2010).

of reason. Protein movements include their own synthesis and conformation in the ribosome and their relation to other molecules in moving along them (transport and streaming within the cell) or binding to them and building cellular material in growth, while creating the necessary energy, as well as the synchronized folding leading to contraction of the entire cell, leading to muscle contraction of an entire tissue and the movement of the organism.

Cell membranes are equally dynamic, a fluid and elastic molecular bilipid membrane constantly changing its composition, opening up and closing following signals and recognition of molecules through *embedded proteins,* described through the fluid mosaic model as two-dimensional fluid but also by its associations to the cytoskeleton and the extracellular matrix.

Ligands are substances, usually molecules, that bind to other molecules for some biological function. When a ligand binds to a protein, it produces a signal or alters the configuration (three-dimensional orientation) of the protein and thus its affordance and capacity for movement, bonding, action, and intra-action. The relation is defined by charge, hydrophobicity, and molecular structure and occurs through

intermolecular forces (much weaker than intramolecular forces) of *attraction* and *repulsion* (part of the chemical force fields described in molecular mechanics, used to calculate potential energy of a molecular field).

Biochemical cascades or *signaling pathways,* also called signal transduction pathways, are complex molecular webs and the very source of life, yet one should maybe speak of biochemical fields as involving fluctuation–variation along multiple states. Like our bodies, I argue that each protein is itself a field capable of multiple simultaneous movements within wider protein fields.

4.5 Theory of the Earth as Indeterminable Field: Eternal Mutation and the Law of Variation

4.5.1 The Never-Ending Mixture and the Law of Variation

This book proposes a theory of the Earth as indeterminable field, where determining flows creates a mass extinction.

Never-ending mixture is the movement of the biosphere, as *increasing variation* in flows of matter and energy, of metabolic and biochemical processes, of molecular compositions and architectures, of ecosystems and modes of movement, of continuous dispersion and spread, for instance dispersed animals foraging and their excrements that spread seeds and fertilize soils.

Each kingdom of life is a great mode of movement and energy transduction, with infinite submodes, but all of them create symbiotic networks that are the ecosystems. The microbial underlies organisms and ecosystems, and the molecular underlies the microbial. The molecular and its continuous mixture is the core substrate of everything in us and there it is revealed as impossible to separate organic from inorganic, since the always new mixture of molecular compounds in the complex flows of the Earth is what allows evolution on Earth as an ever-increasing diversification, unlike on other planets that have too stable or too unstable flows. The more complex the molecular architecture, the more stability it requires. The relative and increasing (meta)stability of flows allows for increasing complexity in the balance of consistency and openness.

Molecular substrate of all processes in the biosphere as increasing molecular mixture:
— under organisms, the microbial;
— under the microbial, the molecular (the viral is intermediate);
— the atomic is already of another order (of stellar nucleosynthesis);
— the subatomic tunes in a cosmic order (Big Bang and initial inflation);
— but quantum fluctuation expresses itself on all scales.

Organic life is growing molecular mixture, whose conditions are rare in the cosmos. Slow mutation gives consistency and openness to evolution through the reciprocal and gradual readjustment of all the indeterminate and unstoppable molecular mutations that constitute ecosystems. The vortex is the paradigm of the mixture of flows.

Ubiquity of the vortex as node of mixing and condensation, symbiosis, and mutation, in almost all orders of magnitude:
— galaxies,
— stars and planets,
— atmospheres and flows,

— organisms and swarms,
— water turbulences around us, including the whipping or beating we do in our kitchens, for mixing,
— micro-organisms,
— molecules: DNA coils and protein spirals–folds,
— atoms and subatomic strings.

The primordial role of the mixture for evolution and biodiversity is a core issue to vindicate, as linked to the inseparability of organic and inorganic, in creating new discourses that prevent the appropriation and disruption of the Earth.

The soil expresses this inseparability of organic and inorganic, as it is altogether an effect of weathering created by organic life over four billion years, and in the process organic life creates richer conditions for its own proliferation through a new stratum of never-ending mixture in the Earth's flows. These are the ones that the low intelligence of human monocrops and dominion are destroying. Soil biodiversity is a domain of increasing concern (Tibbett, Fraser, and Duddigan. 2020), as it turns out to be crucial for biodiversity at large, has been underestimated if not ignored, and has been devastated through our toxic monocrops and occupation of the Earth.

4.5.2 Enferant Evolution

I propose an evolutionary principle of variation and indeterminacy, where to determine is to paralyze evolution. We have created a determination based on our own atrophy.

Principle of variation: because all bodies and their surrounding fields are in ongoing, mostly minimal, indeterminate variation and relation, their recompositions constantly reattune in indeterminable, unforeseeable ways, accounting for all the architectures of nature and their openness, where ecosystems and speciations are fluctuating fields in entangled variation.

Evolution and life are about indeterminate variation in movement relations: symbiotic mutation (the reversal of Neo-Darwinian accounts of evolution as sheer selection, competition, and domination). Since the onset of agriculture a radical process of neglecting indeterminate variation has become dominant on Earth, a process of unprecedented alignment and systemic domination of one species over all others whose telos we are now witnessing: a mass extinction.

Inorganic flows are to be respected in their openness: life is already more complex than we can imagine from our impoverished perspective. There are endless architectures and intelligences of life that move with the flows and not against them!

Inseparability of inorganic flows and organic life: because the latter emerges with the former and because on the current Earth every tiny bit of soil, water, or air is full with organic life. The openness of the flows of the Earth have propelled evolution as variation. It is the intelligence, i.e., the life-fostering movements and qualities of those particular flows that we need to understand and move with, not against.

Organic Plasticity Theory: superiority of the amorphous and non-rigid, which can degrade itself and become part of new mixtures, avoiding rigid, artificially constructed tools, that is, produced by alignment (including energetic), through aggressive extractivism, production, transportation, consumption, and waste processes. Hard objects that impose themselves block flows, consume, pollute, and devastate as they create planetary fields of alignments that atrophy us further, making us more

dependent on them. Segmentation and expansion (or grammatization and exosomatization, in Bernard Stiegler's (1998; 2018) terms) are about modes of movement: alignment, homogenization, reduction, extrusion, acceleration, closure, imposition, destruction.

The low technologies of "civilization": the reductive, destructive, and dominant technologies of domination in human civilizations are "inferior" to most other *technēs* of nature because of their reductive, homogenizing nature, inducing a homogenization of movement in the biosphere to the extent that a mass extinction is created as a result, involving unprecedented forms of oppression that paralyze evolution, as the latter requires a never-ending mixture and dispersal in the biosphere's flows. Do I need to clarify the irony of saying "inferior"? It is about undoing the hierarchy, and domination altogether.

Creativity is in all nature, the anomaly that reduces it is the rational human, tautologically intoxicated by its belief that only rational reflexivity is able to be creative, enclosed in a closed loop of extinction. Human flourishing can no longer be based on a devastating colonization that erases biodiversity. There is no human flourishing without a flourishing (bio)diversity. Planetary health means capacity of biodiversity to flourish, and this is inseparable from the planet's flows that have made it possible, as, different from other planets that lack the complexity of flows on Earth and have not been able to host complex life and a complex atmosphere.

4.5.3 Law and Principle of Relational Variation or Symbiotic Mutation (Open Consistency): The Fallacy of the Concept of "Species"

Species are processes of variation and relation, mutation and symbiosis, modes of relational variation, or symbiotic mutation! There is no being. A body, like a species, is a relational process of variation, an open field of consistency. Relation and variation also mean consistency and indeterminacy.

Evolution is a huge relational rhizome of mutation and symbiosis. Evolution is not defined by independent phyla but by the relational mutation of all phyla! *The tree of life becomes a blurry rhizome of relations.* We can never know all possible relations as many sustain indeterminacy all long, fluctuations that never resolve into a defined form.

Every ecosystem is a field of internal and relational variation, in the indeterminable transmergence between bodies that are themselves internally and relationally varying. This defines the imperative of variation in ecosystems, based on the nondetermination of movements.

Human monocultures of the last few millennia have blocked this mixing movement through monocrops, farming, monotechnics, and monothinking: the homogenization of movements in the biosphere.

We occupy a fifth (1.6 billion of 8 billion hectares[78]) of the usable terrestrial surface with devastating monocrops that erase the movement of mixture, create exclusionary uses of the land, consume, and pollute: a massive war against the flows of the Earth, its movements, and life forms.

78 Altogether 4.6 billion hectares, one half of the inhabitable surface, including grazing for livestock. See Book 5 on this in relation to the Planetary Holocaust.

4.5.4 What Is Life?

This book is a cry for (techno-bio-corpo-neuro-socio-cosmo-)diversity-as-indeterminacy, without which there is no possible thriveability and that renews the question about life as movement of infinite variation. This book proposes that life is diversification, an infinite, affirmative, and expansive process of increasing variation. Diversity is not a state but a movement of increasing variation.

The purpose of life is not survival or self-realization (*autopoiēsis*) but realization-in-variation. Survival, reproduction, and *autopoiēsis* are only aspects of an ever richer and deeper mutation. Life is not only *sympoiēsis* as relational making, but symbiotic variation: *metapoiēsis,* becoming-with as mutating-with.

In this sense, life and the evolution of a cosmos are one and the same thing, occurring in all strata, from the mutation of elements in the stellar nuclei and their dissemination in the galaxies to the neuronal fluctuations of what we call thought.

…

Cycles of life and death are part of cosmological variation. Stars, vortexes, ecosystems, and bodies live as long as they can transduce and transform energy into new, more complex expressions. The highest aspiration of life is to participate in this cosmic game of diversification with as rich as possible expressions. This requires the plastic capacity to reconfigure oneself with the world, never imposing oneself on the world, since this implies blocking the evolutionary movement. This is a Dionysian politics of life-as-ecstatic-variation.

Life is mutation, variation, and diversification propelled by quantum fluctuations, expressing itself in fields that transduce or transform energy toward increasingly diverse expressions, from the birth of universes and flows of matter through bacteria and viruses, fungi and protoctists, plants and animals, to the more aligned social–technical–psychic systems.

Life on Earth always unfolds in the form of biochemical fields on a planetary scale. It is always about modes of energy transduction that add layers of complexity and diversity to the already prodigious bacterial and viral substrate. Protoctists, fungi, plants, and animals are forming new biochemical fields of planetary energy transduction associated with new types of movement. In the same way, human technical systems constitute another equally planetary mode of energy transduction, almost from their origins: mutations emerge accidentally, but over time. If they persist, they always constitute planetary fields.

On the other hand, it is not just about recognizing the way in which individual organisms are an intrinsic part of planetary biochemical networks, diverse, intertwined, and in continuous variation. It is not just a matter of how new biochemical networks emerge that add more diversification to those that already existed, joining them, and transforming them as part of a single life, as proposed by Emanuele Coccia (2021). Life is not a matter of forms and their metamorphosis, but of movements without form. It is crucial to understand the primordial value of the indeterminacy that living systems and the movements of ecosystems must sustain. It is their determination that destroys them when a reductive movement is imposed on them.

The Dionysian politics of life–death–variation is therefore a politics of sustaining indeterminacy as a condition for the movement of variation and diversification.

4.5.5 Intra-active, Intraductive Evolution

The mutations of species must be seen as fully fledged biotechnological evolutions. The beaks of birds, the skin or nails of terrestrial mammals are evolutions that coemerge with the ecosystems of which they are a part without imposing themselves on them, in a movement of growing diversification. This is not unlike cyborgs, except with regard to the slow temporality and the greater coevolution. Cyborgs impose one-sided mutations in accelerated form and on a planetary scale, perhaps ever since we started making tools three million years ago, but especially since the birth of agriculture and farming. The chimera of the cyborg thus expresses the failure of the dominant human and its extinction cycle. Cyborgs are technically extended bodies, which since 2.75 million years ago have tended to abstraction and dominion, causing an extinction. Some other animals use tools, but in certain hominids this tendency took over in a toxic manner, unfolding a world of reductive abstractions.

The great recent anomaly is the rapid technical evolution of the dominant human, a "progress" that is unleashing a mass extinction by creating an amount of artificial mass — aligned in rigid objects and homogeneous trajectories — that already exceeds the biological one and blocks flows by aggressively extracting matter and creating hard objects and architectures that disproportionately consume materials and resources, rapidly destroy ecosystems, and does not allow the molecular remixing of planetary flows. It buries the planet in garbage and indigestible pollution, disrupting all cycles. It is an evolutionarily inferior model if there ever was one, unleashing a mass extinction, but which we, on the summit of nonsense and cosmic idiocy, have called "progress."

4.5.6 Law of Symbiosis/*Sympoiēsis*[79] and the Fallacy of Neo-Darwinism

Evolution is not mere individual competition for survival. This is a conservative concept that tried to justify predatory capitalism and has proven to be wrong, dangerous, and suicidal. Now we know that evolution is, above all, cooperation, as many have been saying, from Piotr Kropotkin[80] to Margulis and Donna Haraway. Already in antiquity do we find precursors of this, in Lucretius and in all the pre-Socratic philosophies of becoming.

79 Neologism used by Donna Haraway (2016) as a relational alternative to Maturana's *autopoēisis* (Maturana and Varela 1980).

80 Of capital importance, though being a reference strangely missing from many contemporary texts, is *Mutual Aid: A Factor of Evolution,* published in 1902 in his English exile by the Russian naturalist and anarchist Piotr Kropotkin, where he attacks neo-Darwinism, which imposed a narrow and biased reading of Darwin, oriented toward the "law of the fittest" as ongoing fight and of life as a struggle of all against all, exposing that Darwin also paid attention to mutual support as an indispensable factor in evolution. Kropotkin, based on his own studies as a naturalist, which he also extended to the study of human societies from prehistory to our times, emphatically affirms that mutual support is in any case *a more important factor than struggle in evolution* (without, of course, denying the existence of struggle). Kropotkin attacks the ungrounded and metaphoric aspect of Darwin's claim for struggle and extermination of intermediate and older variations of species as crucial factors and proofs that these variations and their disappearance often happen due to climate fluctuations or to migrations and changes in diet. Underlying this I claim that there is the primordial factor of mutation-fluctuation propelling evolution that Darwin and all others have missed, presenting mutation as error within a primordial copy of an entity or individual: an ontological mistake, symptomatic of their industrial, capitalist era. Lynn Margulis also expands this idea with the theory of symbiogenesis. This strictly coincides with my proposal of domination as anomaly within a symbiotic evolution.

Of course, in nature there is also struggle and predation. The problem is when domination becomes systemic. To the extent that one species does not radically impose itself on the rest, it contributes to variation.

Then there is the error of the concept of selection, which presupposes mutations as errors. Rather, mutations are *a priori*. Everything is always mutating in every organism, species, and ecosystem. Therefore, there is never passive adaptation and everything coemerges intra-actively. Selection is thus something of a second order effect that acts in a primordial fluctuating sea of changing relations and variations.

The experimentation of nature is always degenerate. In biology this means that it happens from multiple angles, where each "function" can be triggered by several different processes, always. The idea of "selection" is a conservative view that ignores the imperative of variation.

I distinguish the will to domination from the will to variation. We must open the loop of the self that closes on itself by imposing itself, toward the *meta-self in ecstatic relational becoming*. Law of symbiosis–*sympoiēsis*–*metapoiēsis*!

Cooperation in nature is ubituitous. From bacterial symbiogenesis and protist fusions to trees that support each other and make up entire forests, plant species that help each other, insects and flowers, birds and trees, or multiple species of birds that cohabit and cooperate with each other, mammals that take care of offspring of other species, birds that clean crocodiles' teeth.

Evolution as a flourishing of biodiversity implies *relational variation, dissemination,* and *flow.* By contrast, dominion operates by *separating, blocking, accumulating,* and *homogenizing,* implying an extinction process, an *evolutionary paralysis.*

> *The mystery of life isn't a problem to solve but a reality to experience.* [...] *A process cannot be understood by stopping it. We must move with the flow of the process, we must join it, we must flow with it.*
>
> — Frank Herbert (1965, 31)

4.5.7 Immanent Movement Principle

The magic that captivates us in the world (contemplating fire, sea, clouds, wind, trees, animals, mountains) is always movement. It is time to again be an immanent part of its flows. The art of living and being part of the flows from within, like a murmuration of starlings dancing in the winter dusk, is superior to the art of separating oneself from them and contemplating them, turning them into "aesthetic" experiences.

An animal is its movement. Freedom of movement is a fundamental right and is linked to evolution, to the diversification, mixing, and dispersion of flows in the biosphere. Everything that blocks those flows is radically inferior. Hence the cosmic crime of farms. Freedom of animal movement is a *fundamental evolutionary right*: internal and relational movement, that is, in the co-emergent "space" or ecosystem. *Each animal is a mode of movement that enriches the variations of the biosphere.*

The free animal contributes to diversification of behaviors, memories, environments, genetics, epigenetics, metabolism, geochemistry, biochemistry, atmosphere, soil, and so forth. The free animal moves not teleologically (the wrong Aristotelian conception of animal locomotion), but is driven by an *a priori* internal and relational fluctuation in which causalities appear only occasionally. Serendipitous wandering is prior to oriented movements.

It is us who have invented the planetary nightmare of mechanical, homogeneous, causal trajectories: a field of determinations. It is us who have no right to move like this, occupying the Earth in a devastating way.

4.6 Metabiosis: Life as Symbiotic Mutation, or Radical Metahuman Ecology

Metabiosis is the concept synthesizing the proposals of Book 4. Metabiosis is a concept for life as indeterminate and indeterminable process of symbiotic mutation or relational variation. Metabiosis redefines species and ecosystems as processes of relational mutation.

Metabiosis is a concept that aims to give ontological thickness to the notion of *biodiversity,* which is considered to be the core of planetary health and ecosystem integrity in environmental sciences. Biodiversity is an expression of a deeper cosmic diversity principle, visible for instance in how every star system in the current age of the universe is a unique process of mutation of matter. The move toward increasing diversity is thus cosmic. But on Earth, conditions for new kinds of diversity have appeared, inseparable from the uniqueness of flows and conditions on this planet. The ontological unity of life is not the individual, but the ecosystem or metabody or field, as processes of variation.

Ecosystems are relational webs in which all elements constituting the field are constantly mutating in intra-active and entangled coevolution creating ubiquitous slow changes. Mutation thus comes before fitness as the conditions constituting ecosystems are constantly shifting. The conditions for "fitness" change all along due to all the ongoing, unavoidable, and ubiquitous relational mutations.

Metabiosis describes ecosystems as zones of open consistency of entangled metabolic relations tending to increasing diversity. Ecosystems are nested and interwoven. The nose or snout or the guts of an animal are ecosystems for billions of bacteria of hundreds of different kinds. A pond is an ecosystem including organisms of the five kingdoms as well as viruses. A geographical region is a larger ecosystem linked to particular weather and landscape conditions that change over longer periods, and so is a continent or ocean. The biosphere is the planetary web for all the above and is open to cosmic events that may disturb or facilitate its processes, from the necessary solar radiation to deadly cosmic rays.

Metabiosis describes symbiosis as relational ontology grounded on indeterminacy of relational mutations, where symbiosis is *ontogenetic cooperation.* Metabiosis exposes the deeper logic underlying the anthropocentric concept of "ecosystem services" that describes the functions that ecosystems perform which are foundational to the current conditions for a liveable life for humans and millions of species during the current epoch of the Earth, functions such as pollination, seed dispersal, plague control, cycles of air, water, soil, carbon, nitrogen, phosphorous, and their regeneration, etc.

Metabiosis exposes the entanglement of organic and inorganic and the principle of diversification underlying both. It is in the particular dynamism and metastable complexity of the Earth's flows of water, air, carbon, and other elements where the conditions for increasingly complex life appear. Metabiosis as field theory exposes how life creates conditions for its own complexification. This is visible, for instance, in how the Earth's iron core and its magnetosphere have created a shelter from cosmic rays that allows the proliferation of life on the surface, in how bacteria have

created the breathable atmosphere giving rise to the entire realm of breathing organisms, in how a bush or a forest creates a symbiotic architecture where other life forms coexist reinforcing each other in enriching the metabolic web of biochemical transformations of energy into novel architectures of life, and so forth. The soil is an entirely organic compound, the effect of billions of years of weathering of rocks though bacteria, plants and fungi. It is a glorious example of the inseparability of organic and inorganic and of the way life creates conditions for its further proliferation. It also exposes the toxic nature of monocrops, fertilizers, and pesticides, erasing soil biodiversity (Tibbett et al. 2020).

Conditions for more life thrive only as more entangled diversity flourishes, creating field conditions for further richness and complexity of expressions. Complexity is a field process based on symbiotic mutation or relational variation.

Diversity goes along with ecological resilience because, in words of Vandana Shiva "diversity offers the multiplicity of interactions which can heal ecological disturbance to any part of the system," Instead "uniformity means that a disturbance to one part is translated into a disturbance to all other parts. Instead of being contained, ecological destabilization tends to be amplified" (Shiva 1993, 77). Quantitative growth instead, as in growth economy, excludes diversity by principle whereby "uniformity as a pattern of production becomes inevitable only in a context of control and profitability" (71).

4.6.1 Entanglements

All of life is in a *double planetary entanglement*: symbiogenetic or evolutionary and ecosystemic in the present. Life unfolds entangled, like the quantum fields emerging in the universe's Big Bang. Just like subatomic oscillations tuned one on the other composing the fundamental physical fields as energy gradients were crossed, as fluctuations "froze" or tuned like layers of an onion or flower, so do all life kingdoms and genres unfold on Earth as new fields of energy transduction, entangled one with the other: bacterial, viral, protist, fungal, plant, animal, invertebrate, and vertebrate. All are parts of planetary fields of metabolic, biochemical transformations that unfold one upon the other in entangled and increasing complexity, where we, latecomers, have embedded in our symbiogenetic history all the preceding layers of bacterial, viral protist, fungal, plant, and invertebrate evolutions and are entangled with them in the ecosystems we inhabit. Diversity unfolds upon diversity, reciprocally supporting.

Ecosystems are complex and subtle webs of nonlinear relations of every species to many others, where every subtle change affects the ensemble. These changes are unavoidable and multiple. Mutations in the species, fluctuations in the weather, and so forth, which can lead to larger changes if a species with critical importance migrates or expands to other ecosystems, affecting all the previously existing relations.

The complex interrelation of ecosystems, and what destabilizes them fatally, is only starting to be studied (Cosmo et al. 2023; Halley and Pimm 2023). But these dynamic webs cannot be fixed, they are by principle emergent and open: openness is key. Species are never in linear relations with just one other, but relate directly and indirectly with many others constituting the ecosystem. Like in a mesh even a tiny change altering what seems like a simple relation affects the entire mesh of relations, and does so in complex and unpredictable temporal spans, including the ones

relative to critical thresholds unleashing extinctions. This is a crucial topic in the upcoming megatask of regenerating the planetary ecosystems.

...

Microbes and viruses constitute metabodies of life across organisms, literally webs and swarms of living quasi-tissue, sometimes in the form of so-called biofilm. The ubiquity of microbes in air, water, or soil expose the inseparability of organic and inorganic and the complexity of interrelations between organisms, micro-organisms, and flows, whose openness and variability needs to be respected in all orders, as this is the core of natural plague control and regeneration of air, water, and soil. Through the Covid-19 pandemic and other recent research we are acquiring increasing awareness of this shared intimacy. We share not only lung viruses but gut microbes with the people, human and nonhuman, that we interact with in daily life (Valles-Colomer et al. 2023). This sharing is a core symbiotic mechanism in evolution and should never be hindered. What we need to understand are the conditions of overcrowding and confinement that turn this sharing into diseases and epidemics.

Taking into account the complexity and subtlety of interwoven, mutualist, nonlinear relations constituting ecosystems as the architecture of biodiversity, where every tiny change in relations affects the whole ecosystem mesh in unpredictable ways, the dominant human's intervention in ecosystems appears in its radically outrageous nature: as the complete destruction of over half the terrestrial surface and oceans (through agriculture, fishing, and urbanization); as the invasion of ecosystems by humans, livestock (a speciesist term describing an exploitative industry), and other species; as the segregation of ecosystems through roads and transport networks; as the all-encompassing multifarious pollution through millions of new chemicals, plastics, etc. Animal farming, its billions of cages, and massive use of chemicals (antibiotics, pesticides, fertilizers, disinfectants) is the ultimate expression and epicenter of this radically counterevolutionary tendency creating a mass extinction.

From this perspective, one can understand the radicality of the disruption humans have created, evacuating biodiversity and ecosystems on more than half of the Earth, substituting it with genetic homogeneity of invasive species (humans, livestock, crops, gardens, wild species traffic, pets) and hence with radical perturbations of interspecies relations determined by human design, imposing itself on indeterminate coevolution while disrupting geochemical flows across the litho-, atmo-, hydro-, and cryospheres, in the carbon, nitrogen, or phosphorous cycles, through massive erosion, etc. One can also understand the way in which every single aspect of dominant life since the Neolithic, based on sedentary property, homogeneous accumulation, evacuation of diversity, expansive invasion and exploitation of life, is a reversal of the evolutionary principles of metabiosis. Hence it is no surprise that a mass extinction has ensued.

Because life is relational, power of existence/becoming can only be relational, reciprocally enhancing the conditions for thriveability of always richer, more plural expressions of life. It is the opposite of dominion.

4.6.2 Diversity or Diversification or Metabiosis Principle (Law of Metabiosis)

Summarizing, the diversity principle or law includes:

— A basis in the cosmic principle of fluctuation, already active in matter, as generative principle (see the Quadruple Law of Fluctuation or Enferance Law in Book 3).
— Diversity as underlying:
  — The qualitative transformation principle and the inexistence of pollution and waste in nature, as everything is part of regeneration of substances (air, soil, water, carbon, nitrogen, etc.), part of a process of qualitative change toward new and increasing diversity and complexity.
  — The healing of perturbations through a multiplicity of interactions, as opposed to the homogeneous spreading of perturbations in homogeneous systems.
  — The natural control of plagues and populations, where every excessive outgrowth creating homogeneity gets rebalanced by the tendency to diversification, eventually going through extinction processes.
— Diversity as opposite of quantitative growth and systemic dominion (see the Extropy Law in Book 5).
— Diversity as transversal to matter, organic life, ethology, thought, cultures, or technics, including cosmic diversity, biodiversity, ethological diversity, neuro-, sexo-, corpo-, socio-, cultu-, onto-diversity, and technodiversity.
— Diversity as implying an ethico-political principle of nondetermination (see the multiversal right to nonreduction in Book 6).

Quantitative surplus in energy comes from an impoverishment of the qualitative transformation of energy, leading to entropic dissipation. The dominant human has impoverished its own qualitative experience, unleashing all forms of unease, disease, inequality, dominion, and extinction.

4.6.3 Variation, Relations, Flow

Metabiosis proposes a triple condition of diversity, relationality, and flow for life as indeterminate diversification process, contrary to the tendency of homogeneity, separation, accumulation, and blockage unleashed by determination and dominion.

Diversity is exemplified by the established idea that genetic diversity is essential for healthy ecosystems whereas genetic homogeneity is detrimental to it. Diversity as a principle exposes nature as more-than-queer, where the emergence of homogeneities (such as human normativities) is the anomaly.

Relationality is exemplified by how healthy ecosystems imply life-forms from all five kingdoms (bacteria, prostiss, fungi, plants, animals, as well as viruses) constituting webs of reciprocal support, whereas the predominance of one species (plague) is detrimental to it. Plagues exist, of course, besides the more radical and anomalous human plague, but are not the rule in ecosystem integrity. Yet by disrupting integrity they trigger new changes. Integrity is thus about open consistency and plasticity, capacity for reciprocal mutation and coevolution, implying a principle of indeterminacy or nondetermination. Instead, in human dominion systems one can argue that plagues and dissociation or alienation are norm.

Flow is exemplified by the primacy of the movement of dispersal and mixture as core to diversity and to open relationality: the free movement of animals dispersing seeds by eating fruits, the dispersal of seeds in the winds so that seeds will arrive in unexpected places where they may thrive while transforming the ecosys-

tem, the movements of water where carbon and other elements recombine in always new ways, the movements of roots, worms, and microorganisms that remix the soil, regenerating its properties in diversification and increasing richness. This movement of mixture and diversification underlies natural plague control and the avoidance of a predominant species.

The fact that in nature plagues tend to balance with extinctions is due to the primacy of fluctuation and diversification, an indeterminacy principle that tends to wash out any dominance. Inversely, it implies the destructive nature of dominance due to the *a priori* status of relationality and mutation.

The carbon, water, nitrogen, or phosphorous cycles in the biosphere are another expression of how transformations happen as part of an economy with neither quantity nor surplus, but based on qualitative transformation.

Metabiosis thus claims the evolutionary importance of *free and indeterminate movements of animals, seeds,* or *flows* in sustaining the overall movement of diversification in the biosphere. Processes and fields in the biosphere are not necessarily determined. The wandering of the animal sustains indeterminacy as long as it doesn't become a trajectory imposing itself, like human superhighways do. Human dominion creates determination by erasing the fluctuating indeterminacy on the movement of bodies, and by abstracting itself from the processes, observing them from fixed points of vision and calculation, determining them by observation itself.

The above principles resonate with deep ecology as proposed since 1972 by Arne Naess, whose proposal includes biospherical egalitarianism, diversity and symbiosis, and decentralization (Naess 1973; Merchant 1992, 111ff).

4.6.4 Free Movement as Health

Free movement of an organism is a measure for the health of the individual and the ecosystem. Free movement enhances the immune system, neuroplasticity, biochemical plasticity, and relational plasticity of the individual and thus of the ecosystem and society it is part of. As exposed in Book 2, in organisms with proprioceptive system and muscles like us, movement not only creates synapses in the brain, but muscles act as endocrine glandules that mobilize the biochemistry of the body. Instead, forced immobility, such as that of farm animals, agriculture plants and their aligned water flows, or humans in urban environments, imply a stasis in the evolutionary movement of diversification resulting in homogeneity and in numerous health and hygiene problems, because molecules no longer remix, flow, or vary their compositions, or do so in minimal form, interrupting natural plague control and the regeneration of air, water, and soil.

There cannot be welfare of the individual body without free movement. Free movement implies nondetermination of movement, and behavioral indeterminacy in how animals wander, dispersing seeds, and make minimal modifications in the ecosystem together with all other life forms in a process of cobecoming. The reversal of this can be seen in the one-sided dominant human construction of artificial environments that evacuate all other forms of life: cities, airports, farms, and monocrops that evacuate biodiversity, free movement, and sensorimotor richness, substituting it by homogeneity, alignments, cages, invasive species and plagues, confinement and desensitization, a fully fledged evolutionary crime of which industrial farming is the foremost expression. Animal welfare and free movement is thus constitutive of ecosystem health and of planetary health, and thus inseparable from human health.

Indeed, most human health problems stem from the tendencies to accumulation, blockage, homogenization, and dominion inaugurated by farming (Del Val 2023a).

Nature doesn't know dirt because in it everything remixes. Dominant humans have invented dirt and trash through toxic modes of accumulation, blockage, imprisonment, and homogeneity, where qualitative transformation shifts to quantitative accumulation, where nothing no longer transforms, creating toxic entropy (climate change and pollution). With it, humans became fabricators of deserts and pandemics.

Sound ecosystems of free animals also control or self-regulate the populations of viruses and bacteria through the dynamic equilibriums of the relations between species, their movement, and their healthy immune systems. This is so-called "landscape immunity" (Plowright et al. 2021), intimately linked to genetic diversity, unlike the genetic homogeneity, the immune system stress, the unhygienic confinement, and the extreme stress and suffering of animals in farms.

The fact that movement diversity is core to the biochemical plasticity, dynamism, and health of a body is logical when one sees movement variation as the motor of cosmic evolution. The fact that strong and unexpected, indeterminable biochemical reactions happen in our encounter with the world contributes as well. This includes the whole spectrum of beauty, as when we feel a bio-neurochemical storm in the body watching a sunset. Feeling creatively affected by the world's movements and changes follows the same principles as before. Why do almost all humans love sunsets? Or, more importantly, are humans really the only ones capable of being "aesthetically" affected by a sunset? So many birds, such as swifts, joyfully dance with every sunset and it seems to me that, precisely because they don't perform a semiotic reflexion on it, they live it more deeply, less destructively, immanently part of the flow, and more creatively.

4.6.5 Freedom of Movement of Animals, Seeds, Microbes, Ecosystems, Flows vs. Toxic Human Dominion

Free animals: seed disperal, pollination—animal societies and intelligence—ethological needs and behaviors—part of subtle ecosystems → **biodiversity, maintenance of fundamental ecosystem functions—natural plague control—soil regeneration and prevention of erosion.**	**Farms and cities**: crowded confinement, genetic homogeneity and invasive species, suffering, diseases, antihygienic conditions, chemicals, pollution—with animal suffering affecting immune systems, and animals treated with antibiotics creating microbial resistance to antibiotics. → **ecosystem destruction and mass extinctions, climate change, and pandemics.**

Table 1. Freedom of Movement of Animals, Seeds, Microbes, Ecosystems, Flows vs. Toxic Human Dominion.

Free plants, fungi, and protists: seed dispersal, pollination; with plants, fungi, and protists thriving where they can depending on availiable water, and coconstituting ecosystems with all other species, part of subtle ecosystems. **→ biodiversity, maintenance of fundamental ecosystem functions—natural plague control—soil regeneration and prevention of erosion.**	**Agriculture**: substitution of biodiversity with homogeneity, toxic chemicals (pesticides and fertilizers), global economies and exploitation of humans and nonhumans—deforestation—erosion and degradation of soil—stressed plants treated with pesticides, with pollution and threat to pollinators. **→ ecosystem destruction and mass extinctions, climate change, human inequality.**
Free bacteria and viruses: as part of subtle and moving ecosystems and relations across kingdoms of life, and as core agents of symbiogenetic evolution. **→ core agents of biodiversity—natural plague control—natural cleaning of environment—maintaining ecosystem functions and biodiversification in evolution.**	**Microbial concentrations in homogeneous agglomerations of humans (cities), animals (farms), plants (crops)**: disrupting ecosystems where viruses find new hosts, and with stressed humans treated with chemicals (medicines, hygiene, and cleaning products not needed in nature where things remix and clean themselves). **→ pandemics, health and hygiene problems.**
Free ecosystems: with changing and subtle associations between species and kingdoms. **→ biodiversity, maintenance of fundamental ecosystem functions.**	**Human dominion imposing one-sided selection**: homogeneity, pollution, fragmentation, evacuation of life, disruption of cycles and relations, and invasive species. **→ mass extinctions, loss of ecosystem functions, and crossing of liveable planetary boundaries.**
Free water and matter flows: water, carbon, and phosphorous cycles, sand and soil with life thriving in places where flows of matter allow it, always but slowly changing—part of subtle ecosystems maintaining ecosystem functions in the mixture and cycles of flows. **→ natural plague control—air, water, and soil regeneration—biodiversity and maintenance of fundamental ecosystem functions.**	**Capture, channelling, and exploitation of water and resources**: disruption of cycles, depletion and pollution of surface and underground water—dead ecosystems and scarcity for humans, leading to social conflict, inequality, migrations—with stressed degraded soils treated with fertilizers. **→ deserts and pandemics, ecosystem destruction, destabilization of planetary cycles, food and water insecurity, human inequality and conflict.**

4.6.6 Evolutionary Success

Metabiosis as principle implies that evolutionary success cannot be grounded on the greater number of copies of DNA of a species but on their capacity to contribute to the overall increase in biodiversity, to the enrichment of the expressions of life. This principle is in fact contradictory with the quantitative criteria of the "number of copies," as *an excess in one species will be detrimental to the overall increase in biodiversity*. Evolutionary success is about contribution to diversity in the biosphere, degree of symbiotic alliances that allow increasingly rich expressions of life to flourish. This is a Spinozan principle foregrounding that which heightens the capacities of a body to compose with other bodies. Evolutionary success is: how far does a species contribute to enriching the ecosystems of which it is part? How symbiotic is a species? Dominant humans are the least symbiotic, least successful, and most destructive, as they seem to be incapable of coexisting without dominating. There is not even one other species with whom they have an egalitarian relation not based on dominion. We are a complete evolutionary failure.

4.6.7 The Pathology of Quantification as Inferior Intelligence

The tendency to quantification as part of a dominant, neurotypical, and rationalist mode of thinking is crucially part of the problem, as is the excessive focus on verbality and numbers, semiotics and abstractions. It was together with the rise of abstract symbolic thought and language that hunting grew, initiating mass extinctions, and with it population growth above one million, soon followed by domestication and systemic dominion, ensuing in a superquick expansion through geometric design of the environment. A long history of nearly three million years of bodily atrophy and technical extrusion underlies this transition.

Hence the fact that neurodiversity (as linked to kinediversity), understood as modes of thinking that diverge from the neurotypical focus on quantifying and categorizing, is a core aspect of the responses to the extinction crisis. What we need to understand is the epigenetic conditions by which quantification and categorization became dominant, as a question of movement and of modification of the environment: an atrophied movement and a geometric environment fostering a quick evolution that cannot be reduced to deterministic genetics and brain structures. Neurodiversity, as another expression of the cosmic diversity principle, exposes the nefarious nature of having one mode of intelligence imposing itself. The nine million or more kinds of intelligence of the biosphere, one per species or more, need to be claimed by undoing the predominance of rationalization. Trillions of mutating intelligences. Each mode of intelligence is a mode of symbiotic mutation, or metabiosis, and of movement.

Metabiosis exposes intelligence as capacity to coevolve, increasing the overall richness of expressions of life. Intelligence is the capacity for symbiotic mutation. Intelligences that impose themselves, or that are intrinsically reductive, are thus inferior in kind. Hence the inferiority of rational dominant human intelligence, and the superiority of weeds. Intelligence is always of the moving body: BI.

4.6.8 BI and Movement Freedom

BI, as exposed in Book 2, builds upon an expanded notion of metaproprioception or metaception to redefine what perception, movement, thinking, and bodies are: self-sensing, self-moving, self-organizing matrixes that feel the world through their own movements, of which external senses are extensions, and of which the brain is not a center of control but of connections.

Metaception encompasses all domains of the inorganic, organic, sentient, or technical:

1. open consistency of flows, (water, vortexes, planetary environment)
2. metabolic fields (cells, bacteria, slimes, plants, fungi)
3. bodies-flocks with nervous systems (animals and societies)
4. reductive technical extrusions

BI exposes the key relation between symbiotic intelligence and sensorimotor plasticity. Kinediversity, kineplasticity, and movement freedom or indeterminacy are core to all modes of qualitative richness and diversity, from neurodiversity to ecosystem diversity. Sensorimotor plasticity and freedom equals individual, social, and planetary health.

4.6.9 Radical Movement Freedom

Radical movement freedom implies not only the internal proprioceptive plasticity of the body in recomposing with other bodies but *the freedom of all life forms* and *the non-determination of movements.* Hence the false nature of dominant human concepts of movement freedom that imply the freedom of dominant, rich human individuals to use devastating transportation systems to displace themselves across the planet, creating mass extinctions and climate change. Transportation is based on the circular movements of wheels and engines, on the linear movements of roads and trajectories, and on the entropic extraction, processing, consumption, and pollution created by quantitative alignments that miss the core qualitative energy transduction of nature, a homogeneous movement tending to pure quantity and acceleration that erases kinediversity in the biosphere.

Freedom is thus always relational and relative to the plasticity of movements of an ecosystem. Kinediversity and behavioral openness are core to planetary health in the biosphere. BI is thus already a metabody intelligence: relational, expanded, flocking, choral, stigmergic.

What matters is the kind of relationality. For instance, stigmergy[81] is based on biochemical proximity sensing and ephemeral chemical architectures, while dominant human technical systems are based on reductive extensions of an atrophied body looking from fixed points of vision, imposing its rigidity on the planetary ecosystem through sedentary architectures that block the flows of the biosphere.

81 Stigmergy refers to varieties pheromonal and similar chemical traces by which ants and other animals create mobile networks or architectures, modes of web-like orientation and communication, similar also to the traces by which slime molds and other protists and life forms leave chemical traces as means of orientation.

The above exposes the limitations of pathocentric ethics that measure the degree of suffering of an organism as moral frame, a purely negative and palliative approach. Here, instead, welfare as movement freedom, and the joy associated to it, is presented as a core evolutionary principle for a deeper metahuman ethics for creative evolution.

4.6.9.1 Against Sustanability: Toward the Thriveability of All Life. Monocultures as Reversal of Evolution

The onset of all-encompassing monocultures is the reversal of biodiversity as evolutionary principle. The built environment is a geological aberration as it blocks flows and creates homogeneous intensive agglomerations, hence hygiene and plague problems, while evacuating all other life forms or imposing homogeneous and exploited selections of them. The lethal cocktail of agglomerations, atrophy, intensive homogeneous displacement, and homogeneity of seeds, livestock, and human norms cannot but imply plagues, hygiene problems, and systemic destruction of the conditions for biodiversity to thrive.

At stake is not sustainability. Against sustainability! Sustainability is a false concept that only wants to perpetuate dominant human civilizations, as similarly proposed by Neely (2020). At stake is not sustaining human civilization, keeping our damages just large or small enough to avoid a collapse. Regaining conditions for thriveability of biodiversity and of all life in the biosphere is the problem. For this we need to disappear as dominant force altogether and become again one of the 8.7 million species.[82]

4.6.9.2 Undoing Accumulation

We need to dismantle all forms of accumulation, quantification, blockage, separation, and homogenization. Every form of capture, alignment, and channeling is an evolutionary crime: of water, electricity, seeds, animals, knowledges.

Living things thrive by mutual indeterminate coevolution of relational mutations, fluctuation, and dispersal, like a seed that thrives unexpectedly in a place where water lingers. Hence the cosmic idiocy of "intelligent design" that selects artificially following a principle of dominion, prediction, control, self-preservation, reduction, and homogenization. For instance, corn has evolved in its current industrial form from much smaller wild plants, at the expense of global processes of homogenization of seeds and biopiracy (Shiva 1997), of massive destruction of biodiversity through cropland, of devastating pesticides and fertilisers, and so forth.

For a vegetable liberation: every form of agriculture is a planetary crime. Let wild plants grow in their diversity! Hence disperse foraging as primary option and beyond: self-rewilding, back three million years to the times before we started making tools, undoing the cyborg era, regaining Body Techniques, without tools. Yet this is not about going back but about regaining of the conditions for variation and diversification, about undoing the interruption and stasis of evolution, toward a renewed, unprecedented inventiveness.

82 On the current prevailing estimation of 8.7 million species see Mora et al. (2011). there could be millions more, but also less, only over 2 million being documented.

4.6.9.3 Reversing the Reversal: How to Be Again One of the 8.7 Million Species?

The question is simple: when did we start the Sixth Great Mass Extinction? With excessive hunting in the upper Paleolithic, precisely along the process in which we went from one million to four or five million population, before the onset of agriculture, which made extinctions and population growth much worse, along the emergence of systemic human inequalities. Hence the proposal to consider a population of one million as thriveability threshold.

With farming, extinctions have grown exponentially, along with our imposition of a monoculture logic that is a direct attack against the principle of movement and diversity. Hence the need to recognize terrestrial rights as those of the 8.7 million species and their webs of relations: the ecosystems. And the need to reconsider human rights as 0,0000001% of terrestrial rights, just one of the 8.7 million species. We need to learn to live again without occupying, evacuating, or exploiting ecosystems and life-forms: toward *100% of natural reserves! Not just rewilding but self-rewilding!* This is the true becoming-animal, as nomadic gatherers moving with the flows without tools, only Body Techniques.

Rewilding is not a going back but a moving on, undoing the concept of animal as inferior. It is animal multiplicity as the superior kind. The history of *sapiens* is not the history of evolving from animals to gods but from god-like animals to trash-humans.

4.6.9.4 Immanence of Life and Immanent Nomadism

Life is always bound to habitability zones: the planet, its ecosystems, its epochs and times, never abstracting itself nor attempting to occupy every zone. This shows the paradox of reflexive reason that wants to observe every possible ecosystem and appropriate it, colonize it, occupy it, thus destroying it. The mystery of life is that it's not about knowing by observing from outside, but about moving with it from the inside as part of its own variation. One is thus always bound to partial experiences, and yet this is the very condition for openness. It's never a bounded, closed totality that one is confined to. As Hartmut Rosa (2019) proposes, the world is fundamentally irreducible, not available to a totalizing scrutiny, quantification, appropriation, or control.

The nomadism I claim is not that of conquerors, domesticators of horses, and fabricators of chariots and weapons, which seem to be the model for Deleuze and Guattari's nomadism in a *A Thousand Plateaus* (1987). Rather, I claim the nomadism of gatherer–hunters[83] who never domesticate animals nor appropriate land, who are partially bound to ecosystems while moving with the flows and seasons.

4.6.9.5 Revising the Anthropocentric Concepts of Planetary Health and Planetary Boundaries

We, WEIRD (Western, educated, industrialized, rich, democratic) individuals have the syndrome of the invisible elephant in the room, which is ourselves. *Our entire way of living is depleting the planet.* Recent notions of planetary health (Whitmee et al. 2015) and planetary boundaries (Rockström et al. 2009; Steffen et al. 2015) need to be revised, since they, promising though they may be, have also been conceived with an anthropocentric bias, as they consider only the health of humanity and the

83 Joining some currents in anthropology, I will use from now on the term "gatherer–hunters" and not "hunter–gatherers," because of the growing evidence that at least 75% of the diet in these societies is based on gathering, as will be dicussed later on.

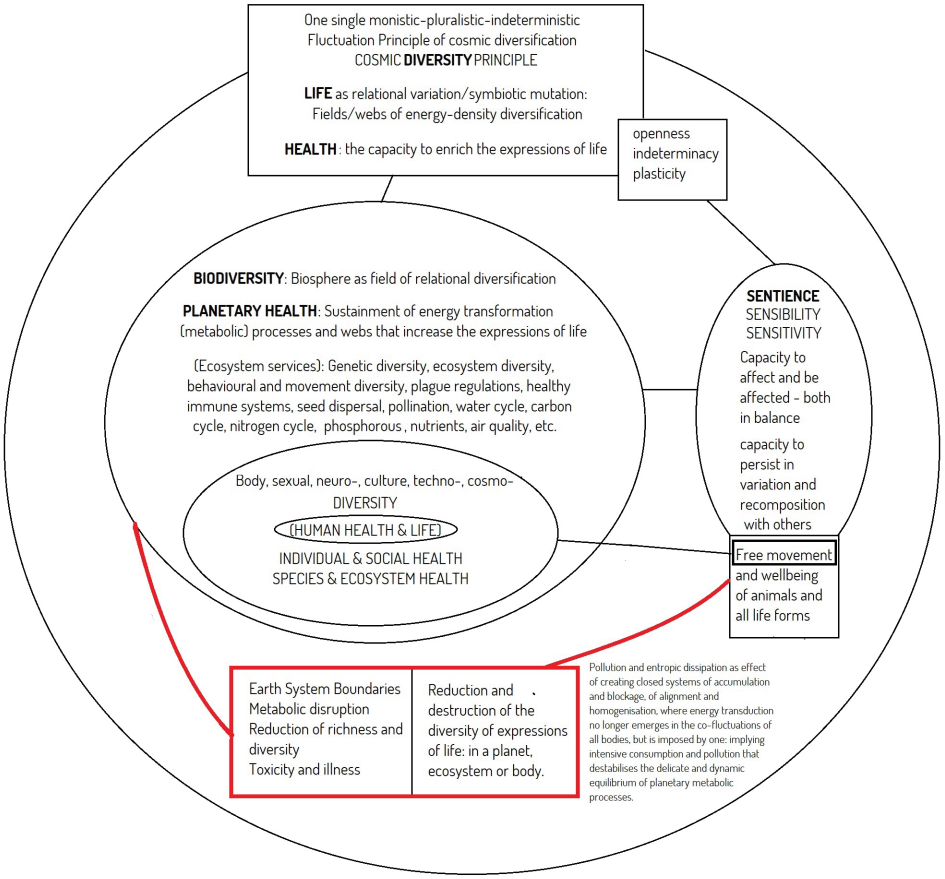


Fig. 24. Cosmic diversity diagram.

planetary boundaries needed for it to keep flourishing as it is, and not health of all life-forms and the conditions for their flourishing (through a shrinking humanity). Justice more broadly needs to be radically revised, as it stems from the defense of human property and no patches can fix such a wrong origin. Planetary health needs to be redefined not as the health of all humans and their civilizations, but as the health of the planet and the biosphere, with humans as a part of it, and as one of the 8.7 million species. Planetary boundaries need to redefined not as the conditions for sustaining human civilizations but for biodiversity and all of life to flourish, away from any human pressure.

4.6.9.6 The Human Farm

It is crucial to examine the critical population boundary when a species becomes a disruptive force, a plague — a reversal of the evolutionary success theory. Our becoming-plague started with carnivory and hunting in the Paleolithic along with the "cognitive" revolution of language. It exploded with agrarian empires in the Neolithic, first in Asia, much later in Europe and its colonies with colonialism and plantations, and became exponential with industrialization. It expanded always with the same logic: more people under worse conditions, a a massive exploitation machine where humans become the product and along with them all life-forms, with *more*

humans consuming and producing, in an ever-growing quantitative loop of expansive production–consumption diversifying in all areas of life and entering a new exponentiality with digitization and AI. *Humanity became its own business and created its own farm of oppressive alignments.*

Derrida (1992) calls the entanglement of carnivory, phallocentrism, and logocentrids carno-phallogocentrism. Hence I say, let's move from carno-phallogocentrism to vegan-queeranarchism![84]

4.7 The Great Bifurcation

The blurry boundaries between organic and inorganic, biology and physics reappear in the field of mechanomics, which studies how forces are transmitted, particularly through mechano-transduction, into chemical or electrical signals and processes. Mechanotranducers are core to proprioception *sensu stricto,* linking mechanical, chemical, and electrical processes. Electricity, or electromagnetic force, seems to be the universal "currency" for transduction across fields and orders of magnitude.

Both in molecular intracell communication, in neural systems, and in mechanotransduction,[85] electricity seems to be the currency of movement for an electrical swarming of bodies. Mechanical force and vibrations transduct into or from chemical processes (oscillations, boding) through electric impulses and charges, thus the complex electric swarming of our nervous system and brain can be seen as complex expression of quantum fluctuations across all scales of matter.

The role of the nervous system is actually decentralized and indeterminate in so far as it can gather and recombine in open ways inputs from the swarms of perceptions–proprioceptions, creating its own correlational (not representational) swarms of neurons and synapses, continually sustaining swarms of feedback actions. It is clear that evolutively this must have developed gradually bottom-up, or else one needs the sudden irruption of some divine agency, the sudden emergence of centralized control and patterns, which would never explain the open consistency of our cognitive worlds.

The apparent centralized aspect of rational decision making is an illusory aftereffect of self-organizing processes. The brain is, if anything, an expansion of the swarming capacity already present in slime molds or bacterial colonies, an expansion that can have centralizing and reductive effects, thus also a diminution. It also brings in new, unprecedented movements, partially gridded networks of nerves in quick electrical self-organizing swarming, affording new types of quick and quasi-gridded movements of coordination.

The nervous system and endocrine system as signaling systems need to be understood as one aspect within molecular fluctuating fields including protein dynamics, genetic transductions and mutations, and all sorts of environmental aspects involved in metabolism and epigenetics, including the presence of lipids and saccharides for energy accumulation and production, and the chemical signals from the environments unleashing changes in the nervous and endocrine systems themselves. These signaling systems cannot be understood as rules, but as provisional nodes within the continually changing movements in molecular assemblages, effect of their movements, and not the reverse.

84 These claims are dealt with more in depth in the final parts of Book 6.

85 See *Wikipedia,* s.v. "Mechanotransduction," https://en.wikipedia.org/wiki/Mechanotransduction.

Brainless or multibrained organisms, such as the octopus with eight independent "brains" (Godfrey-Smith 2018), expose part of this self-organizing and swarming logic of movement, as do for instance forests, whose "thinking" (Kohn 2013) is in the particular movement fields conforming the forest itself: growth, the circumnutation of leaves, branches or roots, the flexible folding in the wind, the dissemination of seeds, but also probably other modes of resonance between trees and the movements of the entire ecosystem that hold it together and which get radically disrupted when a dominant technohuman agency irrupts from the outside without the slightest care for understanding its internal movements. The question is always to enter movement from within. Problems arrive when abstract logics are imposed from an outside.

The development of exteroceptive senses allowed the extension of the proprioceptive field, so that birds in a flock became part of the larger proprioception of the flock. Thus, nervous systems afforded a new mode of movement epitomized by the torsional field of proprioception and its expanded field in the flock or swarm.

But protogrid networks in the brain and nervous systems seem to also have introduced a later bifurcation in evolution, allowing the emergence of radical alignments. These evolved in the *sapiens* into increasingly gridded networks, developing an internal dynamic, splitting itself to some extent from the larger field of the body, recomposing abstractly in excess of it, and reimposing its abstractions on the body and its environments, extruding itself until an entire planetary-scale architecture of gridded movements is enacted (Reynolds 2012). This was a dominant tendency appearing among other less dominant ones in prehistoric human cultures.

Whitehead (1997, 26–48) calls *bifurcation of nature* the split in science and philosophy between substrate and attributes, between matter and mind, *a priori*s and qualities, especially in absolute conceptions of space and time, which he denounced as "misplaced concreteness." I call bifurcations of nature *reductive expressions that turn back against fluctuation itself.* I place non-dominant human cultures along a continuum of nonreductive expressions of nature together with numerous animal flocking societies. The bifurcation appears in a variety of *dominant* human cultures unfolding in large-scale systems of domination, epitomized by empires and the state.

For hundreds of millions of years, the brain was in balance with its larger body-field, but in the *sapiens,* over the past 300,000 to 10,000 years, its gridded abstractions took over. This was a bifurcation within a much broader swarming capacity of our nervous system whose potential we need to recover for a planetary mutation that overcomes the reductive inflection.

Our diverse voluntary, spontaneous, and reflex movements go in some cases through the brain's cerebrum, in others through the cerebellum, and in yet others only through the spine and as reflex movements through more autonomous local neural pathways:

— voluntary/self-generated/spontaneous movement:[86]
  — spine—spinal motion
  — brain
  — cerebrum;
— reflex/reflexive/elicited movement:
  — neural pathways—the reflex system
  — brain

86 On the various types of movement coordination, see Sherrington (1906), particularly lecture IV.

— cerebellum.

The swarming character of the nervous system exposes its complexity, and its capacity to act nonhierarchically in the multiplicity of intradomains: the neural pathways accounting for reflex movements bypassing brain and spine, the spinal movements, where the spine coordinates proprioception and (loco)motion bypassing the brain in dynamic readaptation to the environments, exposing its capacity to learn and develop a memory.

Quantum neurophilosophy studies precisely an approach to brain related processes through quantum mechanics (Globus 2009), partly associated to the attempt to create quantum computation machines. Other branches in computation try to simulate organic brain processes, as in so called neuromorphic chips. But the true potential of a radical quantum neurophilosophy would be in the account for the radical plasticity of brain–body–world interrelations as they all express quantum fluctuations.

4.7.1 On Learning

How do "instinctive" movements come about, performed by bodies "spontaneously" without an apparent cultural learning process? These are especially striking in nonhuman animals. Let's consider first that a body has multiple kinetic memories conforming its processes of growth and metabolism.

Swarming movements that happen in a human body include

— the movement of unicellular aggregates of bacterial colonies, mostly in the intestine;
— the biochemical swarming inside the cells and across cells, including the molecular; movements of growth, transcellular and intracellular coordination, protein movements, and membrane (lipids) movement;
— the mechanostransducive, proprioceptive movements orchestrated via the nervous systems;
  — neural pathways,
  — spinal movement,
  — brain coordinated movement (cerebrum and cerebellum);
— the flocking movement creating societies of bodies and in relation to larger ecosystems and technical–architectural systems.

All these modes coevolve in feedbacks of epigenetic and genetic variation.

It shouldn't come as a surprise that kinetic potentials are present, not only encoded in DNA, but in the protein and cellular–bacterial assemblages of a body. This is ultimately the most ancient kinetic memory of a body. The peculiarity of human learning is, if anything, in how it minimizes this older memory in favor of a more recent memory of technocultural encoding that requires long and intensive learning after birth.

This connects to the question of what triggers movement or what is triggered by movement, or rather what movements trigger other movements, since, as we see, movement is self-caused. What triggers reflex, "spontaneous" or voluntary movements? And how far can one separate the different modalities, associated to different types of learning and memory? What type of movement is the one that we refer to as psychic or relative to an emotional state? Is a motion triggered by an idea or

the reverse? Is the idea another type of motion in itself? And, more importantly, is freedom linked to rational choice or rather to a body's capacity to fluctuate in excess of rationality?

A body has many different modes of movement: molecular, reflex, "spontaneous," rationally guided (i.e., with interference of abstractions from the neuronal field), and externally oriented by alignments. The one I am calling "spontaneous" refers to a zone in between reflex and rationally guided, a zone in which a body can elaborate its open-ended capacities to move, in excess of rational decision and of other automatisms. I put it in inverted commas because spontaneous is a problematic term that tends to be associated too often with a plane of preexisting natural capacities that would be opposed to culturally encoded ones. I oppose this distinction and look at it instead in terms of alignments along a spectrum.

Let's consider Aristotle's distinction between two types of irrational motion, as well as the relation between imagination, memory, and movement, and the uneven distributions of matter in a body. His treatise on locomotion exposed part of this self-organizing complexity of multiple modalities of movement happening in a body, though subjecting them eventually to a centralizing schema. I want to suggest that there is no ultimate logical chain of interactions between modalities. Muscular motions, visceral motions, emotions, and ideas are different types of fields, each with their own dynamism and affecting all others in the process.

4.7.2 The More Than Human Amoeba in Us

The unfolding of 13.8 billion years of fluctuations has resulted in the type of swarming multiplicity that we are, this is both our consistency and our openness. Swarms of bacteria in a biofilm, of oscillatory nuclei in the plasmodial protoplasm of slime molds, or of neuronal networks imply differences in speed and scale and rhythms of swarming, where the faster and more aligned ones have foregrounded the imposition of a unitary field, a superaligned swarm.

Reconsidering Bergson's (1944) claim that creative evolution brings in increasingly indeterminate and plastic capacities to move in bodies, one has to distinguish when this is the case and when reductive bifurcations happen. I argue for the behavioral multiplicity, indeterminacy, and openness in amorphous, amoeba-like aggregates from which we stem and which continue to be embedded in the distributed fields of our neurons, cells, bacterial films, and colonies inside of us. Our proprioception is the key to these doorways of knowing.

Creatures–assemblages with more perceptual–behavioral indeterminacy are fittest, like slime molds. Creatures imposing their rigid ratios are evolutively unfit as they have a destructive effect on their milieu and thus on themselves. We still have, and can further develop, the amoeboid power to move in decentralized manners, swarming in multiple directions, unleashing endless kinetic chains.

This should not be seen as mere need for survival by sustaining unpredictable behaviors for predators (Shaviro 2015). Quite the contrary: it is the very substrate, the indetermination matrix that generates relational movement fields as expressions of fluctuations. Unpredictable behavior is not a margin of indeterminacy or a question of injecting variability, it is the *a priori* condition of movement fields that are irreducible to paths and lines.

The reduction of the field to causal pathways associated with decision making is not only the aftereffect of brain-bodies like ours but of highly sophisticated geo-

metric alignments that have minimized the swarming capacity that we still have and that most animals expose, a swarming both inside (the molecular swarming composing an organism) and toward the outside (in flocking behaviors).

4.7.3 Physical *Archē*-Thinking

Slime molds have become a major field of study in both biology and computation.[87] As I mentioned before, they have a plasmodial state in which millions of nuclei inhabit a single cell membrane, with neither cell or tissue differentiation nor articulated structure, neither unity nor collective, where any split part becomes a fully functional "individual," which is, however, always a multiplicity without unity, a radically Open Whole, radically amorphous, with an amoeboid movement extending the protoplasmic membrane into tendrils that sense the surrounding affordances and then oozing and flowing the entire membrane in the zones that expose more interesting affordances, following multiplicities of cues (chemicals, temperature, humidity, light), whose internal sense of "proprioception" is made of highly complex and varying polyrhythmic biochemical oscillations that are not unison, but a swarming chorus, through the attunement (*n*-training) of single oscillators that propagate chemical signals, nutrients, or energy. Its spores can shift between amoeboid and swimming swarms of flagellates disseminating out into the larger environments, and they have over four mating cell types that can mate to one another indifferently. It is one of the oldest life forms, not having changed much for nearly a billion years, one of the earliest inhabitants of land together with bacterial biofilms.

Doesn't this speak in itself for its "fitness," intelligence, and "superiority"? Its radically amorphous nature, a protoplasmic body made of pure rhythmic plasticity, exposes one of the most plastic and resilient expression of organic life, which implies its resistance to the reductive tendencies of excessively aligned differentiation.

What kind of spacing and temporization does it perform? Its own trails of extracellular matrix are its external memory and "space," its biochemical rhythmic pulsations are its internal proprioception and "time."

Its capacities for self-assembly are subject of intense study in computation, with attempts to reproduce its bottom up, physical thinking, made of its own expanding body and rhythmic oscillations, as well as of the affordance of the environment, where behavior is obviously not only encoded in the genes. The movement–thinking is in between, in the multiple molecular relations, always tending to many places at the same time. Protein affordances, bodily affordances, genital affordances… it is all a question of mutating complementarities.[88]

So, as Steven Shaviro (2015) points out, slimes show us a sort of primordial or *archē*-thought, or the operation of though, sentience, sensing, feeling, and acting as positive feedback loops, common to both neuron-based and chemical oscillation-based bodies. We are perhaps a hybrid of both, for aren't our cells, not to speak of our bacteria, communicating also through highly complex biochemical rhythms? Perhaps the slime mold's lack of predominant accelerated self-reflexivity is a sign of

87 Along with swarm behaviors, but especially the latter in a reductionist approach whose aim is to create useful computer simulations. See my critique to usual approaches to swarms in Book 3.

88 Hippocrates, Galen, and cultures like the Dogons in West Africa conceive genital affordances as interchangeable: the clitoris is like a penis, the penis foreskin is the remainder of a vagina. Attitudes change though in terms of how to embrace, or "correct" this complementarity.

evolutive superiority that we should claim back. This, rather than a degree zero of sentience, is perhaps a superior sentience, a capacity to move along many pathways at the same time, which Nietzsche associated to the Great Health and the Great Reason of the body.

We have an octopus and slime inside of us, a capacity for decentered motion, which we can claim back and elaborate as a greater reason of the body. Is it by chance that the species that have been around for longer time tend to be amorphous and less structured? Some bacteria are perhaps the oldest, followed by slimes, some sponges, jellyfish, and worms. Of course, they existed long before vertebrates, but they keep existing today while vertebrates seem to last much shorter, and some dominant humans are already announcing their self-annihilation.

Sponges are one of the few animals without nervous system. Their cavernous body grows–thinks with the flows it takes in and lets go. They are a very resilient and ancient formless life (rather than life-form). Octopuses, in turn, think in and through their tentacles. A truly tentacular thinking is about decentralized thinking of the body itself, not about reaching out to grasp the world from a unified center. We need improvisation *technēs* for a new kind of evolution where we swarm in new, more plastic ways. Thinking is moving. We urgently need to recover the slime mold's capacity for field-thinking rather than linear thinking.

At stake is the mobilization of all the decentralized networks of proprioception and multisensory integration, in excess of rational consciousness, the zones of proprioceptive networks in between rational awareness and the utterly unconscious, the in-between networks, where reflex movement of "neural pathways," spinal movement and brain-coordinated movement work together in decentralized manner, in dialogue with the proprioceptive deformations of matter as moved by the surroundings, without pathways and ultimately also no "loops," but as fluctuating fields. This will also imply mobilizing a non-linear, swarming thinking.

The motto for a movement revolution will be not so much "move more and better" as "move in more ways, move in increasingly varying, less determinate, richer, and subtler ways."

4.7.4 Movement Ecology

Ecosystems are hybrid affordances of endlessly varied movements: flow, plant circumnutation, amoeboid oozing, locomotion. We should not analyze this diversity by reducing them to linear paths. We need a field approach.

Movement ecology is an emergent discipline that studies ecosystems from the point of view of the changes of spatial location of individual animals or populations. It expands the research in myriads of types of movement and in the context of myriads of diverse ecologies, yet it still foregrounds an idea of individual bodies following quantifiable paths. The discipline is deeply Aristotelian, presenting itself in Nathan et al. (2008) as a sort of completion or expansion of the challenges started in Aristotle's *De motu animalium,* which is quoted in the heading, focusing on the desiring individual following paths. It is thus a science with a causal and teleological approach to movement as measurable pathway, aiming at understanding the why, how, when, and where of individual movements of animals or populations, in the convergence of biomechanical, cognitive, random, and optimality paradigms of movement into a larger mechanistic approach, along a tradition of tracking animal movement through quantification (and prediction–simulation) of movement paths

and along the explosion of new techniques in Big Data, bioinformatics, genomics, and proteomics and techniques for sensing and recording.

Its conceptual framework explores the interplay of internal states (why to move, desire and intentionality, motivation), motion capacity (how to move, motility or self-movement capacities, biomechanical and other), navigation capacity (when and where to move, including orientation and selection, cognitive, sensory, and other) and external factors, that together influence or determine the actual path or propagation process. Studies range from seed dissemination and microbial movements to plant and animal movements, including foraging, animal dispersal, plant dispersal, migrations, irruption, nomadism, accidental displacements, flocking, and so on.

While cross-disciplinary and case-by-case multiplicity is promising, its Aristotelian bias may prove limiting by focusing on measurable individual paths rather that the larger fields of movement relations in which paths emerge. Like biochemical paths, ecosystem paths are also a web of a field dynamics. This brings us to the intentionality of this science. If the ultimate intention of movement ecology were, as it claims, to help *preserve ecosystems,* then it is the conditions for *sustained openness* that need to be considered, by avoiding the imposition upon ecosystems of abstractions that disrupt their movement of variation, their emergence. Ecosystems cannot be preserved as static entities. Blocking or fixing them would kill them. What they need is to keep their variation going without disruptive impositions. So, it is essential to detect tendencies to vary, not just patterns. One needs to understand movement from within — from the proprioception of ecosystems!

If we try to propriocept, instead of map from outside, how animals perceive and move, we can understand better the open consistency of ecosystems and move better with them. Instead, if we remain external observers, possibilities for an understanding from within are small, and our chances of imposing problematic abstractions will be higher. Proprioception radically redefines ethology and Jacob von Uexküll's concept of the *Umwelt* (and also of the *Umgebung*) beyond biosemiotics. Umwelt was a promising term in trying to understand how an animal perceives, but the idea of biosemiotics clearly shows a perspectival bias in trying to synthesize the operation of perception in animals, providing thus alliances with cybernetics. Affordances as direct perceptions of the proprioceptive field (not of vision!) are a cue to go beyond this paradigm. New concepts of movement as field need to be developed for a Radical Movement Ecology (RME) that studies the process in which ecosystems unfold.

Considering climate change and how the disruption of ecosystems unleashes pandemics, it is more than urgent in our epochal shift to develop a new science, an RME that instead of trying to control ecosystems develops a much subtler knowledge of their equilibriums in order to strictly avoid disrupting them further, allowing a rebalance of consistency and openness to return, and with it the movement of variation. This responsibility is more than historical, it is evolutive and earthly.

4.8 The Physio-Bio-Neuro-Technical Continuum: The Margulian Revolution and Other Unacknowledged Ontological Revolutions

It is Vernadsky who fully developed the idea of the biosphere as body of living matter, as process of energy transduction from the sun in a movement of increasing diversification, where the lines between the organic and inorganic are blurred, but also between the organic and rational–technical. For Vernadsky (1998), life is a geological force, while for Lovelock (1979), who developed independent conceptions

similar to the biosphere in the Gaia Theory, the Earth is defined by a physiology. For Vernadsky there is no origin of life. The biosphere is and always was living matter, and life is but a more complex kind of mineral, organic. The organic cannot be separated arbitrarily, and the noosphere (sphere of reason) is a material evolution of it (an idea present in Russian Cosmism as early transhumanism).[89]

> The structures of living organisms are analogous to those of inert matter, only more complex. [...] The living organism of the biosphere should now be studied empirically, as a particular body that cannot be entirely reduced to known physio-chemical systems. (Vernadsky 1998, 52)

The biosphere is a process of energy transduction having green plants as first link (after bacteria!). The biosphere envelopes the Earth, but the Earth has multiple envelopes: thermodynamic, gaseous, chemical, paragenetic (which include the biosphere), and radiation. The biosphere relates to many other spheres: the hydrosphere, lithosphere, ionosphere, noosphere, and so forth.

Margulis adds onto this vision the theory that unsettles the Darwinian notions of species, natural selection, and competition in evolution, proposing instead radical hybridity, nonlinearity, and cooperation, through serial endosymbiosis and bacterial sex, as the core process of an orgiastic evolution. This completes Vernadsky's revolution with a nonlinear history binding genetic transfer across bacteria with ongoing geological transformation over eons at a planetary scale, a symbiogenetic process of which our own aggregation into planetary-scale technical systems is nowadays part.

The *Margulian revolution* also implies a radical destabilization of anthropocentrism by claiming the centrality and complexity of bacteria in evolution and by placing sexual reproduction and programmed death as evolutionary byproducts of bacteria for whom sex is a process of ongoing mutation. Reproduction is cloning and programmed death doesn't exist. Hers is a *deeply ontological revolution* that entirely transforms our idea about ourselves and the world as made of symbiogenetic processes and mutations.

Hypersea Theory by McMenamin and McMenamin (1994), is a third revolution building upon the previous two, which brings in a more explicit, elaborate, and radical metabody approach, as it considers the total of land biota as single hyperorganism with its complex dynamics.

I want to adopt on the Vernadskian, the Margulian, and the Hypersea revolutions while elaborating a radical questioning of the emergence of the noosphere, which I refer to as algorisphere because I don't consider it as a higher form of evolution. The following exposes a continuum in which human cultures emerge as diverse and more or less aligned expressions of nature, from which, however, some reductive outgrowths have ended up dominating.

89 In a very different way, Viveiros de Castro's "cosmological perspectivism," based upon Amerindian, mostly Amazonian cultures, proposes a non–anthropocentric approach to multiplicity where the world is apprehended differently by different kinds of beings, and where perspective is in the body, not in the mind. Still once more proprioception is absent, and we run in the problems posed by the word "perspective" and its relation to points and to vision. My proposal is clearly for a nonperspectival theory. But his influential claims are valid.

4.8.1 Swarming Technocultures

In Book 2 I outlined how bodies, societies, technical systems, communication, thought, and evolution can be reconceptualized as fields through the proprioceptive matrix. Extensions of this matrix can be seen emerging at least since the emergence of bacterial mobility systems, later becoming nervous systems as well as tendrils, plant growth, and multitudes of ways of tending outward. Insect societies and arthropods developed highly complex architectural systems, from beehives to ant colonies that count as extensions of the swarm, analogous to how slime molds leave biochemical traces as environmental memory, whereas the spider web as tensional field is a direct extension of proprioception. The swarm itself creates an internal proprioception through rhythms of the changing distances and orientations, in a new variation from how bacterial swarms communicate through biochemical oscillations. This can be traced back to swarms of subatomic oscillations tuning in the Big Bang.

Flocks of birds, schools of fish, and herds of walking mammals also relate through the extensions of proprioception via exteroceptive senses, connecting inner rhythms with the rhythms of the flock, which is a field of resonance. Early human societies and their architectures and rituals[90] are of course also an evolution of this paradigm that can be analyzed in terms of an increasingly geometric extrusion and alignment of the distances, orientations, and rhythms, frozen swarms constituting aggregates of increasing scale and immobility. This crosses a threshold of consistency, into a new mode of composition, with the agricultural revolution and the constitution of large sedentary settlements.

Sedentarism is first of all a tendency to immobility of certain bodies as part of larger frozen swarm, paradoxically this implies entering a new temporality of exponential acceleration, millions of times quicker than evolutionary spans. Mechanism and digital culture expose two attempts to deny the irreversibility of time, as expression of fluctuation's movement of variation, rather than entropy as dissipation, which go along the attempt to deny fluctuation and variation altogether.

Anthropologist James Suzman (2017; 2020) analyzes this process in relation to the history of work, where all the currently dominant and problematic conceptions (of accumulation, quantification, abstraction, futurity, lack, scarcity, unlimited desire, and limited resources) are a heritage of the agricultural revolution from around 10,000 years ago.

The more impoverished and aligned we are, the more we desire something we lack, always looking outward. The more we flow with our internal fluctuation and the world, the more we are aswim in our superabundance.

Suzman exposes the false promises of liberation that automation of work has made since many decades ago, a problem that is more prominent than ever nowadays, along the increase of telematic work, and the debates around hybrid and shorter workdays, or basic income. Instead, Suzman claims that cultures of gatherers up to the present, as in the case of the Ju|'hoansi in Africa, appear to have shorter workdays, less preoccupations, a far greater sense of commons, a greater sense of enjoyment, and more leisure time for creativity.

The entire culture of bodily scarcity, including normative alignments of sex and kinship, is part of the same story. Here also Adolf Tüllman (1961) claims how wrong

90 A precursor in claiming the architectural and choreographic capacities of animals is the ethologist Karl von Frisch (1974), with his famous studies on animal architectures and the dances of bees.

it is to associate the ritual orgy that one could find in almost every tribal culture, as well as in early imperial cultures, to an inferior evolutionary state.

Is it then a question of going back to preagricultural tribal cultures of gatherers? If so, it would be wrong to think that one can do so without dismantling the entire technocultural field and its three strata of globalization (agricultural, industrial, informational). The medium itself is the problem. We have also seen how false was the promise of the retribalization that Marshall McLuhan associated to TV. But is the answer in neglecting all developments happening in this process, including all the creativity of the arts and the sciences? Do we want to do away with our symphony orchestras and universities? Maybe or maybe not. Neither, nor. But ecosocial collapse will probably force us to do it. The unsustainability of our cities and information systems that allow unprecedented exchanges, can it be simply balanced, or does it inevitably lead to planetary disruption? Could we find a new way that is neither tribal nor global? Discourses of glocality have ignored the power of the media themselves in homogenizing relations. This is the core problem: *the openness of relations.* We need to invent new ways of moving, perceiving, and relating, of knowledge and common space.

The plurality of subcultures appearing mostly in urban environments and sometimes migrating back to rural environments, including the whole spectrum of sexual subcultures and their alternate modes of kinship and economy, can be seen as a complex return of the tribal in the search for glocality. But this process needs to be extended to a deeper reinvention of media as relational technologies, challenging the way in which alignments reappear in contexts that were promising an opening, as in many contemporary social movements and revolutions that become captured by algorithmic, media or capitalist economies on the fly. Maybe the problem is that some alignments have never left the stage nor have been challenged. The question is not to deny the capacities of the *sapiens* but to counterbalance tendencies to reduction, where overcoming these may become a leap into new thresholds of evolutionary complexity. The question of glocality is open and needs to be rephrased.

Work is a new mode of energy transduction in the cosmos. We saw first how nucleosynthesis in stars and internal radioactivity in the planet create conditions for a first energetic mode of transduction and diversification, which on Earth unfolded in the metabolism and growth processes of organic life. Work should be understood as a new expression of this energetic process, for which one can go back to the Aristotelian concept of *energeia,* understood as at-workness. The problem is precisely in how work in dominant societies has often become the opposite of energetic diversification and growth. It has been captured in alignments that close down energetic flows, paradoxically enforcing dissipation. This can only be understood in terms of the new planetary-scale assemblage that is growing in spite of the cells composing it. A whole new energetics and economy of movement needs to be mobilized if we are to overcome this epochal tendency.[91] This demands a multifocal action, from the body outward, across any alignments.

91 On the implicit interdependence of modes of work, subjectivity, organizations of spacetime, sensory orientation, kinship, and sexuality along degrees of alignments, see Carpenter (1964). On varied accounts of the five genders in American Indian and Indonesian cultures as well as other modes of nondualist organization in tribal cultures, see the final section of Book 3. On the reduction of empirical experience as preliminary step toward the emergence of opposite terms in ancient tribal cultures, as a grid-like logic imposes itself on a more indeterminate background, see Lévi-Strauss (1966).

...

The architecture and technique of the cell I have described as possibly the highest technology in evolution so far, the highest self-organizing intelligence in the balance of consistency and openness, is followed perhaps by the creative intelligence of bacterial colonies, slime molds, and swarm societies of insects composing complex rhythmic fields as proprioception of the swarm, and with their architectures (bees or ants). With mammalians and hominids, increasingly determined behaviors appeared, increasing extrusion of proprioception to external senses, and of these to technical extensions of increasingly geometric kind. The increasing articulation of vertebrate movements ultimately led to segmented movements, especially in the hands, and this, coupled with gridded networks of neurons in brains and nervous systems, evolved in some cases into increasingly aligned ecosystems, foregrounding segmentation, extrusion, reduction, and abstraction of movement ecologies from the more diffuse environments in which they slowly arose.

The outlining of a psyche and of a society of "individuals" is entangled with the technics that unfold a particular epigenetic, biochemical, and genetic (epiphylogenetic) modulation. As Stiegler (1998; 2018) correctly outlined, building upon André Leroi-Gourhain (1993), one cannot separate a psyche from its related social organization and technics. It is the field that needs to be considered.

The process in which flock societies have elaborated complex rhythms and architectures took hundreds of millions of years. For 2.75 million years after the first known tools and for over 1 million years after the taming of fire, hominid societies have proliferated in cultures of gatherers at the slow pace of evolution, including the *sapiens* for its first 300,000 years. The process in which the *sapiens* developed more aligned ecologies in relation to the articulate movement of the hands in standing posture, with relations increasingly at visual distance in open spaces outside the forest,[92] leading to an emergent symbolic thinking, language, and tools, with more articulate, segmented, extruded, and abstract movements, may have taken hundreds of thousands of years.

The problem is that some of these alignments became dominant around 10,000 to 5,000 years ago[93] and entered an exponential spiral of acceleration, especially since ancient Greece, as inaugurating the rationalist mode of reduction, the most dominant one so far. Their evolution we will analyze in the next chapter on the Algoric-

92 Due to changes in the forest density in Africa at the time, when many zones stopped being tropical as part of the continual changes of climate distributions that, besides the wild changes in tectonics over the eons (the Atlantic ocean appearing only in the last 100 million years), move deserts, forests, mountains, oceans, currents, and cloudiness in radical shifts round the planet, which in its longer span is a radically lively and amorphous organism, in relation to which we are something like a cough is for a body, perhaps not even a flu.

93 After the last glaciation. This period of exponential growth equals to a millionth of the age of the Earth. "Civilizations" have flourished in a minuscule cosmic span of relative calm on the planet in between catastrophes caused by the interaction with the larger cosmic medium. Over the past 5,000 years the population grew from 1 million to around 170 million, over the past 500 years it rose to a billion and in the last hundred years it is moving toward a critical limit above 10 billion. So human populations have multiplied by 10,000 in one billionth of the planet's age, at a speed millions of times larger than other evolutionary processes. Population goes along amount of waste, pollution, and planetary disruption. If we had not upset the climate system, we might have had 50,000 years of relative calm ahead before the Earth's axis tilts again, millions of years till a next cosmic catastrophe, billions of years till the sun grows and life gets difficult on this planet, and trillions of years till stars stop forming and this universe enters its eternal Heat Death.

ene. The parallel emergence of these processes in different seemingly unconnected cultures at similar times has been ground for much speculation. But if the *sapiens* had common ancestors, it could imply a common coevolution of its brain structures, its articulate movements, and the technical environments they created and which reengineered the movements and the brain in turn.

4.8.2 Less Aligned Naturecultures: On Behavioural Indeterminacy and Social Indeterminacy

Culture means perhaps only aligned expressions of nature, where movement gets segmented, homogenized, abstracting and imposing themselves, self-referential and closed upon themselves, while expanding and dominating.

There are more and less aligned societies: empires (superaligned), Indigenous (semi- or protoaligned), nonhuman (nonaligned or less-aligned).

Aligned societies are based on rules, insensibility, fear, homogenization, atrophy. They are societies of discipline and control, of waiting and boredom. Within these, we produce a variation that is too self-referential and constrained to the alignments. But most societies are less aligned in kind.

...

This book is an invitation to redefine anthropology and ethnography (as a meta-anthropo-ethnography) by studying movements in terms of fields, their modes, their alignments and openness; by studying architectures as expanded proprioceptions and multisensory integration, by analyzing fields as metabodies of diverse kinds in a continuum of flocks–societies, architectures, ecosystems; by unfolding the trope of the chorus as rhythmic field, the modes of BI, the symbiotic mutations, and behavioral openness. This should lead to a valorization and learning from past, nonimperial cultures, undoing millennia of holocide, for reinventing our futures.

We need a revision of ethnography through the lens of proprioception and multisensory integration to understand the greater or lesser alignments at stake in different cultures and the interrelation of modes of movement–perception, kinetic articulation, economy, architecture, kinship, effect, sexuality, subjectivity, or collectivity, as stands out in Carpenter's study of Inuit societies (1964). This would provide a richer and less colonialist understanding of the pluralities of BIs at stake in diverse cultures and their modes of organization.[94]

Kinesthetic, multisensory, and proprioceptive atrophy comes about when the sensory extensions of proprioception impose reductive movement orientations and become a reductive externalized memory of timelines and objects. Increasing segmentation and extrusion ("grammatization" and "exosomatization" in Stiegler's terms) into homogeneous, large-scale alignments create a frozen swarm, a relatively immobile society congealing into symbols and forms.

The slower analogue of biochemical processes of bacterial and molecular swarms crossed a threshold of alignment in the quick electric swarms of nervous systems and brains, where cells became aggregates of a complex multicellular body. A new threshold of alignments is crossed now, as the binary electrical swarms of digital signals

94 I expand on this in Book 5 on the Original Affluent Societies Theory, in Book 6 through the choral and dance onto-politics, and in the start of Book 7 on metaphilosophies of movement in non-Western scenarios.

in gridded infrastructures choreographed by code create a planetary-scale body of which organisms and technical systems become aggregates.

...

Chaosmic fields don't just accumulate but build upon one another in complex, transformative ways. For instance, quantum neurobiology exposes the way quantum phenomena are active in the nervous system and brain (Globus 2009; Jedlicka 2017), exposing the core indeterminacy of their operation, and this tendency seems to be timidly extending in the social and behavioral sciences, accounting for behavior as crucially indeterminate (Glimcher 2005). My claim is that indeterminacy, behavioral included, is not only unavoidable but necessary. It needs to get cultivated, rather than reduced! (This of course implies a radical mode of anarchism, and the failure of previous modes of anarchism is precisely in not having acknowledged this deeper mode.) The intrinsic relation between movement–behavior and neuroplasticity, as I propose it, is the core loop that we need to open up rather than try to close down!

We need to not only cultivate behavioral indeterminacy, but crucially disalign (from) the radical closures that are causing a holocide, mass extinction, and planetary crisis. The latter involves voluntarily suspending human reproduction in order to radically reduce the population and changing our sedentary consumerism. Both of these can only be accomplished by the former, by regaining a lost richness of experience as capacity to vary.

The radical challenge is not simply forgetting about verbality and its dominant abstractions but rebalancing it with the nonverbal spectrum with movements of unprecedented plasticity for a real technoepiphylogenetic evolution.

...

Not all cultures and nonhuman ecologies are equally aligned or dominant. My interest is in claiming the importance and indeed evolutive superiority of the less dominant, less aligned expressions of naturecultures. My usage of the word "superiority" is not meant in an essentialist way that reinstates a hierarchy and quantity, it is an ironic and blasphemous reversal of the dominant narrative.

It exceeds the scope of this book to research other kinds of great alignments that may have come about in other imperial formations, in China, India, Islam, or pre-Hispanic Americas, as well as the myriads of nonimperial cultures that may have sustained a better balance between consistency and indeterminacy. These should be crucial subject for a renewal of ethnography and a meta-anthropology that focuses on the openness of ecologies. Nonhuman ecosystems of organic or inorganic movement, nonimperial tribal cultures, imperial human societies, or subcultures within dominant societies: any of these can be approached transversally by analyzing the alignments and the complex movement fields they express.

Prehistoric tribal cultures can be seen as extensions of the swarm and flock paradigm, as varieties of rhythmic fields, with different kinds of protoalignments in the modes of contact, affect, and orientations of the bodies, the modes of collective mutation, cultures mostly based on improvisatory practices. The ubiquitous chorus[95]

95 On the ubiquity of the chorus and its relation to the ritual orgy in ancient cultures, both tribal and imperial (as in the Dionysian chorus), and in most tribal cultures to the present (as in the multitudes of African dances and masks) as well as its remainders in modern Europe (as in the carnival), its variations (as in Easter processions), and its current mutations and resurgences (as in gay cruising

as group of dancing and singing bodies, with extraordinary varieties of masks and body extensions, often outdoors or nomadically, and its link to the equally ubiquitous ritual orgy, can be seen as paradigmatic trope for rethinking the evolutions of cultures rather than as an inferior state. The chorus–orgy became captured in theater on the one hand, and in the assembly and later the parliament on the other, with bodies increasingly fixed in distant relations to one another, diminishing the mutual cosensing in favor of a rationalist and abstract consensus.

The idea is that the emergence of an absolute conception of spacetime, of binary sex, and of nuclear forms of kinship and affect are interrelated and have been part of an epochal inflection of imperial cultures, an inflection that does not imply a forward evolution. It needs to be understood as an intermediate stage toward the aggregation on a planetary scale: a hypercyborg. Along the way, we see less aligned modes of organization reappear, which were always first (normative regimes came second), but we need to take them much further if we are to overcome the epochal inflection of totalizing aggregates, with a much deeper reinvention of our movements, spacings, and rhythms, our sexualities, affects, and perceptions.

4.8.3 Was the Shift in Agriculture? (A Reply to Graeber and Wengrow)

There is wide recognition among anthropologists, palaeontologists, historians, and archaeologists that agriculture was arguably the worst mistake and fraud in history that worsened life conditions of gatherer cultures, started a massive population increase, and inaugurated an era of systemic inequalities amongst humans not to speak of animal and ecosystem abuse. Suzman (2017; 2020) and Harari (2015a), as well as Fukuyama and Rousseau agree on this.

However, anthropologists and archaeologists David Graeber and David Wengrow (2021) question the idea that inequality was intrinsically linked to agriculture. They propose (and here I can't agree more) that gatherer cultures experimented with *numberless different modes of social organization.* Some of these were more hierarchical, but mostly they were non-hierarchical or less hierarchical than later societies. Likewise, they state how in the origins of agriculture one finds experiments that involved high degrees of *human* equality, or processes that went back and forth between more hierarchical and more egalitarian societies. Thus they want to dismantle the predominance of a vision that builds either upon Rousseau and the idea of an Eden before agriculture, or on Thomas Hobbes's *Leviathan* and the idea of an intrinsically evil human nature that needs to be repressed in culture.

Nevertheless, their critique shows important humanistic and anthropocentric biases. By focusing yet again on *human equality as the main problem,* ignoring the radical disruption of human societies on the planet and all its life forms, overlooking the extinction problem, confusing symptoms and causes. Inequality is itself an effect

and clubbling cultures, now being superseded by phone apps and chemsex) see Books 3 and 6. On the ritual orgy in imperial cultures, see Partridge (1960). On the ritual orgy in tribal cultures, see Tüllmann (1961) and Rachewiltz (1964). On the chorus, see Nietzsche (1999); Harrison (1903; 1913); and Mariño Sánchez (2014).

Tüllman interestingly claims that it is in agricultural societies where the ritual orgy flourishes more, linked both to the greater dependence on natural cycles and rain, for which fertility rituals became important, as well as to the greater needs to discharge tensions in increasingly large social aggregates. Cultures of gatherers would have been less reliant upon both, which connects to the mentioned theories of Suzman.

of systems of relations based on alignments and splits, which accidentally became dominant after millennia of "experiments" in social organization. Social organization as core point is itself a misleading idea as it implies a subject, or a collectivity of subjects, taking rational decisions on how to design a society, thereby ignoring that a true anarchism has to be emergent, without design and not grounded in rational narrow perceptions. Graeber and Wengrow mention that for humanity to become gatherers again we would have to reduce population by 99.9 percent since so much space is needed for foraging, but they seem to take for granted that this is impossible. Again, a human supremacism that doesn't want to address the problem of overpopulation and seeks to put palliative corrective measures on the current situation. The problem is not to overcome a Rousseau vs. Hobbes dichotomy, still muddled in false conceptions of instincts vs. culture, while assuming that there is a "human nature." My proposal echoes neither Rousseau nor Hobbes: neither the "fall from Eden" of gatherer cultures, nor the "intrinsically evil human nature." There is no essential human nature, and the future lies not in rational choice but in BI and cosensing.

I do agree with Graeber and Wengrow's claim that there must have been an endless plurality of modes of "social organization," choruses, rhythmic fields of life, as varied as those to be found in animals and ecosystems, in the three to seven million years of hominids, and 300,000 years of the *sapiens*. I also agree with them that not all that happened on the past 10,000 years can be equally condemned. But Graeber and Wengrow have a very humanistic focus, their question is *which is the origin of human inequality*, which is a huge problem, because human equality may well be based on vast nonhuman slavery and ecosystem disruption. My proposal for shifting from analyzing the past from 200 years to 200,000 years ago at least, from a human-civilization-centered to a more geological view, is part of a reversal of the excessively predominant human supremacism and its self-complacency and self-indulgence. We need a far deeper self-critique than usual, even only as a first step down from our pedestal.

Graeber and Wengrow seem to ignore, like most others, the extinction cycle unleashed by dominant human civilization altogether, and due to their humanistic optimism they seem to want to find ways forward for an anarchist egalitarian project that may find inspiration in past societies. Their proposal is that there was not a single fall from grace through agriculture and large-scale organizations, there can be forms of civilised large-scale living that are egalitarian among humans. And this is surely an important message, learning from past societies is also something I propose and for which their work is very valuable. But (1) their 700-page book leaves the crucial question unanswered: "what is the source of inequality?" Only on the last pages a hint is given, that perhaps in how charity and welcoming of refugees and migrants in some instances became a mode of domination; (2) due to their humanistic bias, they completely ignore the core role of nonhuman and planetary inequality, as if this did not crucially matter for considering inequality at large. It is the latter that needs to be taken as reference framework, of *which human equality is just a part,* and this for a simple, powerful reason: planetary inequality is creating a full-scale extinction cycle, annihilating our only possible cosmic milieu, which besides being an unimaginable crime and destruction is also a species suicide, and the reason for this is the intrinsically destructive mode of living emerging at least since agriculture, based on massive land appropriation, expansion, and slavery.

Here Milan Kundera (1984) needs to be remembered. It was our moral failure in abusing animals that underlies all subsequent failures of "humanity." Animal domes-

tication is an euphemism for animal slavery, mutilation, and radical abuse emerging along with crops as pillar of human expansion (Patterson 2002; Harari 2015a).

As for Graeber and Wengrow not criticizing scale per se, I agree with them that scale itself is not the core issue, it is the *mode of relation.* My idea about the cause is clear: reductive modes of relation have become dominant through millennia of imposing themselves on a nonreductive Nature (which still expresses itself inevitably in every instance of our lives, but is unable at this point to counteract the catastrophic effects of our massive planetary disruption). Scale, however, has become a problem since the emergence of empires, kingdoms, and states at least, and it is linked to population. In this regard, Graeber and Wengrow also ignore the current processes of algorithmic governmentality. How is it that we are becoming aggregates of a planetary-scale hypercyborg of autonomous algorithms that behind the fake façade of bottom-up structures impose themselves on the planet in an ultimate dystopia of extinction?

One question is: could the mode of relation proper to agriculture–farming–urbanization *not* have ended up in empires, states, and mass extinctions? Another more urgent one is: since it did, how do we revert the situation to reduce the effects of the already ongoing mass extinction cycle?

We need a much sounder self-critique of the failures of human supremacism. We will need to distinguish which *technē*s of life (which movements–perceptions) emerging over the past 300,000 years are intrinsically reductive and which ones sustain indeterminacy and variation in relations and perceptions. By what reductive movements–perceptions has a narrow-minded, self-obsessed, fearful, dominant "human" subject appeared, and its dominant mode of reductive thinking which operates in terms of reducing the world to semiotic abstractions numeric quantities, and causal relations?

The response is double or triple: because the movements creating this type of human have created a *phylogenetic* mutation of bodies, a *technogenetic* mutation of the planetary environments, and an *epigenetic* mutation of movement repertoires in the social field itself. My proposal is to learn not only from past human societies but from nonhumans, for a much deeper understanding of emergent processes that allow a creative evolution to flourish and undo the disruptive anomaly, the extinction cycle of the age of algorithms.

For this we have to become much less self-centered, and more symbiotic and ecstatic. This implies questioning all the self-centered and exclusionary spaces that humans have created, now covering half of the terrestrial surface, from airports to leisure, or a city on Saturday night with all bodies aligned with the toxic self-referential circuits of desire.

4.9 Decalogue for Undoing Cosmological Ignorance

The same positivistic science that humans have created to dominate has come full circle and now shows the suicidal nightmare of that enterprise, and its poverty and wrong assumptions, if we want to see it. The science of the last century has already dealt with dismantling the ontological arch-fallacies on which human supremacism had been built, but we still have the enormous challenge of dismantling its roots in common sense:

— The fallacy that matter and non-rational life lack agency and dynamics, when it is the complexity of terrestrial flows, unlike all other known planets, that has allowed the evolution that we have paralyzed, and when everything in matter is dynamism, from quantum fluctuation to the lives of stars;
— The fallacy that evolution is just a barbaric struggle for domination, when we now know that evolution is first and foremost cooperation, symbiosis, indeterminate variation, and diversification;
— The fallacy that cultures previous to or different from "civilization" are or have been barbaric oppression, when it is quite the opposite. Civilization has created never-seen-before oppressive systems of domination that lead us to extinction and agriculture was "the biggest fraud in history." It is the opinion of numerous anthropologists that forager societies lived better (Harari 2015a; Suzman 2021);
— The fallacy that the highest mode of thought, agency, creativity, ethics, and freedom is the rational mode that controls and dominates by reducing the world to categories, when embodied cognition is opening up the way to a radical redefinition of thought as movement. All nonhuman animals and other life-forms are sentient and in so far as they don't impose themselves, one may argue that they have a superior, less reductive intelligence. The openness of the ecosystem and the capacity to sustain it are the measures for freedom and intelligence;
— The fallacy that we are the "verbal" beings and that our only rich mode of existence is through complex semiotic matrixes and self-reflexivity (it is astonishing how far we have put on a pedestal all our "pathologies"), and the recognition that we are above all nonverbal and that immense experiential wealth can be created only from the movement and sound of the body, in its smallest variations.

Our common sense is permeated by a humanistic image of the cosmos. We occupy the center of the universe, which is within our reach to exploit and dominate. But science in the twentieth century has completely dismantled that image, although with it very old visions have reemerged. Was it worth the trip in order to return to them? As part of my "ontological therapies," I propose to dismantle humanist cosmological ignorance and show how ridiculous is the obsession with control, domination, and immortality.

1. *On the spacetime scales and the dynamism of the cosmos*: a trip to Alpha Centauri, the closest star, would last between 100,000 and 300,000 years,[96] as long as the *sapiens* has been on Earth and thirty times longer than it took for dominant civilizations to emerge (and self-annihilate). In general, the distances between stars are of the order of a million times greater than between planets in a system. A walk through a part of our galaxy would last billions of years and in the process, it would merge with the Andromeda galaxy. In other words: there is no planet B!
    a. Imagination exercise to understand scales: if we made a scale model of the solar system with a 10-centimeter-diameter sun located at the center of Madrid, the

96 This is considering the speed of the Voyager 2 space probe. As of 2021, speeds around ten times higher have been reached with the Parker Probe, which is anyways a very small ship. And even then it could imply a 30,000-year trip, and 100,000 years to planets around 100 lightyears away! I don't think we will ever be able to leave the solar system, fortunately.

Earth would be a pinhead at 15 meters, Neptune would be like a marble half a kilometer away, and Alpha Centauri would be in Moscow.

b. The light that we emit now will never reach the most distant galaxies that we observe because they will be causally disconnected from us due to the cosmic expansion, so that in the distant future, we will see nothing in the sky beyond our own galaxy, which will have merged with those of the local group. The universe is, fortunately, not a Cartesian spacetime that can be mapped to appropriate it!

c. The night sky visible to the naked eye is already a time map: the light of each star comes from different times; some of them from thousands of years ago. The deep field observed with telescopes takes us to the early universe billions of years ago, and also tells us about the expanding cosmos due to the redshift of galaxies that are moving away from us, the faster the farther they are, some of them faster than light.

d. Hence the extreme improbability of contact with extraterrestrial life! Beyond the improbability of traveling at speeds much higher than those we know now, even sending signals at the speed of light, we should be listening to a specific region of the sky in which there is a planet that, if it is for example at 3,000 light years, hosted a civilization that discovered and emitted signals, like the ones we can hear and emit ourselves for less than a century, exactly 3,000 years ago. A civilization that, unlike us, will not self-annihilate just shortly after creating this type of technology and that is still there?

2. *Radical dynamism of "matter"*: matter mutates first and foremost in the nucleosynthesis of stars. We are children of a second- or third-generation star, the minimum time necessary for complex elements such as carbon to emerge. Star systems are of such astonishing variety that they are beyond current human imagination (as do the varieties of bacteria and other life-forms on the planet). It is a hyperdynamic and self-organizing cosmos, propelled by quantum fluctuation that are everywhere, including all the voids in the cosmos, both interstellar and those inside the atoms of our bodies that are just as immense. Radical evolution of the "material" cosmos and the ridiculousness of seeking immortality!

   a. We are in a new-born universe. There are still 10,000 generations of suns ahead, with unimaginable cosmic evolutions, and then an even greater eternity of long-lived stars and then even longer until the last black holes evaporate, toward a potential heat death in a googolplex of years.

3. *We are children of unimaginable cosmic fluctuations*. Conditions that we take for universal are unique effects of a cosmic accident, like the seasons, effects of a collision tilting the axis of our planet. Complex multicellular life requires a complex balance between dynamism and stability, which appears to occur only on very few planets. In ours it is the offspring of myriads of cosmic hazards. The seasons are the result of the tilting of the axis produced by the collision with another planet that also created the moon, which in turn stabilizes the axis, unlike Mars which has a more chaotic oscillation. The oscillations of the axis by the gravitational interaction with other planets create the glaciations every 100,000 years or so. Venus could be similar to the Earth but by some cosmic hazard it developed an extreme greenhouse effect long ago that makes it uninhabitable, the absolute image of hell. On each planet the conditions for life are diverse, complex, precarious, and changing, modulated by myriads of extinctions that change the course of an evolution or annihilate the possibil-

ity of future life. Planets similar to ours are probably extremely rare, and even then, the differences will be enormous: their star type, their gravity, atmosphere, magnetic field, tectonics or vulcanism, their evolutionary state, their cosmic accidents, their fluctuations that create unexpected forks in evolution, their microorganisms and chemistry.

4. *On each planet where life has the opportunity to proliferate (probably very few) it will do so in very different way.* Similarly, on Earth each evolutionary branch is unrepeatable, linked to all the fluctuations and evolutions of the planet. On Earth, organic life took a long time to appear, and it did so after a great glaciation, leading to the Cambrian explosion of multicellular life 540 million years ago. Agriculture also emerged after a minor glaciation. Only 100 million years ago the current continents did not exist and 50 million years ago the Himalayas did not exist, which arose from an incredibly fast tectonic movement, and with it the monsoon, in whose area of influence the largest human population has proliferated since ancient times. If fluctuations in the Earth's climate had not cleared and dried up, tropical forests in Africa a few million years ago, hominids who had already acquired bipedal posture in the jungle 4 million years before along with articulate use of free hands, and vision at a distance, might not have started to develop tools, ensuing later in language, and an algorithmic intelligence! We are not a teleology but an anomaly! We are an accident or anomaly derived from billions of evolutionary hazards, arising from eons of prodigious fluctuations of the planet, climate, tectonics, changes in forests, glaciations. If a meteorite had not exterminated the dinosaurs, mammals might not have proliferated, including primates. *We are children of a meteorite! And now we are worse than a meteorite, creating an even faster mass extinction!*
5. *Our civilization has arisen and is in the process of annihilating itself in the blink of an evolutionary eye, a million times shorter than life on Earth.*
    a. If the 4,500 million years of history of the Earth were equally narrated in a book of 4,500 pages and a million words, human civilization would be only the last word. What word would it be?[97]
    b. If we compare the history of the Earth with a human life of 90 years, we would be in the middle, and civilization would have lasted less than a headache.
6. *Against the cosmic flight and the absurdity of terraforming planets*: bacteria have terraformed the Earth for billions of years, along with a thousand cosmic processes. The Earth is intertwined with its cosmic, stellar, interstellar, and galactic environment, as well as with its flows and microorganisms, with its entire biosphere, where physical and biological flows are inseparable. It is in this movement that evolution arises as a process of increasing variation.
    a. Trying to terraform an entire planet in a very short time, in a programmed way, to colonize it, is a cosmic idiocy that can only result in disaster, and that only obeys a hypernihilistic will of planetary destruction and cosmic flight. It would be a fantastic business, yes, fantastically absurd, and catastrophic.
    b. Leaving a planet demands exiting its gravitational influence with an escape velocity that demands rockets and very sophisticated technology. So traveling to other planets one would need to carry everything necessary to build a space

97 On the exercise of imagining a 1,000-page book with the history of the Earth where civilization would be condensed in the last word, see Leakey and Lewin (1982), cited in Patterson (2002, 4).

station as well, not to speak of the mentioned differences in atmosphere, gravity, radiations, microorganisms, and so forth.

7. *Fear of an asteroid?* An asteroid is less for a galaxy than a single bacterium for our body, a galaxy is the same for the observable universe, which is perhaps part of infinite multiverses. What would nowadays annihilate life was necessary in its day for it to emerge: asteroids and comets that brought water and carbon molecules in a cosmic pollination. In the same way, bacteria and viruses are the matrix of evolution, from which humans now want to separate themselves, creating a Planetary Holocaust.
8. *The* sapiens *has been living with the planet for 300,000 years in a much more sustainable way than nowadays, with a very low population.* We must dismantle the fallacies about gatherer cultures and acknowledge their plurality, creativity, inventiveness, their techniques, their choral arts of existence.
    a. Animal superiority: so-called natural evolution is biotechnological and intra-active: the gradual modifications of bodies that emerge with the evolution of entire ecosystems, where everything is recycled with no trash or pollution! The biotechnical extensions of birds' beaks, of claws, of fur, or the astonishing architectures of spiders, made of their own bodily fluid. Such slow intra-active biotechnical mutations are far superior to an accelerated, controlled and imposed "artificial" evolution. Our vulnerability is also our openness, the price we pay, and need to pay, for evolutionary openness![98]
9. There is the same complexity and immensity in scale up and down: Inside the body we have a microcosm just as vast and complex as the entire universe: the scale relationship between the tiniest subatomic particles and our body is similar to the scale relationship between our body and the observable universe with its 100,000 million galaxies. And lower still is quantum foam, and higher up swarms of multiverses. In both cases the vacuum predominates, which is actually made of quantum fluctuations. An atom and a solar system are very similar: a tiny nucleus and a fluctuating cloud very far around it, and in between immense fluctuating voids. A human body has as many cells as there are atoms in each cell. A human DNA molecule has as many atoms as there are stars in our galaxy and as the number of galaxies in the observable universe. And everything is made of swarms-vortexes-oscillations-foams intertwined in fields that arise from fluctuation.
    a. Everything moves without centralised control, which is as ridiculous an idea as that of the Divine Providence controlling everything in the cosmos, as Giordano Bruno denounced.[99] The body moves: there is no external agent to control it. In fact, reductive intelligence is the problem! Error of controlling!

98 I have a trans-species family and admire my nonhuman companions every day more and more. Till recently my deepest affective bonds have been with dogs, and now I am discovering with amazement the relation to cats and admiring their movement. Their self-sufficient capacity to love, dwell, and survive (without creating systemic domination and mass extinctions), their graceful movements, their sensory capacities, their fur, and bio-technical prosthesis. The astonishing and beautiful, shiny, impermeable, black fur of my cat companions seems to me such an evolutionary advantage with regard to the naked skin of humans! So does their movement, their kinesthetic relation to the environment, not unlike that of neurodiverse people or children, who are also superior to rational human adults. I cannot but feel intensely inferior to all of them, admire them, learn from them!

99 As exposed in a hilarious vision of one night in his village, in the 1584 text *The Expulsion of the Triumphant Beast.* See Rowland (2008, 17–18).

   b. The self-conscious "human" being is not superior. Away with the anthropic principle! The challenge is to mobilize new nonreductive intelligences: paradoxes of reductive intelligence that drives itself to extinction in the blink of an evolutionary eye!
   c. Redefine intelligence as a capacity for mutation and symbiosis, for variation, plasticity. Neuroplasticity and sensorimotor plasticity are one.
10. *Nature is variation,* and the same must be said of "human nature" instead of pretending that it consists of immutable essences! Let's reclaim the ability to change, instead of holding on to fears and patterns!
   a. Primacy of mutation: death and sex are part of mutation!
   b. Primacy of symbiosis: the anomaly is domination!

4.10 Epilogue on Technics

Against the still prevailing humanistic myth that technics is at the service of a rational human that creates it, thereby dominating and shaping the world, while the human is autonomous and distinct from technics, over the past seventy years or so (not surprisingly since the emergence of cybernetics) a number of discourses have proliferated with a multifaceted rethinking of technics. One important strand has been in theories that manifest the technical aspect of things previously considered natural, a tradition arguably initiated by Foucault's (1978) *History of Sexuality* and his "technologies of the self" (with inspiration from Nietzsche's genealogical critique) which is taken on by Teresa de Lauretis's (1987) technologies of gender, amongst many others. This took another important impetus in Haraway's (1991) *Cyborg Manifesto,* which has an important diffraction in Sandy Stone's (1987) *Posttranssexual Manifesto,* as well as the many texts on sexual practices beyond reproductive heterosexuality, starting with Gayle Rubin (1984) as well as the writings of Monique Wittig (1992) and later Judith Butler's performativity (1990) along inspirations from Simone de Beauvoir or Luce Irigaray (1985a) which together with Katherine Hayles (1999) have expanded into posthumanistic turns in feminism, exposing the technological and discursive construction of gender, sex, racism, or ableism and more generally of the human, the species and its epigenetic and technogenetic spiral, all of which turn out to be interconnected as part of humanism's colonial project.

Not by chance this way of thinking appears as the human crosses a new threshold of entanglement with information technologies. Haraway's figuration of the cyborg was an important turn in this process, which, resonating with Bruno Latour (1993) amongst others, led to a broader definition of how technics generally craft the human in a process of coevolution or technogenetic spiral.

Stiegler (1998; 2018) has developed a detailed account of this expanding on André Leroi-Gourhan (1993), with earlier resonances coming from the Toronto School of Communication (Innis 1950; McLuhan 1964). Along the way, Derrida's *supplement* and Heidegger's pioneering thought on technics have been influential. Simondon was a crucial precursor gaining now momentum, opening up the thought on technics as individuation process with its own potentiality and openness, taken on by Deleuze and Guattari's thinking of technology as including an abstract virtuality or intensity, which Rosi Braidotti couples with posthumanism and feminism, while Anna Munster (2006) or Luciana Parisi (2013) expand on the novelty arising within technics.

Hayles (2017) and Mark Hansen, in turn, consider the new accounts of cognition arising in distributed technical systems connected to issues of the extended mind. More generally, embodied and extended cognition has also allowed a rethinking of our embeddedness in technics. Paul Virilio's critique of speed, Jean Baudrillard's critique of simulacra, the total screen, and the desert of the real... the number of poststructuralist authors enriching the critical approach to technology is endless. Vilém Flusser (2000) offers an original different take by inviting to think the metaprogrammes that every technology expresses, thus resonating with McLuhan's metamediums and even Maturana's *autopoiēsis*. Cybernetic control feedbacks and issues of entropy in creating new communications systems are its core underlying preoccupations.

It appeared already revolutionary at some point to define the human as tool-making animal, as defined by technology, rather by holy divine reason, but this had a double effect. Taken to its limit, as done by Haraway's cyborg, it implied the dissolution of any bounded category of the human, so that if these technologies with which the human itself is confounded are produced by the human, we enter the self-referential and inescapable loop of discursive and performative production, in which everything we do will be a process of technocultural production, a reinscription, subversive or normative, of constructs, denying nature its dynamics. This bears in itself a deep contradiction, for who is after all the subject enacting technics and discourses that split technology from nature if this subject is confounded with its own technologies? Agency is distributed with technology, but nature seems to lack any dynamics, as every attempt to name it is a discursive–technological production that defines the boundaries of nature itself. Nature thus becomes the radical Other of a self-referential loop of technocultural inscriptions in which what is denounced is *how certain technologies had presented themselves as natural.* Political agency will be limited to "appropriating" them, but this way affords almost no way to think novelty, nor nature's dynamism.

At the same time, the Deleuzian approaches present a similar problem but from the other end: nature has its dynamism, but it pertains to an abstract virtual plane, in bipolar dialogue with the formal plane of discourse, and whose impersonal agency is difficult to grasp and has hardly a sustained in-between.

So, on the one hand all dominant categories that were considered natural but also the self and its holy grail of consciousness appear as technical, while on the other technics itself is considered open to a plane of infinite virtuality. This is a double-edged sword with two sides that don't see each other: the discursively constructed and the open to virtuality. On one side, we have the tendency to performatively deconstruct every existing concept that seems to be natural and expose it as being technoculturally constructed (thus subject to rearticulation, by "appropriation" of the technologies of oppression but always implying a resignification), on the other we have a definition of technics as itself nature, as having its own intensive, open-ended dynamics, but in a virtual abstract realm that seems beyond discursive reach, as the technologies of insects that some technical systems try to imitate. Both ends seem not to be able to talk to one another. The discursivity bias is at odds with the virtuality bias, conforming a double-edged discourse–virtual polarity bias. Both entail black boxes which I want to open up through movement, which has been the great missing term for a renewal of philosophies of technics.

Underlying both approaches is the problem of agency which gets either bound to rational subjectivity or abstracted into a virtual realm of intensity. I propose to

bridge this by claiming openness at the core of our actual proprioceptive movement fields, whose capacities to move exceed by far the narrow scope of rational agency.

...

I propose a different turn by considering technics a property of movement fields in nature which can express diverse degrees of alignments and modes of organization, of which discursive apparatuses are part. But this broader field is not an abstract incorporeal plane, rather it is an intrinsic aspect of movement conceived as field, and thus also of our proprioception, so that we participate in openness as much as in alignments.

I propose a reverse move to both tendencies mentioned above, by taking nature as a broader field of movements, and *technics as implicit part of nature,* as the memory of fields, but along many degrees and modes of organization, where human technics is a more aligned and dominant one. So, I reverse the previous approaches by saying *not that nature is technology, but that technology is nature!* This allows us both to expose the technological production of alignments and the broader dynamics of nature. *Techniques of naturing,* as proposed by Sophie Gosselin and David gé Bartoli (2019a; 2019b) are those that take on the movement of variation, rather than imitating, reducing, and fixing nature for the sake of controlling it.

So, yes, all categories are "technological" but part of a broader field of technics of nature. Plastic techniques will be those that mobilize nonreductive, mutant compositions. Of course, what counts as open must be subject to ongoing critique.

Thus we have neither *bios* nor *zoē*. Sex, affect, desire, spacetime, or the subject are neither pure cultural constructs nor purely anonymous intensive forces. Reinventing them can never be just an issue of the rational subject, nor of "pure intensity," but a larger issue of nature's dynamism as it comes through in our BI.

I diverge here from Stiegler's pharmacological vision of technics as a double-edged medium that can be both poison or remedy, an idea that has the danger of reinstating the fallacy of technology as neutral medium. We need instead to understand what tendencies to alignment particular technics expose and open them up through more plastic movements. The technique of technics is in the type of movement. This is the crucial aspect so far missing in the critique of technology.

My claim of technology as intrinsic part of nature has to go along the metaformative turn. Every time we diagram a field's dynamics, we are not representing a preexisting truth, but enabling a new movement.

...

Technē in Greek concentrated the meanings of technique, arts, or crafts and was both *poiēsis* (creation) and *praxis*. *Technē* referred not only to arts and craftmanship, thus vaguely what we may call technology and arts today, but was also understood as one of the two primordial types of knowledge, together with *epistēmē*, in this case a knowledge that is always practical, situated, in variation, embodied, a knowledge about making or doing. But any *epistēmē* is already a *technē*, an embodied, situated knowledge so that it implies episteme (and even *theoria*).

Erin Manning (2013) proposes the term technicity as distinct from technique, to approach open-endedness in technical processes. Gosselin and gé Bartoli (2019), in ways similar to The Invisible Committee (2015), claim techniques (as nomadic variation) against technology (as stratified comprehensive array).

4.10.1 On Techno-Indeterminacy and Body *Technēs*: Beyond Technodiversity

Following Pieter Lemmens (2020), Yuk Hui (2016) provides a synthesis of Martin Heidegger's and Bernard Stiegler's accounts of technics by acknowledging both the plurality of cosmologies and of technologies, in a double move that acknowledges the technicity of the cosmic and the cosmicity of technics, pluralizing both, and opposing the dominant monotechnics that is currently unleashing a global crisis. Specific modes of technics correspond to specific cosmologies, but in an open loop that resonates with the *ontological turn* in anthropology (as exposed in the work of Philippe Descola, Viveiros de Castro, or Latour amongst others), which questions the nature–culture split and the idea that there is a single world of which there are endless representations. There are actually endless worlds. Plurality then is about the coexistence of these worlds and their nonviolent coevolution.

Technology has the potential to become a comprehensive array of techniques and tools, but it may also refer to an open field of common knowledges and techniques, which are *always movement repertoires, as the memory sustaining a field.* This can be extended to genetic toolkits and folding affordances of proteins, or even to electromagnetic oscillations accounting for atomic bonds and below. The problem is when certain tools, techniques, and technologies become a dominant, reductive, and closed set of practices.

Techniques need to sustain a lively improvisational process grounded on proprioception rather than abstract themselves into set of rules and alignments. This is where Body Techniques or *Technēs* (BT) need to be claimed, as plastic movement knowledges of the body and across bodies, associated to BI. Marcel Mauss (2006) called body techniques those relative to what a body can do through its movements, gestures, and habits, without added tools, instruments, or machines.

Here I challenge the 2.75 million years of tendencies to extend in tools, exposing that the greater the extension, the greater the reduction, dominion, abstraction, and destruction. Returning to the body and regaining a lost richness and variation in movement and perception is the key for renewing symbiotic evolution.

The BI & BT r/evolution puts openness at the core of movement and technics. The deeper issue behind diversity is indeterminacy or nondetermination affording a process of diversification. Plastic movements–perceptions as collective knowledges and life techniques in variation need to be regained.

Since every technology, technique or *technē* is of the body and *is* movement (all *technēs* are kinetic) at stake is the mobilization of nonreductive *technēs* that sustain indetermination, symbiosis, and variation: enferant, clinaotic, metabody *technēs*.

Down with anthropotechnics, up with symbiotechnics!

The openness in technics is the questions: Technoindeterminacy!

4.10.2 Form and Monotechnics: Moving Beyond Extinction Technologies

The tendency of algorithmic technics to become autonomous, as self-organizing algorithms may or may not cross the threshold of general AI, has been implicit in the dominant conception of humanism, as a reductive outgrowth of the biosphere leading to the stratum of *form.* Form is the fifth (dispensable) level in the F5 Theory of Fields. Form is not expressing a consistent field in itself but a reductive outgrowth, a recent bifurcation in nature. It cannot become a consistent field because it lacks openness. It wants to block fluctuation.

I have taken you on a journey from the Big Bang singularity tuning this universe to the Big B.A.N.G. (bits, atoms, neurons, genes) singularity of convergent technologies as a reductive black hole within this universe and this Earth. I have proposed a swarming and orgiastic cosmology and evolution where fluctuation is the mobile motor of a universe un/folding in variation, with a will-to-variation, with occasional reductive folds, which need to be overcome, launching further variations.

Will the promise of an AI singularity ever arrive, and if so, will it correspond to the control dystopia of its promoters or to something utterly unthinkable? Is it instead unleashing an extinction? Or will it be decentered along the way by a BI & BT r/evolution? As a singularity, it should be unthinkable.

The Algoricene
A Kinetic Ontology of Power and Dominion

To be prohibited explicitly is to occupy a discursive site form which something like a reverse-discourse can be articulated.
— Judith Butler (1991, 20)

Now, in the nineteenth century [...] *a strong advance in social controls* [...] *allowed also the constitution of a "reverse" discourse.*
— Michel Foucault (1978, 101, translation modified)

The sublime virtue is infinitely deep and vast, it goes to reverse all things.
— *Daodejing* (Laozi 1977, translation modified)

5.1 The Age of the Great Alignment

We live in the Age of Algorithms, the Algoricene, where for several millennia, and increasingly so, all possible movements are segmented, codified, and choreographed on all scales, from the subatomic to the planetary and beyond, in a tendency to negate indeterminacy, ensuing in radical homogenization, acceleration, and disruption. It is the age of alignments and extinctions, the age of systemic closure, the age of the Great Reduction.

Currently, the minutest movements of bodies, human and nonhuman, are continually measured, predicted, and oriented within Big Data[1] and Artificial Intelligence (AI) systems that increasingly manage life, present and future: from agriculture,[2] consumption, and genetic engineering to traffic, stock markets, and medical systems; from affects, desires, and nonconscious perceptions to knowledge, memory, and state politics; from war and hard coercive power to soft ubiquitous surveillance and disruptive information warfare.

1 Big Data is not only the sensing and storing of massive amounts of data coming mostly from the digital traces left by any user in communication networks and the internet, but especially the sophisticated processing in which increasingly complex algorithms find new patterns by correlating data bases. Big Data is the new threshold of computation and the new data economy that is increasingly governing all aspects of life, social, and economic systems, related to autonomous algorithms, machine learning, and AI.

2 Monsanto has increasingly moved its business to Big Data, at least since 2013 when it acquired The Climate Corporation and subsequently a number of other companies.

Half the world's population carry in their pockets a seemingly innocent and immensely powerful device that still orients our perception through a window, grid, and frame that stems from Renaissance perspective but is full of sensors connected to the heavily gridded infrastructures of planetary-scale computation systems (the "cloud"). Every app installed on the smartphone is an autonomous algorithm of such opacity, dynamism, and complexity that it defies every common-sense assumption we have inherited from earlier societies grounded in the static perception of things. Their operation is so dynamic and opaque that it is increasingly impossible to know what's going on behind the algorithmic scene. The challenge is not about thinking a technological future of AI, but to develop new concepts for what's already there: a world of dynamic algorithms entangled with us in new kinds of intimacy yet to be accounted for.

An algorithm is a sequence of steps that can be codified, and it's thus about cutting movement into chunks that can then be reorganized. This, however, is not as simple as it may appear, as it has required millennia of technological alignments. The first static algorithms were perhaps looms, gridded structures performing sequences of steps, and the ensuing gridded textiles, for about 30,000 years. It was also a loom, the Jacquard machine, which sparked the way to dynamic algorithms and computation culture in the nineteenth century. The loom points to automation from the start, and it's all about gridded choreographies, codified movements, weaving a new kind of gridded reality of textiles and codes. Gridded urban organizations perhaps also afforded an algorithmic organization of the city, systematized in Greece about 2,600 years ago. In 1436, the first theory of linear perspective systematized the fixed point of vision in relation to a frame that reduced movement to the manual, a point-by-point transposition between grids.

For millennia we have inhabited societies where movement has become codified in more or less static sequences, geometries that oriented behaviors, a period I call the *Macrocene*.

The onset of cybernetics in 1948, and more particularly now in times of Big Data, brought the sequences of steps that we may call algorithms, which have become increasingly dynamic and complex to the point at which their operation becomes inaccessible to human comprehension. Meanwhile, they evolve in increasing autonomy from human decision making and manage more and more aspects of life on Earth. I call these *hyperalgorithms* and the period of their domination the *Hypercene*. Their logic pre-empts the future and emergent, not just managing the known, which corresponds with Brian Massumi's concept of ontopower.

The Macrocene and Hypercene expose two planetary-scale fields of algorithmic reduction, two phases and strata of the *Algoricene,* or Age of Algorithms, our geological era.

Older regimes based on static behavioral patterns (urban grids, perspectival vision, anatomization, and mechanization of bodies) have culminated in biopower and biopolitics, as "the explosion of numerous and diverse techniques for achieving the subjugation of bodies and the control of populations" (Foucault 1978, 140). These have now been superseded by ontopower, which operates not in beings or states of things as already preconstituted, but at the level of their emergence and movement, colonizing becoming and the very conditions of emergence of life.

The *reduction of movement to patterns,* first static and now dynamic, is core to old and newer forms of domination. The Algoricene and its Algorisphere are a body: a heavy material infrastructure of movement reduction. The Algoricene propels itself

forward, through all its mediums and formations, following a smoke-ring model,[3] a vortex in exponential acceleration.

5.1.1 Ontology of Domination as Reduction, the Productive Logic of Reduction, and Reduction as Anomaly in a Nonreductive World

The problem we tackle in Book 5 is not power in general but *power as dominion* or *domination,* since power can also be a creative power to become-with the world, a symbiotic power of relational growth. Domination, instead, is the power of that which grows by itself, not relationally, hence imposing itself on others.

Domination is always an issue of reducing movement, its plasticity and indeterminacy. Reduction is always production of a homogeneous field of alignments that, incapable of fluctuation, impose themselves on other movements. Domination is about reducing the fluctuating indeterminacy of movement fields by segmenting and reorienting, probabilizing and reprobabilizing, movement.[4] Power is always productive and pre-emptive in that it is always about creating a field of alignments. Domination is the very field, thus always environmental, ecological, or relational. We need to account for how reductive fields emerge, spread, and dominate their complex evolutions, strata, and dynamics, their inconsistencies. And we need to account for how they can be opened.

Quantification itself is only possible in aligned fields with fixed sets of references. It is a mode of relation. The quantitative and addictive intensification of pleasure, desire, joy, or emotions experienced when one is aligned with fixed points of vision, for instance in TV or gaming, is part of this reductive logic. One of its most successful mechanisms of resilience is that it undermines sensibility and resistance in one go. Alignments spread across other fields, imposing their narrowing ratios, reducing, at the same, time sensibility, sensitivity, and resistance to alignments.

The society of alignments is intrinsically addictive. The more we are guided by external cues, and not by internal proprioception, the more lack we feel. The more we rely on the external cues in order to satisfy it, the feeling of a fundamental dissatisfaction increases because we lack our internal fluctuation. Markets unfold all their tricks to trap us and keep us trapped, with a radical engineering of prefabricated desires.

Justifying dominant models based on the apparent pleasure and dependence they generate, the apparent need and desire that people may have for them, is problematic and tautological as it relies on alignments imposed by the ecology itself. The "free-willing" subject wants to stay aligned with the very frames that have allowed its emergence and still sustain it. But it is the frame itself, talking through the subject,

3 Peggy Reynolds (2012) proposes the model of the smoke ring as the underlying dynamics of the grid. Smoke rings have a triple movement of forward displacement and internal (poloidal and toroidal) rotations that feed the ring's movement forward with maximal economy, propelling itself in nearly autonomous manner while traversing, transforming, and feeding other systems. This precisely coincides with my proposal of field metaduction as process of multiple simultaneous un-/in-/enfolding in variation, building upon its previous iterations.

4 See Massumi (2015, 101) on ontopower as "resetting the parameters of emergence so as to redistribute the probabilities" whereby ontopower is about "reprobabilising." See Massumi (2015, 13) on how power turns the indeterminate into an actual effect, resonating with Parisi's notions of postcybernetic topological control as a step-by-step determining of infinities (Parisi 2013, xiv). Ontopower recognizes the intrinsic indeterminacy of the world as "amorphous battlefield" (Massumi 2015, 224).

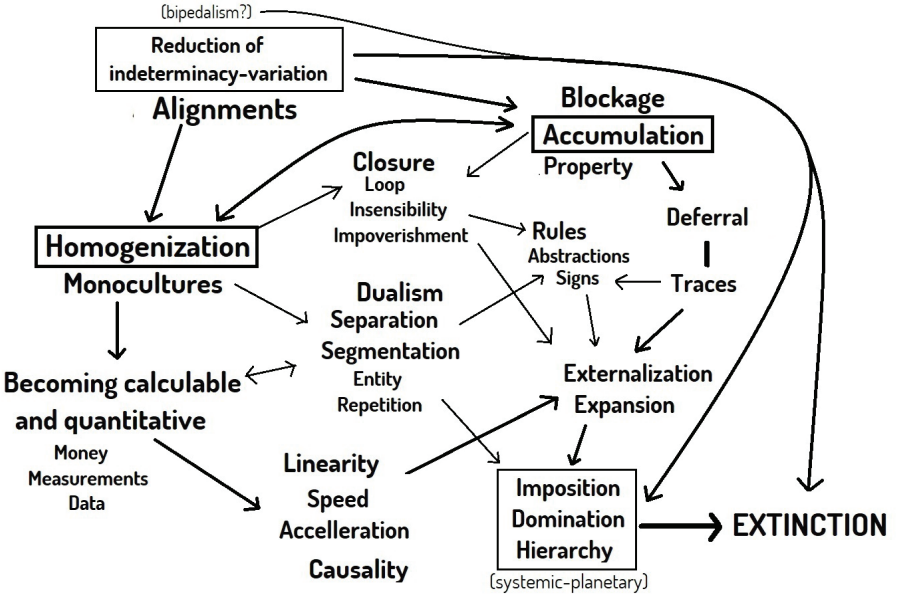


Fig. 25. Alignment–homogenization–fragmentation–accumulation–dominion diagram.

that wants to self-perpetuate as an alignment. "Human" diversity in the Algoricene is too self-referential and linked to its own motley alignments, while resulting from and responding to the pressure of homogenization. We have created a society of self-referential black holes: individual–family–city–state–society–humanity and so forth. It is time to become less self-referential, more ecstatic and mutating.

5.1.2 Alignments: The Age of Monocultures, Fragmentation, and Enclosures

Alignments are tendencies to, as well as a modes and a degrees of reduction. Alignments are reductions in movement. Reductions of what? Of movement's intrinsic indeterminacy and variability. Alignments are in fact particular kinds of reduction emerging on Earth since the Neolithic, where amorphous fluctuating fields of organisms, microbes, flows, weather, or tectonics, become geometric and formal, losing their openness and irregularity, or get geometric formal fields imposed on them.

Alignments, as reductions of variation, imply on one hand *homogenization and insensibility*. They do so by means of the reduction of qualitative variation, a quantitative becoming, ensuing in linearity or causality and acceleration. On the other they imply *blockage* and *accumulation* (property), deferral, and traces. Both imply closure and *segmentation* (dualism), ensuing in worlds of abstract rules, all of which imply *expansion, imposition,* and *dominion,* which, when reaching a systemic level, imply an *extinction* process. Preceded by 2.75 million years of atrophy and extrusion in tools and weapons for hunting, in herbivore bipeds who unfortunately became carnivors, it is farming, enslavement of animals, and Earth exploitation in the Neolithic which inaugurated an era of massive alignments and fragmentation, of accumulation and homogenization, an Age of Monocultures and Enclosures unleashing the Sixth Great Mass Extinction (fig. 25).

Issues more often dealt with, such as polarities and dualisms or technocultural acceleration, are second-order effects and symptoms and effects of a more primordial reduction of indeterminate variation (homogenization), while property

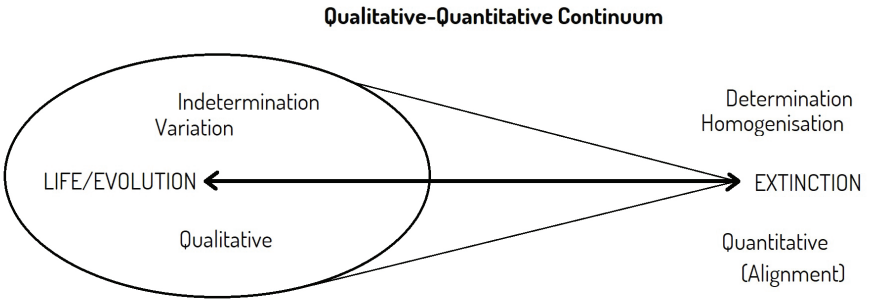


Fig. 26. Quantitative–qualitative continuum.

or money are third-order symptoms, effects of accumulation and the tendency to homogeneous quantity, which are in turn the effect of alignments that reduce qualitative transformation in experience. Hence it is not possible to properly challenge acceleration, dualisms, quantification, or property without challenging the deeper alignments that reduce qualitative variation in embodied experience. All dualisms eventually have their source in a primordial blockage and segmentation stemming from sensorimotor reduction creating causalities and closures, insides and outsides, emptiness and fullness. Reduction and its rigid order create the phantom of disorderly chaos by being incapable of perceiving complexity.

Qualitative and quantitative are thus two ends of a spectrum (fig. 26), but they are not inevitable parts of a bipolar reality. It is proposed here that life and evolution imply the predominance of qualitative variation and that the onset of the quantitative, as result of the reduction of variation, implies a reduction of life and evolution, eventually to the point of implying an extinction.

Most relations in the chaosmos are not understandable in terms of quantities of force in struggle (a neo-Darwinian fallacy where Nietzsche was also wrong), but of qualitative differentials that are irreducible to quantity. Reduction of qualitative variation and indeterminacy ensues in a quantitative becoming.

5.1.3 A Regime of Perceptual Reduction

The Algoricene is a regime of perceptual reduction.[5] Why is it a reduction, what gets reduced? Linear perspective eliminated movement, proprioception, and multisensory integration, and the only residue of movement and of other senses participating is a very discrete and algorithmic manual–visual kinesthetics which still characterizes screen-based interfaces today.

Jean Gebser (1985, 18–23) speaks about the *narrowing of vision* and perception that happens with perspective, which *locates* and *determines* the observer and observed, resulting in a "concretion of man and space" by *restricting* man to a *limited segment.* Anthropocentrism and humanism results precisely from *giving primacy to this limited sector of vision,* this *partial view.* And yet precisely this narrow sector of vision is the one that now acquires a sense of totality, where the part outweighs the whole: "The deeper and farther we extend our view into space, the narrower is the sector of our visual pyramid" (Gebser 1985, 23).

5 Eric Sadin (2015, 128) also claims this algorithmic irreducibility of sensation and the need to explore the "splendour of the sensible" and a nongridded experience (2016, 259). On how digital culture erases sensory capacities see Carr (2014).

Gebser also speaks about the sensory reduction involved in perspectivation by imposing a visual pyramid. Perspective provides a distancing and detachment; it is a sensing at a distance which Gebser correctly associates to power expansion and colonialism. But he also relates this expansion of space with the expansion of the ego that needs to be balanced in order not to get lost in the new infinite space in which they reach out through the visual pyramid, resulting in an "ego-hypertrophy." The rigid conception of measurable space thus results in a rigidification of the self.

The spatially sectored world and its relation to colonialism also grounds any form of sectorization, which becomes narrower the further we reach out into the newly created space, while extreme perspectivation unbalances the ego, which becomes anxious through its obsession with space, its spatially fragmented activity, and its resulting lack of time. Gebser correctly associates the narrowing of vision with fanatism and intolerance as it generates anxious individuals who will defend their point of vision fanatically: individuals with "tunnel vision."

I previously exposed how proprioception precedes and integrates all other sensing modalities. The dominance of fixed vision is the highest point in the tendency toward exteroception, extruding from proprioception and taking over, where extrusion is always linked to narrowing. In this process perception gets utterly reversed: from having proprioception as field of reference to having purely external fixed points as reference for orientation.

The qualitative variation and plasticity of proprioception and multisensory integration is minimized in favor of a quantitative multiplication of a single dominant modality of sensing. Bernard Stiegler analysis this process as both a grammatization (1998) and an exosomatization (2018) engineered through technics as tertiary retention systems enacting our collective transindividuation but also affecting and preventing individuation, imposing a proletarianization associated to computational nihilism. The response however is no to claim individuation, but plasticity and sustained variation.

5.1.4 Double Reverse: Ontology of Dominion as Reduction

The Age of Algorithms is the era of the *becoming calculable* of our world through movement reduction, or alignments. This age issued forth the Sixth Mass Extinction event on Earth. The Algoricene theory exposes a kinetic ontology of domination, its unfolding and dynamics. It diagnoses specific regimes of movement reduction or alignments. It is a *metaformative theory of alignments*, laying bare the process of their emergence and evolution in order to look beyond. It takes to the limit the Nietzschean idea that what needs to be undone is an original reversal of the values of life, a reversal that is in itself a cosmic, geologic anomaly, indeed an extinction anomaly. This critique implies a *double reverse* move where the dominant narrative (of domination itself as law) is presented as "anomaly" in a cosmic evolution based on indeterminate variation. Norms are the anomaly in a fluctuating world.

The Algoricene theory exposes the unfolding of a planetary-scale field of calculable relations. It is one particular *mode* of the metaduction of fields: a reductive mode. It addresses the following question, amongst others: How did will-to-power-of-variation as cosmic drive turn into its opposite, a will-to-power-of-fixation-and-world-reduction, or domination? The confusion between power to vary and power to fix oneself, dominating, is the most significant burden underlying the planetary crisis.

The Algoricene is the history of a transvaluation that has literally put the world and all values upside down.

My field approach to domination expands on Michel Foucault's account of implicit, productive, distributed, mobile power relations,[6] but with a difference. The metaformative shift I propose allows the distinguishing of degrees of alignment in fields, as well as types of dynamics, their openness or closure, and their plasticity and resilience. Different modes of reduction correspond to sovereign and disciplinary societies in the Macrocene (necro- and biopower; emergence of static alignments) and allow for the emergence of control societies in the Hypercene (ontopower; emergence of dynamic alignments).

Necropower[7] is a way of naming the mode of domination that operates by administering death, associated with Foucault's account of ancient sovereign societies. *Biopower* corresponds to his account of the power to administer life, optimizing its performance and alignment with the industrial–mechanical apparatus in disciplinary societies (especially from the seventeenth century to World War II), and its association to colonialism, racism, ableism, and heteropatriarchal monogamy in the nuclear family. Following Massumi (2015), *ontopower* corresponds to the power that manages not just the known but the emergent and future, which corresponds partly to Deleuze's account of control societies. I suggest that since the birth of cybernetics, and more explicitly since 9/11 and the onset of Big Data culture, ontopower moves toward a hypercontrol society of autonomous algorithms tending toward absolute control, aggregating in a planetary-scale cyborg.

These three modes of dominion, necro-, bio-, and onto-, not only represent juxtaposed phases, they also represent accumulated strata or choreographies of movement in ongoing recomposition with one another, building upon one another at the same time as undermining one another, reciprocally overcodifying. We will look at this in detail when analysing the dynamics between Macro- and Hypercene.

5.1.5 The WEIRDness of Dominion: Double-Reversal Mode

What happens when power and control have become not only incredible invisible but desirable and disguised as ultimate liberation? How to resist them? What happens when power and control are unknowably ubiquitous and emergent, attempting to pre-empt the future in unknowably dynamic ways? How does one escape them? What happens when "open ecosystem" becomes a keyword in smart technologies of control designed by global corporations? Is there anything that may exceed such a control? Maybe we need *indetermination ecologies* rather than open ecosystems.

Dominion in the Algoricene is WEIRD (Western, Educated, Industrialised, Rich, and Democratic), thus also *weird* as anomalous and relative to a minoritarian but dominant elite. This is crucial for understanding that the supposed egalitarian freedoms promoted by rationalist models as expressed in the Enlightenment tend to imply planetary-scale models of exploitation and slavery, while imposing a universalistic and neurotypical idea of freedom as property of the rational individual, characterized predominately as European or North American male, heterosexual, abled, rich, educated, and adult.

6 "The multiplicity of relations of force immanent and proper to the domain where they are exercised, and which are constitutive of their organization" (Foucault 1978, 92, my translation).

7 See Valencia (2010) on the current renewals of necropolitics or politics of death as "gore capitalism."

The Algoricene is not a totalizing narrative or truth but a movement of thought in *double-reversal mode*. It looks at the dominant narrative from an elsewhere, telescoping from afar into it, as one would do with a faraway cosmic anomaly, giving a genealogy of a structuring force that achieved a position of dominance with which other expressions of movement have had to contend.

Algorithms are an expression of nature, albeit a reductive one. No technology is neutral,[8] as it expresses certain tendencies in movement, but it is also equally true that every technology generates unexpected processes, uses, outcomes, and impacts, since fluctuation is always primordial and cannot be stopped.

Some readers will surely be objecting that algorithms enable all sorts of things. One should in any case ask how many of the good by-products of algorithms (say the enabling of some social movements) are only palliative side effects of much more dramatic impacts. What algorithmic fields enable are often *tautological, self-referential effects of, or palliative solutions to, its own reductions,* solutions needed to its own problems as well as unavoidable variations and side effects. Also, reduction creates added tensions that may produce intensified creativity in return. The wonders of inventiveness within Western colonial and other imperial cultures follow this logic as both exceeding reduction and counterbalancing it.

5.1.6 What Is an Algorithm: Algoricene beyond Anthropocene and Capitalocene

The Algoricene proposes an unusual account of the algorithm, as movement segment that may be codified. It also assumes that not all movements are algorithmic. Indeed, the algorithm is the foremost and most dominant reduction of movement so far. This goes against a dominant tendency of algorithmic society itself to logically consider the Universe as intrinsically algorithmic. I have already proposed arguments against this in the Field theory of movement (see Book 3). Here I will expose a millennia old history for the emergence of algorithmic fields that have made it possible to fix and segment movement in the first place.

The Algoricene contributes to the current debate on the Anthropocene, and its multiple alternate definitions,[9] by proposing that what eventually goes on behind

8 For instance, why are hybrid technologies, such as brain interfaces, in principle unethical and why is the discourse of a neutral technology, subject to good or bad usages, wrong? It ignores the field dynamics, the narrowing of movement it imposes, aligned with the epochal tendency to justify domination by ignoring the alternatives that it erases, and by concealing the way they are part of a planetary Holocide! If they say for instance, "oh, these technologies will help diverse-abled people," I say: let's create a neurodiverse culture where every type of neuro-motor diversity can flourish without having to align itself, new *technēs* of radical care and symbiosis that undo the dominance of rationalist reductions and restore planetary health! It is not just a question of the need to regulate these technologies and the privacy threats, but to understand the global tendency it is part of and the false dependences it creates.

9 I have used the term *Algoricene* since around 2016 (Del Val 2017a; 2017b; 2018a; 2018b; 2020a). The Algoricene contributes to the ongoing discussion on the term *Anthropocene* for describing the current era (previously, and still by many, officially named Holocene), which has already been challenged by terms like Jason Moore's *Capitalocene* (Moore 2016), Donna Haraway's *Chthulucene* (Haraway 2016), or Bernard Stiegler's *Neganthropocene*. Some focus more on the apocalyptic present, others like Stiegler in the necessary reply, or like Haraway in the broader framework. A plethora of neologisms is emerging, including *Trumpocene, minor Anthropocene, good and bad Anthropocene, weak and strong Anthropocene, Atomicocene, Plantationocene, Euclidocene, Kinocene, Pandemiocene,* or *Langdonpocene* (following Langdon Winner's proposal to use each one's name for the sake of responsibility).

anthropocentric and capitalist processes are particular processes in which a calculable reality is produced and that the reduction of movement to segments–patterns is a crucial aspect of this process and is the very condition for all categorizations of bodies and relations.

The Algoricene is metahistorical because it generates the conditions for what we call history, as a particular timeline emerging with the very movement organizations conforming it. Indeed, it *is* history, and it is the history, birth, and death of linear spacetime and all dualisms; it's the history of (or history as) a movement of increasing separation and alignment. The Algoricene is also the age where form dominates movements. It could thus be called the *Morphocene*.

5.1.7 The Concealment Logic of Pre-emption

Pre-emption operates best the more it is invisible. The concealment of the perceptual infrastructure sustaining a power matrix is a crucial aspect of its operative logic and lays the ontological foundations to Foucauldian notions of implicit power (Foucault 1978, 84) and Judith Butler's account of implicit censorship (Butler 1997, 127–63). These imply that power operates best the more it makes alternatives unthinkable, unspeakable, imperceptible, and impossible. This logic is implicit in movement reduction itself. The more a field that increasingly narrows down perception imposes itself, the less it allows to move and perceive beyond its alignments.

Aligned with fixed points of vision for centuries we believe that there is nothing but the content or our tunnel vision. This is what I call the *content bias* of eurocentrism. It is not only power that works best when it censors invisibly by making the censored unspeakable or unthinkable. Its primary operation lies in perceptual formatting, which I call *metaformativity*. Domination is perceptual reduction, that is, the imposition of narrow perceptions that reduce the field to a set of possibilities, imposing a dominant perception and thought, making the rest imperceptible and unthinkable. The idea of the inescapability of representation defended in many critical circles is the foremost expression of its success.

Biopower was producing that which it sought to patrol: a world of relations based on geometrically split subjects/bodies. Ontopower takes this further, projecting itself into an abstract mathematical field of infinite potentials that are to come.

Biopower pre-empts over long timescales, defining the kinds of viable and stable subjects and objects of perception producing atomized subjects fixed onto

Every term brings different nuances to the important question of how to define this era. If Holocene means "completely recent" period, Anthropocene implies the recent influence of the anthropos as the one crafting the current geological era, while Capitalocene points to capitalism as the major influence, Plantationocene to plantations as racist, colonialist, extractivist paradigm, and so forth. Thomas Nail's Kinocene proposes that this is an era defined by unprecedented motion at geological scale, where all extracted metals and plastics are literally in accelerated motion around the entire surface of the continents, seas and in space, together with migrations etc. Haraway's Chthulucene instead points to the ancient Greek powers of the underworld, below the Earth, the so-called "chthonic" powers, to speak of the narratives we are part of, which are both larger and smaller than anthropocentric tragic narratives, claiming the ongoingness and entanglement of processes and problems, the need to think in a "tentacular" mode and to "stay with the trouble," making kin in new ways that don't imply making children. In turn, Stiegler's Neganthropocene proposes the need to revert the disruptive entropy of anthropic action with a negative entropy and negative anthropy that creates unpredictable bifurcations, against the "proletarianization" imposed by current algorithmic culture. Echoing Langdon Winner's proposal mentioned above I could call this era *Valocene*.

static grids. Ontopower projects itself into a wider field of movements acting in nonconscious micro-intervals through mobile grids. It operates always prior to the slow reflexive consciousness of the atomized subject, in the missing half-second of premotor activity and readiness potential,[10] continually modulating the entire ecology.[11]

The logic of incitement[12] to discourse, described by Foucault in the *History of Sexuality* (1978) as opposed to the logic of repression, is precisely about creating a relational field. From the point of view of movement (as different from approaches based on discursivity), there is in fact no contradiction between incitement or production and repression, since both incitement and repression are about creating *alignments*. The "outside" of the alignments is not an essentialist metaphysical a priori, but it is the plurality of less aligned expressions of movement. The increasing atrophy of proprioception, and reduction of kinaesthetic and perceptual plasticity built in bodies over millennia is crucially underlying bio- and ontopower.

> *The unification effected by the Spectacle is no other than the official language of generalised separation.* [...]*The means [of the spectacle] are also its ends. It's the sun that never sets.* [...] *It covers the entire surface of the world.* [...]*The spectacle collects the previously split but it collects it in keeping the split.*
> — Guy Debord (1995, 12, 15, 22, my translation)

> *Having failed to create computers capable of equaling human beings, they've set out to impoverish human experience to the point where life is no more attractive than its digital modelling. Can one picture the human desert that had to be created to make existence on the social media seem desirable? The poverty of cybernetics is what will bring it down in the end*
> — Invisible Committee (2015, 69–70)

> *The nebulous nature of desire also points to the differences between an abstract computational model and the noise of a world too full of ambiguities and complexities ever to be captured fully in a model.*
> — N. Katherine Hayles (2012, 42)

> *The ramification of complex social systems in the alter space of communications technologies suggests a war between simplification and multiplicity.*
> — Allucquère Rosanne Stone (1996, 44)

5.1.8 Exponential Nihilism

If nihilism is the negation of values, and if we follow Nietzsche in considering that there was at some point in history a transvaluation toward a negation of the will to power, a reactive force that has become dominant, I relate that reactive force to

10 See Massumi (2015, 97) on the modulation of readiness potential, and (235) on how surplus value of bare activity is captured.

11 That's why I propose that it's important to mobilize the alloceptive swarms in excess of rational consciousness, always in the "missing" half-second of premovements, always already in a quantum excess of ontopower.

12 See Massumi (2015, viii) on ontopower as power to incite and orient emergence.

the Algoricene, and the transvaluation to a reduction of movement. Nihilism comes when reduction is the driving value, enacting a negative fold in evolution.[13]

The Algoricene is the metahistory of a reactive, negative, reductive force coming up within movement, a narrowing drive; it is the history of nihilism, and since it shows an exponential curve of acceleration, it is an *exponential nihilism.*

5.1.9 The Onto-violence of Abstraction

Domination can be analyzed through the ways in which reductive abstractions separate themselves from larger and less aligned fields and impose themselves. This is the case, for instance, when notations and mathematical models for music or choreography detach themselves from the larger embodied practice, constituting reproducible abstractions that become the reference.

Henri Lefebvre (1991, 289) claims that "there is a violence intrinsic to abstraction, and to abstraction's practical social use," something that Whitehead (1997, 52) would call *misplaced concreteness* in reference to how an abstraction is taken for the real, choreographing the real, particularly in the case of spatial extension. I agree with Whitehead when he disagrees with Bergson's idea that this is an essential mode of operation of the intellect. It is, however, a dominant expression that needs to be taken away from its dominant position.

The Algoricene operates by imposing (reductive) abstractions. One could say that its fundamental mode of operation is misplaced concreteness. This is a fundamental mode of *ontological violence.* Every time we assume a fixed point of vision, we perform a gesture of ontological violence that subjects us and the world in one go.

> *It's hard to see what* [*technologies*] *do, because what they do is to structure seeing.*
> — Allucquère Rosanne Stone (1996, 167)

> *The structure of the cultural condition is captured in the act of photography rather than in the object being photographed.*
> — Vilém Flusser (2000, 34)

5.2 The Panchoreographic/Pankineticon

5.2.1 Ontoviolence

Ontoviolence is the implicit violence of a (meta)medium such as perspective, which organizes relations in terms of calculable geometries and categorical splits that are the condition of possibility for appropriation, manipulation, and many other modes of explicit violence, while implying a fundamental homogenization of movement

13 I don't pretend to assign an exclusively negative value to algorithmic culture since its tendencies may occasionally ally with more affirmative forces. Anna Munster (2006) will say that there is virtuality embedded in technology, which is building upon Simondon, and Luciana Parisi (2013) that there is mereotopological infinity in algorithms. But I want to avoid neutralising technology and propose to analyse its symptomatic thrusts. Can algorithms develop their own indeterminate mereotopological calculation movements if their entire infrastructure is a heavy, unsustainable binary architecture? Maybe quantum computation and neuromorphic chips will bring in unexpected variations, but it is doubtful that they will stop being a machine of reduction grounded on a planetary mass extinction: the "what for" remains the unanswered question.

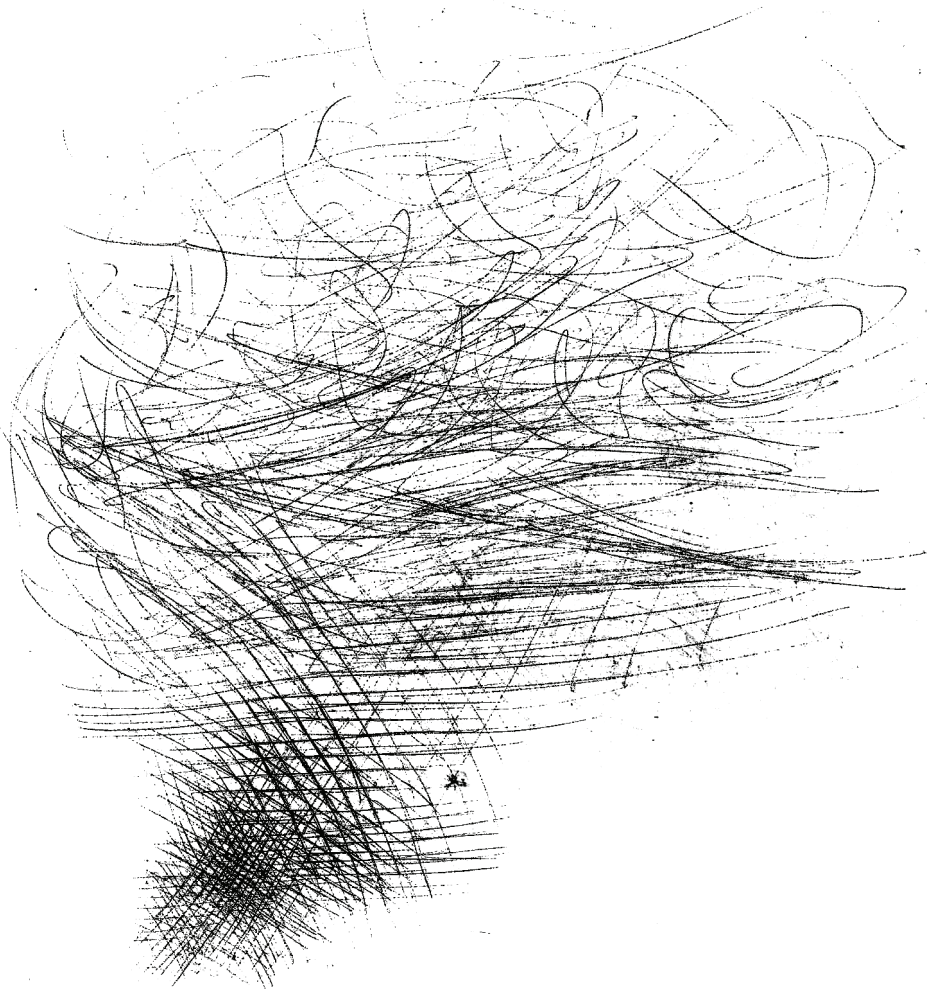


Fig. 27. The cosmic anomaly of the Algoricene.

itself and an erasure of its indeterminate variation. Ontoviolence, and more generally power in the sense of domination, operates primarily through choreographies of movement and perception.

The multiplicity of geometries that orient our movements and perceptions in the Algoricene constitute what I call the *panchoreographic* (Del Val 2009a). Underlying the visual–spatial organization of relations of a model like the panopticon,[14] as theorized by Foucault (1995), there is a complex orchestration of sensorimotor ratios. The trope of the metamedium (or metaprogram[15]) is the one proposed to approach

14 The panopticon is the architectural prison paradigm proposed by Jeremy Bentham in the late eighteenth century consisting of a circular space with a surveillance tower in the middle from where an unseen guard can see any cell at any time.

15 Vilém Flusser (2000) develops an account of the metaprograms that are behind each program of organization. Flusser also gives an account of the technical image as product of machines that are products of texts, something applicable to perspective as theory, texts which are in turn the metacode of images. He crucially proposes that what photography shows is the structure of its internal logic, more than "content."

these articulations: underlying media and other modes of social organization there are particular sensorimotor ratios operating as organizing principle.

Marshall McLuhan (1964, 18) and Harold Innis (1950; 1951) anticipated with visionary force the formative power of media (electricity, paper, printing, television, road, computing, etc.) in organizing patterns of existence and warned of how the content of the medium masks this formative power, which induces violence and programs patterns of existence of entire cultures without any resistance, except from some artists, experts in perception, and in some cases originary or Aboriginal cultures.

Innis differentiates between media that favor the spatial component and those favoring the temporal one. He defends the balance between both while denouncing the excessive weight of the spatial component in the imperial tradition stretching from Ancient Rome to the present time.

McLuhan distinguishes hot and cold media, the former fragment and exclude participation, are mechanical and of high definition, exploding, expanding, and accelerating the scale of the patterns of existence. His prototypical example is typography, The latter are of lower definition and invite participation, such as aphorisms, improvized dances, and irregular fabrics. McLuhan considered that electrical technology induced a reversal of the fragmentation tendency of the mechanical age and retribalizes the experience with the instantaneity and implosion of spacetime scales. His book, written in 1964 when television was still low definition, did not yet glimpse the new modes of extreme fragmentation that would induce the segmentation of electricity and the electromagnetic field performed by computation and a tendency to "high definition" in media, exploding in VR, videogames, and 3D.

My approach also resonates with media philosophers Friedrich Kittler and Langdon Winner, both of whom, in different ways, have called since the late 1970s for the ontological force of media and their political dimensions, while going beyond McLuhan in exposing their autonomous dynamics, in excess of a central position of the human.

Likewise, my approach echoes with André Leroi-Gourhan's thesis concerning the coevolution of humans and technics, which challenges traditional ways of delimiting the "origins" of the human vs. the prehuman and posthuman, while raising questions regarding the present and future as not necessarily implying a forward evolution.

Lastly, my approach clearly builds upon Marcel Mauss's idea of technologies of the body as implying almost any practice and therefore almost any movement, while looking at their economies, considering gifting economies as not being based on capitalist accumulation and appropriation. This relates to my focus on movement and proprioception as primordial, which doesn't mean that there is a central "human agency."

Gilbert Simondon's (2005) idea of transduction, which I call intraduction or metaduction, underlies all of these as the self-organizing dynamics by which technics unfold as fields, in which the "human" eventually emerges and becomes an active node. Understanding the emergence of the technical fields implies accounting for the perceptions and dynamics *of the field.* The "human" (as entity, concept, and construct) is seen as one of the *provisional* products or nodes of the Algoricene, and as part of a larger field dynamics of movement.

Technologies are understood not only as movements but as fields of movement relations with diverse modes and degrees of alignment. Technologies always imply modes of sensorimotor organization, though some of them are more implicitly and

others more explicitly doing so. One can thus differentiate between implicit and explicit perceptual technologies.

5.2.2 Metamediums as Perceptual Technologies: Ontocolonialism

Technologies of perception are technologies that not only allow to sense certain portions of the world, but format perception itself, thus orienting movements which in turn conform ecologies, which in turn constitute worlds. Technologies of perception have a multilayered ontological force. In a large sense, any technology has this ontological and perceptual dimension, organizing movements and modes of attention and relation.

Technology more broadly could be defined as an emergent and sustained (self-) organization of relations constituting ecologies and worlds. There are, however, technologies whose direct aim is that very structuring, or in which perceptual organization is key and not secondary to another purpose: perspective, cameras, or screens are such media whose main purpose is perceptual organization itself. Even if perceptual engineering doesn't seem to be the primary instance in metamedia such as geometry, it is in fact in the transformation of the world into a calculable entity.

Even more importantly, what renders the world calculable, measurable, appropriable, manipulable, modifiable, and controllable is a particular perceptual logic, a logic of rationalization, a rationalization of sensibility itself, which has a specific history that will be the object of study of this chapter.

Technologies of perception create in the first instance a field of relations. They aim at choreographing sensorimotor ratios in more or less rigid ways. In the Algoricene, they have created the spaces and bodies that may be calculated, measured, appropriated, manipulated, and modulated.

Their operation is through inducing alignments: orienting perception and gesture through external geometric references that reduce the intrinsic fluctuation of bodies, which stop having their proprioception as main frame of reference. This involves defining hierarchies of multisensory integration (as with the dominance of vision) and fixing relations (as with the fixed point of vision). These references are projections of the moving body that gradually have congealed into increasingly fixed affordances by losing variation.

Linear perspective emerging in the Renaissance is the foremost example of a technology whose main intentionality is perceptual design itself, and which has become the underlying logic (metamedium) of many other technologies, such as cameras and screens, creating a planetary field of perspectival relations. By fixing an observer in a point in relation to a frame, linear perspective enacted a *rationalization of sensibility itself* and with it a calculable world split from a disembodied subject. Every time we align ourselves with a screen, keyboard, or camera we reproduce this choreography invented with perspective, and its world of rationalization. This usually implies an extreme narrowing or our sensorimotor spectrums. Our very gesture becomes calculable because of this reduction. We become part of the algorithmic proprioception of a larger technical metabody that is establishing itself through us and our alignments. Linear perspective is a clear example of invention of a new mode perception that had never existed before but which imposes itself, becoming the predominant way of perceiving. But what it does most importantly is to orient bodies composing an entire planetary-scale field of relations.

The current increasing focus of design in perception (the design of attention affordances, interaction and interface design, smartphones, social media, apps, and the ubiquitous proliferation of new sensors) and the explosion of powerful perceptual technologies[16] with unprecedented scales and modes of perception expanding across electromagnetic and other spectrums exceeding human perception, covering the Earth and the body with satellites, drones, and ubiquitous sensors, has to do with the exponential *logic of production* of calculable movements. Every new perception creates a movement field. Every calculable perception creates a field of calculable movements.

(Onto-)colonization is about *producing a quantifiable field* and *a field of quantification*: the anatomical body imposes itself on our fluctuating proprioception, maps impose themselves on ecosystems and the biosphere's fluctuations. We live in an era of exponential explosion of new abstractions that impose themselves: from the nanometric scale of matter or the domains of genetic and neuro-engineering, to geo-engineering and space.

Underlying each of these processes is the invention of new perceptions and movements, realities, and spaces for new interventions (of the atom, the gene, the brain, the electromagnetic signal, the atmosphere and climate, or code and the internet), and this continuous invention of spaces, as perceptual and relational fields, operates in a legal and ontological vacuum, so it happens in advance of regulation, common sense or categorization, thus exceeding critique.[17] We will see that there is a common underlying logic to the kinds of perceptual technologies at stake, technologies of rationalization as reduction of sensibility, which are but one possible kind of technology.

Perceptual design in technology is a geodesign problem. It always has been, since colonization and globality have always been issues of perceptual engineering. It is equally a user-design problem.[18] I propose to address this collaborative design problem at the level of the underlying geometries, and the kinds of ecologies they afford. It will be our task in further sections to think beyond this particular kind of technology and reach out to other kinds, modes, and paradigms. This implies a critique of the symptoms of which this technology is an expression: symptoms of a nihilistic tendency to reduce, capture, and control. These symptoms express themselves not in a particular use of a technology, but in the core of its underlying geometry, at the level of how this geometry organizes movements and perceptions, creating relational ecologies that constitute worlds. Therefore, the invitation in later sections will be to rethink the underlying geometries of perceptual technologies, with the task of not merely substituting a given geometry by another, since geometry itself may be the problem as reductive tendency of perceptual rationalization.

What is at stake here is the understanding of the particular underlying geometries of perception that generate a calculable world, and the particular ecologies that these instantiate. This points already to what is the subject of the final sections: how to imagine other relational ecologies not grounded on geometry, which don't imply a

16 See Virilio (1994) for his account of technologies of perception, perceptual logistics, and the politics of speed.

17 Regarding the invention of space with geometry, see Cornford (1976a); for the ongoing invention of spaces to colonize, see Bratton (2015); for the production of space, see notably Lefebvre (1991).

18 User design and geodesign are two aspects or layers of the accidental megastructure and collaborative design project that Bratton (2015) calls "The Stack."

mere attempt to go back to pregeometrical cultures, but which may articulate other complexities yet to be thought.

...

Every large-scale system of domination is a panchoreographic, defining the ratios of the movements happening in it. Our entanglement with technical fields happens in terms of sensorimotor ratios that define the larger field we are part of and that are also defining our individual perceptions. The more we align with a large-scale system, the more impoverished our own sensorimotor ratios.

Perspective has become internalized, formatting not only urban landscapes and architectures but orientations of bodies in relation to other bodies and to the environment at large, choreographing nonverbal communication, for instance in conversation as face-to-face interaction. Atomizing bodies, and aligning them in particular ways, is core to systems of domination.

Grids and perspective are not just means, tools, or frames for an independent content, rather they enact the actual gridded and perspectival field of domination. They are metamediums underlying the logic of endless other mediums as structuring forces, with fully ontological dimensions.

Following Manuel de Landa (1992), scientific revolutions are transformations in perception, producing new forms of perception that make things that were previously imperceptible or unthinkable become a dominant and ubiquitous element of a certain epistemological paradigm. De Landa associates this process with the emergence in the 20th century of new perceptions of complex processes that now make phenomena that were previously believed to be marginal, the result of errors, or non-existent, to be observed everywhere. This can be applied more generally to how perceptions are engineered in contemporary culture creating at the same time the object, the perception (subject), and the field of perception.

5.2.3 Epidemiology of Perceptual or Gestural Contagion: The Panchoreographic

The panchoreographic is an epidemiology, as much of what's at stake is *contagion*. The establishment of homogeneous sensorimotor ratios allows for the homogeneous propagation of movements in the field. Perspective arranges bodies in terms of fixed points of vision in relation to a frame. When multiple bodies relate to one another following that ratio, relations become choreographed in a homogeneous specular manner, nowadays globally, as billions of bodies are aligned in social media.

Gestural contagion implies a double proprioceptive alignment: my alignment with the fixed point in relation to the camera or screen (frame), and my performance of a gesture in that frame (content). Bodies become nodes of repetition, antennas that replicate, rather than diffract. You see a gestured framed in a screen and your mirror neurons reproduce it without resistance, rather than take it into new variations.

Gestural contagion[19] minimizes movement's indeterminacy by creating fields of homogeneous propagation. Societies organized in this way operate by the ongo-

19 The idea of developing an *epidemiology of gestural contagion* was inspired by Harmony Bench's lecture "Contagious Gestures: Communicability in the Social Sphere," presented at MIT Medialab in 2011, where she expanded her account of social dance media (flash mobs, viral choreographies, and crowd-

ing *engineering of perceptual pandemics.* The power of contagion of particular gestures (whether of a TV presenter, celebrity, Trump, football match, or music video) has to do with the degree of homogenization of sensorimotor ratios of the bodies aligned with the screen (the spectators). This contagion is the operative mode of an affective capital that exceeds ideology. We need to denounce the intrinsic fascism of homogenous media if we are to fight both against Trumpish neofascism and Silicon Valley totalitarianism in an emoticon world.

The homogenization of sensorimotor ratios is in itself an ontological violence underlying the actual violence of any content being disseminated in a medium. What we need are less homogeneous fields of relations.

In the kind of *social dance media* and *interface choreographies* theorized by Harmony Bench (2009; 2010; 2016; 2017), where communities of shared gestures are created, there is a high degree of homogenization in the process of gestural contagion, which relates to the underlying medium.[20]

Stelarc's project *Movatar: An Inverse Motion Capture System* advanced years ago the mode of contagion proper to current media culture: where an avatar moves the performer's body through an exoskeleton. Stelarc proposed a creative and experimental approach, somehow anticipating this contagion. But, in fact, this is basically what happens in human–computer interaction in unacknowledged ways. A paradigmatic example was in games like *Dance Central* or what goes on in face recognition interfaces: the interactor has to align with the avatar or with the face recognition patterns of the system. The focus of attention of the participant is directed toward aligning with what the interface can read. We become an emoticon by aligning with the interface.

Control aesthetics in gaming, VR,[21] and 3D films highlights the seductive aspect of perfect simulations, but these never represent a given, they create their own affect. It is a whole set of choreographies that one can see built in the design of the interface and the virtual world, a set of correspondences between the physical interfaces (joystick, keyboard), the audiovisual alignments with the screen and immersive or stereo sound, the actual programming of the game spaces and characters, and finally the programming of the movements of the characters and the relation between the player and her avatar.

sourced choreographies) as modes of gestural contagion. In a time when, following Agamben (2000), since the 19th century, gesture has lost symbolic meaning and can become a means of pure contagion, generating *communities of shared gestures.* Bench also expands on Marcel Mauss's accounts of gestural repertoires (as techniques of the body), on Hewitt's account of infectious gestures generating fantasies of body communities, and on Rosalyn Diprose's idea that "the lived body is built from the invasion of the self by the gestures of others" (2003, 15). I propose a new understanding of how this actually happens *through proprioception.* On affective–rhythmic contagion see also Goodman (2012), and on contagious algorithms Parisi and Goodman (2009). Judith Butler also addresses this issue in her essay "Contagious Word: Paranoia and 'Homosexuality' in the Military" (1997). On media as "epidemics," see Marco Binnotto (2000); on other immunology discourses, see Haraway (1991). This debate has acquired new resonances in face of the COVID-19 pandemic, where I claim the crucial role of viruses for biodiversity in evolution as model for a type of contagion favoring variation.

20 *Dance Central* was a 2010–2011 game for Xbox that uses a Kinect camera/sensor to match the player's movement to an avatar, whereby the player scores points as more matches are made with the avatar moving. Matches are counted on the basis of discrete moments.

21 It is a big error to think that VR is non-dualist because of the immersion it provides. It is an even more all-encompassing and inescapable form of world redoubling, creating a controlled world via reductive interaction design and gestural alignments!

Now, in programming those movements there has been a complex spiral of reduction going on where movement capture systems are used to get movement data from a physical body performing for the videogame's or movie's scenes, which in turn gets transposed onto the avatar, with whom the player in turn aligns via the interface! Sometimes the reduced gestures of the avatar can get imitated in "real life" taking the spiral further, as a becoming-avatar. Just like some people want to get operations in order to look like they do online with Instagram filters. *Second Life,* the VR world popular in the 2000s, and all its VR and social media aftermaths, always want to become the only life.

The repetitive and accelerated choreographies of the interface induce an addictive intensification of quantitative affects. They are extremely hot media in the sense proposed by McLuhan, instigate addictive alignments and narrow down ambiguity and creativity. In this process, what is most difficult to simulate, and actually never works, is the movement of the 3D characters. This is due to how movement in a body emerges bottom-up from proprioception. The Uncanny Valley is the name for the weirdness one feels when a simulation is almost perfect but not quite. I say: let's linger in the Uncanny Valley, elaborating its weirdness in dislocated movements, impossible textures, and spaces, rather than spending billions in trying to erase this ambiguity.

Video games, clubs, thematic parks, or gyms are paradoxical: they afford intensified kinaesthetic experiences, where the muscular and kinetic has a crucial role, and at the same time they do so in highly aligned, homogenizing ways. They are all hot media: accelerated and of high definition, the creativity they allow is minimal. Instead, I will propose cold media that, by being undefined, foreground a more disaligned improvisation.

5.2.4 From the Panopticon to the Panchoreographic

The panchoreographic is a concept that proposes to think beyond the trope of the panopticon, because underlying any systemic social organization there are always movement organizations: choreographies, not structures.

The panopticon itself is an expansion of the fixed point of perspective to a 360^{o} field of surveillance in which the God-like observer is abstracted from the field of observation and cannot be seen, so that any activity in the field is under potential surveillance. We never know whether someone is looking. The panopticon thus enacts not only an attempt to reach everywhere, but also an uncertainty principle that is expanded much further in cybernetics and information. The panopticon now evolves as a much more complex internet pankineticon or panchoreographic of billions of bodies ubiquitously connected and exposed, controlled by invisible algorithmic eyes. Every smartphone is a mobile control terminal in the planetary network.

The panchoreographic studies planetary-scale choreographies of sensorimotor ratios. It studies the metamediums underlying multiple other mediums, manifesting across varieties of contexts and their evolutions.[22] For instance, how did linear

22 We need to look for the movements underlying dominant processes and structures. For instance, if one examines a process like global food production, one may at first consider it as a convergence of seemingly disparate fields: the family, affective production, animal slavery and killing, the slaughterhouse, media orienting consumer's perceptions, pesticides, chemical engineering, geoengineering, genetic engineering of seeds, epigenetic engineering of bodies, the wars on seeds, water, and patenting of indigenous knowledge, financial or consumption flows, climate change and Big Data.

perspective recodify earlier formations like grids and frames, how does it underlie multiple media like photography, how does it affect relations even face to face, in education or in the family, or articulations of memory, economy, or subjectivity, and how is it being recodified in the shift to dynamic algorithms, as in the selfie?

This implies a metaformative analysis of the emergence and evolution of alignments understood as a narrowing of sensorimotor ratios, focusing on the ontological force of media as crafting perceptions and motions. The metaformative turn implies a double focus on the *mode* and the *degree* of alignments. It also implies a field approach: alignments are relations and part of aligned fields.

The panchoreographic or *pankineticon* is thus a metaformative mode of analysis that not only looks into any type of movement, including the movements underlying apparent structures and their complex entanglements in fields, but also looks for underlying movement principles. It studies their degrees of alignment, the tendencies they are symptoms of, as well as the openings they may afford. It is thus a type of diagramming that aims not to represent but to mobilize. In this process, it relates types of movement, media, and metamedia, across dynamics and scales, and their modalities of spacetime, rhythm–affect, or bodily composition. It is itself a transductive science that develops concepts and diagrams as it proceeds. There can be no all-encompassing map, method, or systematization of the panchoreographic as a whole.

Given a particular case study, for instance an interface choreography, one will ask what its underlying metamediums and alignments are, how it relates to multiple other metamediums across multiple spaces, from the family to the State, up to planetary or geopolitical economies of movement, as it organizes perceptions, but also in the underlying industries, trading, or transport, from the microchips of hardware to the stock markets and financial speculation, from urban design to agriculture or its impact in climate change and pandemic outbreaks, while also looking at its potential openings and reinventions, fluctuations down to the quantum realm. It is about diagramming field dynamics, taking as a starting point any phenomenon (medium or metabody): an interface, clubbing, the family, a particular type of book design, a particular type of urban design, a TV channel, the TV medium, a particular society, a climate phenomenon, a trauma, a norm, a cellular process, a relation, a body, a migration, a swarm, a storm, a stock market, a food, a language, a book or a type of book, a music instrument or tradition, a panting, etc.: always specific events or kinds, never assuming universal kinds.

The starting point can be itself a metamedium like perspective or geometry or a global economy, or planetary-scale phenomenon like climate change, or an evolutionary phenomenon in biology or technics. Any medium can become

But metaformativity points to the underlying logic of movement organizations: in the mentioned example perspectival vision is choreographing perceptions of consumers as much as laboratory experimentation with seeds and more generally quantification and management systems. Perspective accounts for the radical distancing that affords unprecedented scales of animal slavery and killing in WEIRD countries. Grids are behind architectures of animal slavery and slaughter as much as packaging and agriculture. More sophisticated algorithms, still largely relying on grid and frame architectures, define the information technologies, infrastructures, hardware, and code of Big Data systems which in turn are the new logic increasingly managing the full circle of perception, production, and consumption. A whole panchoreographic of movement reduction underlies this process, like any other in colonial, imperial, and slave societies. I invert the traditional story by which these technologies are considered as mediums in an accidental sense and place them as the primary modes of organization of relations.

inframedium, metamedium, epimedium, paramedium, or metametamedium for another one depending on the diagram. The mode is both a field dynamics of rhythms, orientations, and contacts and a mode of thought. The degree of alignment also implies potential disalignments.

Table 1 is an example of diagram drafts. Consider the columns as shifting constellations in dynamic networks. They are not meant to be a stable set of distinctions with fixed relations but as provisional ones.

Transversal to this approach one can consider what *technologies of the body* are involved in each process, as fully formative of what the body is as field of relations. Technologies of kinship and affect, dwelling and transport, communication and relation, education and care, entertainment and play, birth and growth, food and arts, fight, or bodily trainings of different kinds. Technologies of the body are never just of the self.

Contagious choreographies of pop music, robot lights of discos, porn choreographies, contagious gestures of TV presenters, interface choreographies, and other "patented" gestures, selfies, but also alignments in a city, walking, driving, using transport, or chemical–neurological modulations in our hyperaccelerated society... at stake is to look only at the movements and their relations. Each of these phenomena will provide a new shifting network of infra-, para-, epi-, meta-, or metametamediums, of modes of organization and thought, of alignments and disalignments.

The panchoreographic points to a metaformative shift, from studying structures to their underlying movements. Diagramming a panchoreographic exposes many kinds of alignments with geometries, perspectival media, architectures, mechanical machines, and computation systems. The Algoricene is itself a broad case study of a panchoreographic. It implies consideration of major old and new alignments and their dynamics.

The concept of panchoreographic also concerns evolutionary processes in technics as expressions of movement in nature, taking thus a post- or metahumanistic approach. It points to the gradual emergence over millennia of planetary-scale alignments, from the static geometries of sovereign societies, through the fixed point of vision of perspective to the planetary-scale metabody of computation systems, infrastructures, sensors, and interfaces. The Algoricene as panchoreographic is a planetary-scale matrix of movement reduction.

The gradual emergence of its metamediums will be unfolded in the next sections, and the dynamics between them will be partly exposed.

5.2.5 Proprioceptive Contagion and the Modulation of Bodies

The deep entanglement between us and technical fields derives from the understanding of technics as expanded proprioception, itself constituting a larger proprioceptive field. This implies reversing the dominant ontology based on the fixed point of vision. The privileging of external reference points is the most extreme and anomalous outgrowth within a much larger evolutionary process of diversification where external senses are extensions of proprioception. But with perspective the story has inverted itself, making it appear as if the model for all perception is a purely external vision.

The way in which perspectival media affect and modulate bodies at deep chemical, neuronal, emotional, cognitive, metabolic, hormonal, or epigenetic levels has to do

with the a priori character of proprioception in embodied knowledge, memory, and affect, as I exposed in Book 2.

If I assume fixed points of vision in relation to the world, I don't develop plastic capacities to reconfigure with the world, I develop a narrow spectrum of responses, which means also of synapses in the brain, and of qualities of experience.

5.2.6 Panacoustic

I will devote a special word to a highly relevant but underestimated layer of the panchoreographic that deals with music and sound architectures as fundamental means of control. The panacoustic is a multilayered field of homogenizing rhythms and affects composed primarily by the power of ubiquitous commercial music and by the increasing automation of sounds.

Commercial pop music floods every public and private space through technologies of identical production, reproduction, and homogenized centralized hearing (ubiquitous and mobile stereo systems), disseminating contagious gestures that smooth the affective rhythms of bodies.

The seamless consumption and ubiquitous reproduction of prerecorded music is a further step in a long history of splits and separations: between music, dance, theater, performer, spectator, and author. From improvisation practices in emergent, collective, and multisensorial situations there has been an increasing abstraction and formalization of music in scores and centralized auditoriums. In the turn from the Macro- to the Hypercene music becomes eternally replicable, computable, both in terms of content and perception, while the apparent democratization of music technologies hides the impact of market-driven strategies in the increasing homogenization of soundscapes.[23] Song, as expression of the humanist subject and its macroaffects (universal emotions) becomes with commercial music a primordial means of affective modulation of bodies and populations.[24]

The panacoustic exposes a crucial expression of the panchoreographic as exceeding visual organization of space.

23 A 2012 study by CSIC of 464,111 songs from the past 55 years concluded that there is an increasing homogenization of commercial music. See Serrà et al. (2012).

24 On song and humanism see Del Val (2010a).

METABODY-MEDIUM Case study of movement field	Inframediums/ intramediums	Metamediums	Epimediums
Example 1: Interface choreography—study of its particular, local movements and perceptions.	Example 1: The microchip in the interface, the software, etc.	Example 1: Perspective and geometry as metamedia for the interface, grids as metamedium for the microchip, etc., and their genealogies and relations.	Example 1: HCI research and industries and their ramifications in affective computing or other domains —or the semiotics of marketing technologies.
Example 2: Clubs and clubbing culture.	Example 2: The architecture, the music and music videos and their choreographies, the sound systems, the robotic lighting, the drinks, the music economies, etc.	Example 2: Perspective and geometry as metamedia for the interface, panopticon as model for space etc.- Genealogies, from the ancient chorus to the panopticon.	Example 2: Modes of affective contagion of choreographies and music, marketing technologies.

Table 2. Sample panchoreographic diagram.

Paramediums	Metametamediums	MODE + mode of thought	DEGREES
Example 1: Family or the State as sites that get articulated and further articulate the interface—similarly particular economies of production and transport etc.	Example 1: Global economies and impacts, from stock markets to climate change, global economies of production and transport, etc., and other related economies on which it impacts.	Swarm/field dynamics: 1. Affects–rhythms; 2. perceptual –spatial orientations; 3. composition. Clicking choreographies, repetitive rhythms, narrow orientations, immobility, algorithmic compositions, etc.	Alignments and openings: Symptomatology—Degrees of freedom of the interface, opacity of algorithms, flexibility vs. plasticity; Potential disalignments in use and in redesigning the interface.
Example 2: Affective relations, sex, economies of production etc.	Example 2: Global economies and impacts, from stock markets to climate change, and other related economies on which it impacts.	Swarm/field dynamics: 1. Affects–rhythms; 2. perceptual –spatial orientations; 3. composition. Rhythmic and spatial organisations, modes of contact between bodies.	Alignments and openings: Symptomatology—Repetitiveness of choreographies vs. improvisation – openness in bodily compositions, pre-emption vs. behavioural openness, etc. Potential disalignments in use and configurations of the space, in the dance, in the music, etc.

METABODY-MEDIUM Case study of movement field	Inframediums/ intramediums	Metamediums	Epimediums
Example 3: The nuclear family in WEIRD 21st-century societies.	Example 3: Quotidian technologies of food, economy, affordances in the house and living environment, normativities, reproduction technologies or other economic infrastructures, proprioceptive and microaffective fluctuations.	Example 3: Perspective, geometry, or grids, but also Big Data as underlying mode of subjective and bodily organisation.	Example 3: The architecture of the house, the smartphone, TV, affective andmarketing technologies.
Example 4: The living cell.	Example 4: Quantum fluctuations, atoms, proteins, DNA, membrane.	Example 4: Colonies, swarms, tissues, symbiogenesis.	Example 4: Organisms and Eco-systems.

Table 1 (cont'd). Sample panchoreographic diagram.

Paramediums	Metametamediums	MODE + mode of thought	DEGREES
Example 3: The state, education, particular economies of production and transport, etc.	Example 3: Global economies and impacts, from stockmarkets to climate change, and other related economies on which it impacts.	Swarm/field dynamics: 1. Affects–rhythms; 2. perceptual –spatial orientations; 3. composition. Rhythmic and spatial organizations, modes of contact between bodies.	Alignments and openings: Symptomatology—closures in affective choreographies and behavioural alignments; Potential disalignments through movement and novel modes of kinship.
Example 4: Economies of viral transduction, bacterial sex and gene exchange, pollution, climate, genetic engineering, etc.	Example 4: Biosphere.	Swarm/field dynamics: 1. Affects–rhythms; 2. perceptual –spatial orientations; 3. composition. Rhythms of biochemical pathways, folding movements of proteins, cell motility, folding movements of DNA.	Alignments and openings: Symptomatology—radical plasticity; Potential disalignments—learn from them!

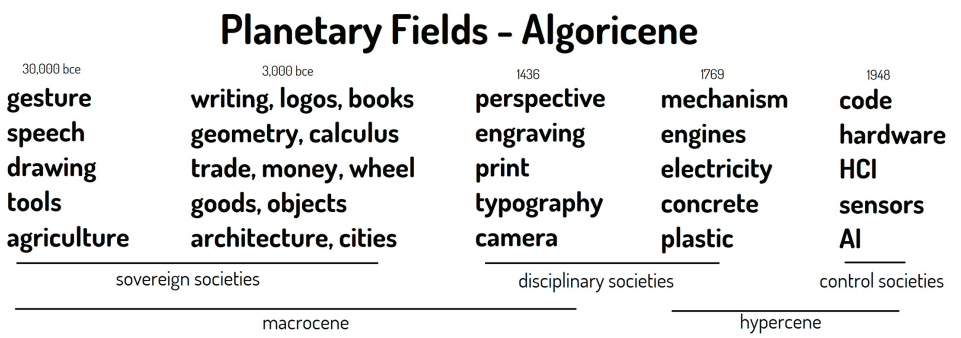


Fig. 28. Algoricene fields diagram.

> *Reinforced by Cartesian convention, personal convenience and neurological design, people operate merely as minds, immersed in metaphysical fogs.*
> — Stelarc (1998, 155)

> *One never maps a territory that one doesn't want to appropriate.*
> — Invisible Committee (2015, 62, my translation)

5.3 Genealogy: Macrocene and Hypercene

In the following sections I will expand on the genealogy and dynamics of the Algoricene along two modes, phases, and strata: of macroalgorithms (static alignments) and hyperalgorithms (dynamic alignments). These strata don't only accumulate but also transduct or transmerge, reciprocally transforming and enfolding one another in a complex dynamics.

I will refer to these two epochs and strata as Macrocene (since before ancient Greece to World War II) and Hypercene (since World War II, with precursors in the 19th century till today and beyond). I think it is important to differentiate between them because of the radical challenges posed by the Hypercene and because our common sense still lingers on the heritage of the Macrocene. The dynamics between both will be analyzed in the final section of the chapter.

The macrocene corresponds to the emergence of *linear* movement–space–time, and the hypercene to the emergence of *exponential* movement–space–time.

Rhythm (affect) in the Algoricene acquires two modes: mechanical and binary (clock time and click time), first as a field of homogenous "universal" emotions (macroaffects) and later as mobile simulations of an emoticon and AI culture (hyperaffects).

Orientation (desire) is first defined by geometry, perspective, linear space, symbols, and objects that narrow down perception and sensibility to fixed points of vision (macrotopias), which in turn allows opaque algorithms to reorient bodies within the frame of alignment (hypertopias).

Contact (sex) is first defined by a great narrowing, culminating in heteropatriarchal monogamy and the nuclear family (industrial society and Victorian morality), reducing sex to the controlled reproduction of an entity (macrosex), then shifting to the possibility to capitalize any action that aligns itself with a sensor and interface (hypersex).

The metabody of the Algoricene is algorithmic, of movement segmentation and codification. Its *clinaos* or power to vary is reductive. Its intraduction or evolution is a *double infolding* movement of reduction across macro- and hyperalignments.

First a great reduction of experience happened through static geometries orienting the social field. The year 485 BCE can be mentioned as a first inflection, when Parmenides published his book *The Way of Truth,* and with it the radical affirmation of fixity, while shortly before that time Hippodamus had systematized the grid as organization for the Greek *polis*.

The year 1436 is another crucial moment, with the publication of the first treatise on linear perspective by Leon Battista Alberti in Florence. Mechanism overcodifies perspective, unfolding a new shift in the steam engine, giving birth to thermodynamics in the 19th century, unleashing a chain of scientific revolutions, and exploding in World War II.

In 1948, with Wiener's *Cybernetics,* Shannon's "mathematical theory of communication," and Turing's "intelligent machines," unleashed the inflection toward the Hypercene, when static algorithms double-folded into dynamic geometries. After the launching of the internet and the PC during the Cold War, the last inflection, from control to hypercontrol, comes about after 9/11, with the emergence of Big Data systems and AI, with the launching of the smartphone in 2007 and with the domination of Google, Apple, Facebook, Amazon, and Microsoft (GAFAM).

If the Macrocene was grounded on representation, the Hypercene enacts a correlationism where dynamic algorithms continually create emergent correlations, as new patterns emerge out from the noise of infinite databases, where simulations create models to pre-empt the future. The continual production of new, dynamic patterns becomes an intrinsic operative logic of contemporary domination or reduction.

Along the way, one can see a technical nonlinear evolution, which recently has been accelerating exponentially:

1. From ancient external geometries orienting movements;
2. through linear perspective as embedded geometry of perception;
3. disseminated in ubiquitous and increasingly automated mechanical devices and architectures;
4. becoming dynamic with cybernetics;
5. and constituting an all-encompassing, dynamic network of planetary-scale computation systems in exponential acceleration, tending toward an autonomous AI.

The gradual emergence of geometries organizing bodies, movements, perceptions, and collectivities is difficult to trace and a matter of speculation, I will thus propose some speculative threads whereby the relevant aspect of my proposal lies in reversing traditional approaches by understanding geometries not as designed by a mind, but as the effect of emergent, collective movement organizations, or alignments.

The process of geometric structuring of relations was linked to the consolidation of mature slave society in ancient Greece, which, following the historian George Thomson (1954, 14), as different from previous despotic monarchies, was a democracy of tradesmen.

In ancient Greece, object affordances became abstracted from use value to exchange value, while class relations became abstracted in relation to increasingly geometric organizations. I propose that *abstracting relations allows for domination on a larger scale and in more sophisticated ways.* The split between moving–corporeal–sensorial (the slave) and immobile–insensible–incorporeal (the aristocrat) was a crucial

step in this process, following a movement of increasing dualist separations. This was itself an overcodification of earlier mating and predator relations.

Along the way, the idea of an accessible totality of the world as measurable space and time gradually emerged *with these geometries* and their linear and circular choreographies of movement and perception, creating a planetary-scale field of alignments, where the cyclic rotations of wheels have *created a measurable linear time,* while the grid has created *measurable linear space.*

Both coemerge entangled in increasingly intricate *planetary networks,* perhaps preceded by *pyramidal,* monumental perceptions as a first iteration of fixity and hierarchy in the search for permanence and self-preservation in *sapiens* and its new preoccupations with the unfolding of agriculture, its associated cities, and large-scale organizations, that were perhaps from its very foundations, based on slavery, extractivism, and exploitation.

I will now briefly narrate some possible genealogies of the emergence of this planetary-scale panchoreographic, in whose increasingly rapid movements the modern subject, the human, and its technics have also emerged.

5.3.1 Macrocene: Emergence of Dualistic Media and Linear Movement

5.3.1.1 From Protogeometries to Abstract Geometries

The gradual emergence of alignments in ancient prehistoric societies can be traced along a multiplicity of organizations of spacetime, movement, and perception that don't just accumulate but transduct or transmerge with each other in long time spans, non-linearly, composing always new assemblages that choreograph relations at increasingly all-encompassing planetary scales and at varying speeds.

Similar to how the universe unfolds in entanglement of foams–filaments, oscillations, vortexes, and swarms, the Algoricene has metaducted its geometric field of reduction in a sort of *reverse entanglement* of circles or spheres, grids, fixed points or pyramids, and networks, toward a systemic reduction of movement. The overall movement is a double folding of static into dynamic configurations (of alignments into superalignments) exemplified by how the loom, perhaps the most ancient algorithmic movement (since around 26,000 years ago[25]), double-folded into the automated dynamic reconfigurations the Jacquard loom (1801) and its cards made of points in grid-like patterns for automated design, opening up the way to computation.

In the first stratum of the Algoricene (as geometric–historical time-line), that of the Macrocene, we can identify two crucial moments: the consolidation of mature slave societies in Ancient Greece, where a number of incipient geometries became abstract and all-encompassing; and the onset of perspectival vision in the Renaissance as radical rationalization of sensibility underlying the colonial era.

5.3.1.1.1 Fixed Points and Hierarchies: The Age of Segmentation

The emergence of megaliths, pyramids (as increasingly high altars or tombs), and temples, associated to diverse ceremonies, rituals, burials or cults in religion and magic, eventually allowed the establishment of a monumental, fixed reference, a distant point of orientation, a hierarchy with a surrounding field. Pyramids are the

25 Though the first looms are often attributed to Ancient Egypt around 4,500 years ago, Adovasio et al. (1996) point to evidence of woven textiles as old a 26,000 years.

becoming-geometry of mountains, related to tombs and the fear of death, the search for permanence and eternity reaching up to the circular motion of the heavens.

Pyramids with perfect polygon shape may have evolved from the earlier Babylonian altars called *ziggurats* in the Middle East as an increasing smoothing and abstraction of the stepped architectures rising to a narrow highpoint in the altar, while in other places of the world they never lost a flat top, and may respond to an attempt to build higher, in relation to rituals and to the worship of the sun. The pyramid with smooth side (without steps) and perfect polygon shape may have been an aesthetic evolution of the stepped pyramids along the invention of geometry.[26]

This is one important genealogy of fixed hierarchical perceptions, perhaps also related to the emergence of *systems of likes and opposites*,[27] of *totalities*, and of *symbolic organization in general* (of which religion and magic were perhaps early systematizations). Symbolic thinking emerged in the process of reducing, segmenting, and extruding proprioception.[28] It would take thousands of years for the pyramid to become embedded in perception as the pyramid of vision of perspective, in a radical revolution of pyramidal relations.

The birth of geometry was possibly the result of the need to recalculate the size of the lands subject to taxes that were continuously flooded by the Nile in Egypt.[29] Euclidean geometry culminated — approximately 300 years after the systematization of the Hippodamian grid — a process of invention of homogeneous geometrical perception, movement, and space,[30] while Aristotle culminated the submission of

26 The original smooth cover of the Giza Pyramids would reflect the sun rays. It would be task of an archaeology of perceptual affordances and movement to understand the significance of this reflection as structuring affordance of a despotic state in Egyptian culture.

27 I discuss some of these in the start of Book 7.

28 According to Luis Siret (1996), megaliths, pyramids, monuments, and altars were originally linked in sympathetic magic–religion to the symbolism of the Earth, imitating mountains as the place where condensation happens, where the Earth meets the humidity of the sky whence fertility comes about.

Siret proposes an account of symbolism where symbols, particularly water, are part of a process of learning from movement, thus sympathetic magic–religion approaches a scientific–naturalistic knowledge, whereas the sympathetic aspect is not about imitating or reproducing a form, but rather about taking on a movement. The emergence of symbolic thinking in *sapiens* could be seen as the process in which, along an increasing extrusion of proprioception to technical systems and geometric environments, a concern for and a knowledge of movement is developed, which paradoxically happens through the novel alignments with symbols. Thus, knowing water's movements happens through multiplicities of drawings, as proprioceptive gestures in which that movement is taken on. Drawing is primordially a proprioceptive form of knowledge. At the same time, this movement, initially an immanent knowledge in motion, becomes increasingly abstracted, (in a double oscillation of totems and taboos, of spacings and temporizations, of traces and deferrals).

As symbols cross a threshold of abstraction, the world of internal causal relations of rational thought gets established, splitting itself from its sympathetic, magical, and religious background. Then geometries will abound, conquering thought, perception, movement, space, and with them abstract logical chains of language.

29 On the origins of geometry in Egypt, Babylon, and India, see Guthrie (1962, 34); Serres (2017); and Derrida (1989). A major geometric abstraction prior to Greece may have occurred with the great pyramids in Egypt. Geometry and writing would have been two modes of segmentation and extrusion (alignments) of proprioception, movement, knowledge, thought, economy, and memory constituting large-scale systems of domination. Furthermore, according to Stiegler (2012), the production of metadata, as a relational technology, would be a metanoetic activity started in Mesopotamia, as a process of grammatization of social relations.

30 See Cornford (1976a; 1976b) for a genealogy both of the invention of space and of the elimination of time in early Greek philosophy. See also de Kerckhove (2001, 7) on the invention of space and spatialization.

movement to a law of causality and form, and Euclidean geometry created a "Euclidean world" through architectural design.

Counting technologies, such as the abacus, and the perception of numbers as discrete proprioceptive movements, associated to the articulate movements of the hands, may have been crucial for thinking the *point* as primordial discrete unity that one finds in the Pythagoreans. The *segment* as the discrete movement appeared perhaps already with the loom, but also with fences for animal exploitation, doors and enclosures, receptacles for accumulating and holding food, water and goods, in counting and in other technical activities which allowed fixed *reference points* and thus the *segmentation, repetition,* and *codification* of movement, up to the switches of modern electrical networks and binary modulation in circuits and microchips, unleashing an Age of Splits and Segmentation.

Along this process, the differentiation between sensing modes, and the increasing predominance of vision, reached a first culmination in Aristotle's definition of the five senses, which are only exteroceptive, thus neglecting proprioception and movement right from the start, in the context of a formal ontology.

Agriculture and cities, as large-scale movement fields associated to particular economies of accumulation (postponements or reserves) were crucial inflections toward *linear and gridded geometries* that emerged perhaps over millennia from more disaligned *protolines* and *protogrids*. In agriculture protolines emerged linked to a muscular movement of working the land, along with animal exploitation. Movement by furrows emerged as an economy of movement, as it did in writing as another type of segmentation and extrusion of gesture, proprioception, economy, and memory. This grammatization (Stiegler 1998) is part of the space bias of empires (Innis 1950), the tendency to spatialization that is visible in the evolution of imperial bureaucracy, its mediums, and its economies of postponement, alignment, and accumulation.

The gradual emergence of *networks,* such as the road system of the Roman Empire, and more recently railway networks or electric grids, is another genealogy yet to be accounted for, foundational for current information networks, the internet, and its attempt to mimic nervous systems and brains, creating a planetary brain. As in other cases, old and new networks bear a resemblance: ancient and modern sea routes for cargo ships are similar to the networks of submarine cables connecting internet servers worldwide.[31]

Manufactured objects started moving around as goods, exchanged through money, instead of the direct exchange of objects, in expanding trade networks and empires, affording an increasing abstraction and mobility of bodies, relations, and perceptions that were a priori quantified, while perceiving the object as detached

31 My account of the gradual emergence of pyramidal, gridded, circular, and networked movement alignments, and their transmergent/transductive unfolding, could be cross-read with Thomas Nail's (2018b) account of the historical movements of ontology as being defined first by a centripetal movement (that could be related to the perceptions created by pyramidal constructs), followed by centrifugal movements (that could be associated to the grid and its expansion), followed by tensional and lastly elastic movements whereby the circle and the network could be a hybrid figure bounding them all, though with some efforts one could associate the circle to a tension toward the heavens and the network as that which will create increasingly dynamic, flexible, and elastic, but not plastic relations. On my crucial differentiation between elasticity, flexibility, and plasticity see the end of Book 2. My approach to these modes is slightly different from Nail's approach, and more intertwined, as different, more or less simultaneous modes of transmergent alignments: of fixity, linearity, and circularity, and their expanding networks, all being related to the gradual invention of space.

from the intrinsic and embodied movement associated to its use, through which the object itself had emerged, evolving into increasingly abstract design processes.

Counting itself, and thus numbers, may have been the result of increasingly articulated movements of the hands, and increasingly abstract relations between bodies, their environments, and the increasingly distinct object affordances emerging in those environments: things incipiently seen as separate from ourselves, ourselves as separate from the environment and from the actions performed and the relations to that environment.

The history of this separation will be partly object of study in Book 7 in relation to ontology, when we will look at how movement became separated from its cause and from the body, as mature slave societies became articulated in Greece. This history, however, rather than having a single cause, may be seen as effect or tendency of multiple movement alignments creating increasingly fixed and multilayered architectural environments, at increasingly larger scales, following increasingly systematic geometries that consolidated over millennia grounding the development of despotic slave states and empires. The latter may be seen indeed as effects of increasing geometries of scalar organization and movement alignments affording increasingly abstract and large-scale power relations.

What gets disseminated in the process, constituting *planetary fields*, are movement relations.

> *The logical principle is always to be able to oppose terms which previous impoverishment of the empirical totality, provided it has been impoverished allows one to conceive as distinct.*
> — Claude Lévi-Strauss (1966, 75)

> *The human is* [...] *pitifully weak and seems perennially doomed to its weakness.* [...] *The stone* [...] *is the first organ that increases his strength.* [...] *Later,* [...] *the human will begin to put distance between its hand and its victim, between its hand and its work. And from the bow and arrow it will reach the bombers,* [...] *or the machine that makes the objects with minimal and distant human intervention.* [...] *Myth and magic are born as a means of warding off fear,* [...] *the rough carved stone utensil acquires shapes that no longer serve a utilitarian purpose.* [...] *And it is so that the human, busy overcoming the difficulties of material order, finds and falls squarely into the great mystery of spiritual life. His purpose is to dominate and defeat nature.*
> — Maria Laffitte (1953, 21)

5.3.1.2 *Interlude: Articulation–Separation Hypothesis, or The Birth of Proprioceptive Atrophy*

How did the transvaluation of life-as-variation into life-as-fixity happen, creating a vortex of increasing reduction, resulting in mass extinction? I want to suggest one possible hypothesis for the emergence of the Algoricene as planetary field of alignments and as tendency to closure, linked to an evolution of movement-perception in hominids.

The origins of bipedalism are unclear. There is evidence that it existed already around seven million years ago, over four million years before hominids started creating tools. It is also unclear how the transition may have occurred, since radical anatomical changes in the pelvis are needed in order to shift from quadrupedal to bipedal movement (see Bermúdez de Castro 2021, 84ff). So, it seems that bipedalism

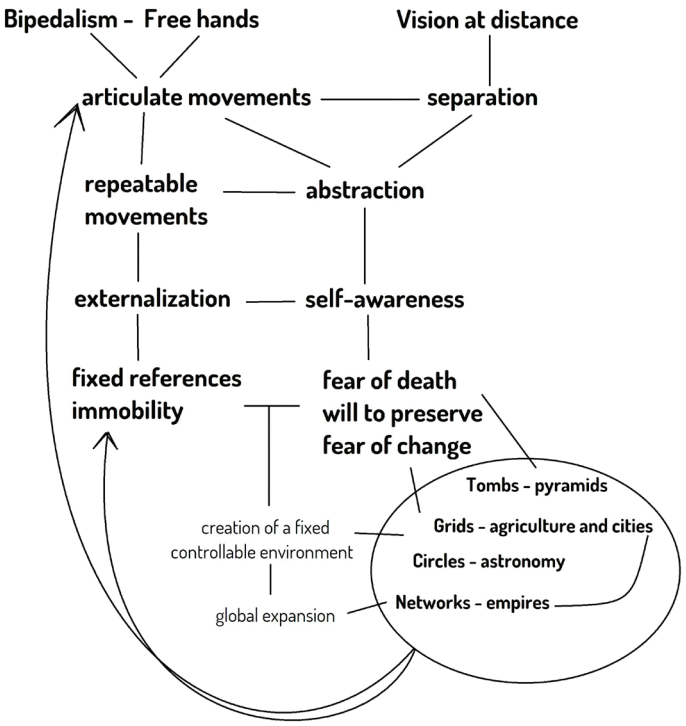


Fig. 29. Articulation–separation hypothesis diagram.

developed long before hominids left the forest, as did stereoscopic, three-dimensional color vision, perhaps needed for jumping between branches. We have inherited these already from our origins in African jungles, but crucially also hands with articulate movements.

My proposal is that bipedalism evolved precisely because primates had developed articulate hands, which some of them started using more than others for grabbing things, shifting increasingly from the branches to the ground. The fact that this had to happen in the forest and not after leaving it is the very cue to the "million-dollar question" of researchers on the origin of bipedalism and the otherwise inexplicable anatomical transition from quadrupedal locomotion. It was perhaps the forest environment with its multiple affordances for standing, grabbing, and hanging that allowed the gradual anatomical transition toward bipedalism, through in-between modes of movement in relation to the forest environment! It happened not because of any selection pressures but because primates started trying out new variations. The new mode of movement primates had developed climbing trees and jumping branches led to the development of articulate hands, and suddenly these started to explore other movement possibilities.

But then, about four million years later, tropical forests in Africa retracted due to climate changes, so that hominids originally living in the forest found themselves gradually in the savannah, coinciding with the period when they started creating tools, around 2.75 million years ago. So, this change of environment, induced by the climate fluctuations of the Earth, eventually allowed the development of new kinds of free articulate movements of the hands, together with the increasing use of vision at a distance. Tools didn't appear when they were in the forest, it was the new savannah environment that triggered the change.

In the tropical forest, primates were distinguished by their peculiar locomotion, jumping from branch to branch, living amidst the trees. And most importantly, they were herbivores — indeed we are still anatomically herbivores. In the savannah, instead, they were helpless against the phenomenal predators around them, cultivating perhaps a fear and inferiority complex that is most likely at the deep roots of human cruelty, while most unfortunately becoming carnivores, hunting through tool making. This quite possibly triggered the change,[32] together with the fact that in the jungle their hands were occupied with the multiple affordances of plants, whereas in the savannah they were free. Distance vision allied with articulate hands and the increasing statue-like posture of this fearful biped, allowed for the unleashing of this extraordinary mutation toward walking and tool making. *Walking: that strange kind of movement… followed by ploughing, and rolling, and clicking.*

The steps of bipeds in the savannah (as different from torsions in the jungle) may have been an early cue to the rhythmic segmentation of movement and to binary meter, as well as toward linear trajectories, visual distancing, and teleology. Much later, through the circular motion of wheels and engines, a superlinearity took over, of highways, airplanes, ships, railways, spacecraft, currently moving into the hyperlinearity of computation. The greater the alignments, the less movement fluctuates recomposing with the world in qualitative transformation of energy, resulting in a surplus of energy consumption and pollution.

The changes emerging in the shift from jungle to savannah implied a *double movement of articulation and separation,* in which bipedal locomotion induced a new type of postural alignment where internal body parts shifted much less their internal orientations with regard to one another, while a greater focus was placed on the small articulations of the hands, moving freely, detached from locomotion, while the sense of vision started gaining predominance over the other senses.

Bipedalism introduced a first-level *proprioceptive atrophy,* as the body reduced its internal proprioceptive fluctuations in moving with, and sensing, its surroundings, perhaps involving already in the early stages a greater focus on manual proprioception for relating to others and the world. This got accentuated by the increasing dominance of vision and the focus on increasingly discrete and abstract manual movements that externalized themselves, creating an even more atrophied body, in an endless loop.

The increasingly discrete, articulate, and protoalgorithmic movements of the hands constituted an increasingly abstract field of movement, separating itself from the rest of the body and from locomotion, constituting the nexus for externalization in a geometric technical environment, where the body no longer felt its environment proprioceptively but saw it from a distance, acting upon it, imposing on it its increasingly abstract manual movements and extensions.

A subtle balance got co-opted in mammals that had already grown very complex in their brain and nervous system. It seems that the very fact of standing up induced a sufficient reduction of proprioceptive variation for the evolutionary turn to happen, but only once bipeds found themselves in the savannah, using their free hands

32 See Jouventin (2020) on the core role of collective hunting of megafauna in hominization, with *sapiens* as only primate having developed this, and the way in which this has made us converge ethoecologically and psychologically with species who have evolved around social hunting, like wolves, from whom we have arguably learned the altruism that primates don't usually have, resulting in the dog and the wolf as the ones whom we owe the quality of *humanitas*. This contradiction between the primate's egoism and the sociality learned from wolves and dogs through an overdose of enculturation would be another core piece in the puzzle of our evolutionary failure.

in new ways outside the forest environment, leading to increasing abstraction of manual movements in relation to vision, which in turn aligned bodily movement even more, which in turn led to increasingly fixed built environments… and so the loop started that has taken us all the way to a mass extinction! This alliance of bipedalism, articulate hands, and vision started a perfect storm setting the grounds for an algorithmic culture that would take 2.75 million years to fully unfold, in a fatal spiral of increasing atrophy, dependence on technical systems, and narrow sensibility, a spiral of alienation, appropriation, and accumulation.

The unprecedented evolution of bipedalism eventually led to increasingly articulate and repeatable movements externalizing themselves in tools and protoarchitectures, unfolding as an increasingly geometric environment, which in turn involved increasing abstraction in thought, leading to increasing self-awareness. The latter eventually grew along with fear of death and will to self-preservation, which induced a will-to-fixity that was enacted through externalization: by composing an increasingly fixed environment while trying to foresee the changes of the world.

All this exploded in the agricultural revolution after the last glacial period. This ensued in the first three major types of alignments: pyramidal and monumental fixed points reaching up to the permanent heavens (tombs and altars); gridded expansion-accumulation (agriculture); and circularity as effect of the search for permanence and prediction of change through the study of the heavenly bodies (astronomy). The emergence of religion and of despotic regimes was part of this process linked to a body that had lost its proprioceptive plasticity due to bipedalism, articulate use of hands, and the predominance of vision.

The more intricate the geometric–technical environment became, the more atrophied the bodies, and the more abstract the thoughts, entering a fatal spiral of *techno-epi-phylogenetic closure,* of increasing experiential atrophy that has narrowed down perception and kinetic variation. These early alignments unfolded an increasingly complex and all-encompassing geometric environment, constituting protonetworks, with an increasing spatial expansion. These geometric environments induced a full-circle process of epigenetic reengineering of perception, behavior, and ultimately also an artificial genetic selection, unfolding a vortex dynamics of superalignments where geometries affect behaviors, which affect thought, which affect geometries, and so forth, a dynamics through which we seem to be approaching the black-hole singularity of extinction.

The articulation–separation hypothesis is an actual kinetic evolutionary theory that provides a hint of how a certain techno-epi-phylogenetic turn appeared, associated to an abstract, reductive, and rational form of intelligence; and points to possible ways of reverting this evolution also through movement, taking it in new directions, as I expose in the introduction, and in Books 2 and 6, mainly through the concept of BI (and in the opposite direction of transhumanism).

…

Sapiens migrated from Africa to the rest of the planet, across one or more glacial periods, over the past 100,000 years. Its evolution has been timed, as well as both hijacked and propelled, by these glacial periods (fig. 30). The simultaneous explosion of agricultural societies 10,000 years ago is due to the end of the last glacial period. The astonishing appearance, at almost the same time, of Confucius and Laozi in China, Buddha in India, Zoroaster in Persia, Pharaoh Necho II in Egypt, Plato in Greece, as well as the Mayas and other ancient cultures in Mexico, can perhaps be

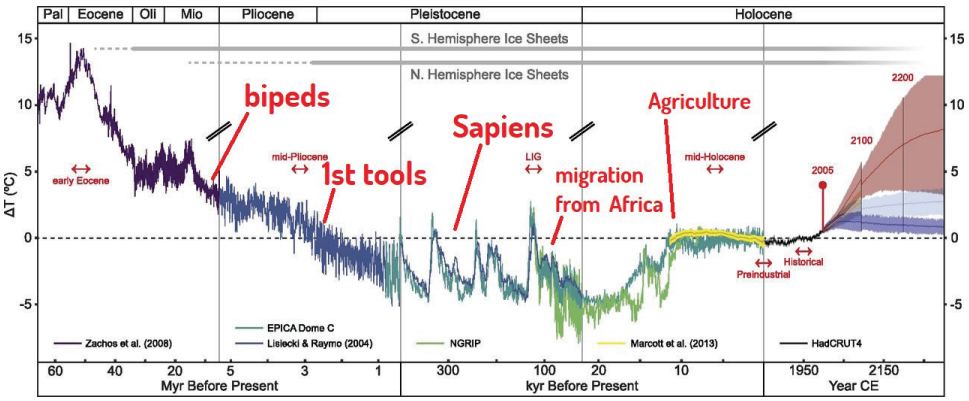


Fig. 30. Global temperatures over the past 65 million years identifying the emergence of bipedalism, tools, the *sapiens,* its migration, and agrigulture, including future predictions. Adapted by author from Burke et al. (2018).

explained through this common evolution propelled by glacial periods, an evolution that had been on the way for nearly three million years, since the bipedal hominids found themselves in the savannah and started using their hands in a new way.

Bipedalism probably didn't emerge due to selection pressures but due to the overabundant experimentation of nature and its movement of variation that researchers seem often to ignore due to excessive focus on Darwinian selection criteria. Sometimes things are simpler. Our emergence is due to a huge number of accidents: the extinction that killed the dinosaurs and favored the proliferation of mammals and primates; the emergence of the type of movement that characterizes primates, climbing, jumping from branch to branch in the jungle; the consequent biotechnical evolution that led to the emergence of articulate hands that, perhaps by chance, started to explore other possibilities grabbing things in the jungle and leading to bipedalism, which several million years later took on new variations when the bipeds with articulate hands and stereoscopic color vision found themselves in the savannah, migrating afterward all over the planet across glacial periods. Since the end of the last glacial period, we see agriculture and the largest concentrations of human population emerging in China and India, the area of influence of the monsoon and the rivers from the Himalayas–Tibet region. The latter are also an effect of a recent geological fluctuations, as the Himalayas appeared in a very quick geological time lapse only 50 million years ago due to the fastest recorded tectonic movement, when India separated from Africa and collided with Asia. The Chinese and Indian populations proliferating in river cultures were soon accompanied by other growing populations in river cultures of Mesopotamia and Egypt. All these are just some of the accidents leading to the Age of Algorithms… And we still pretend to be the telos of nature?

…

At a certain point, with the first naturalistic philosophies and religions or with sympathetic magic, we went from practicing movement to *worshiping* it, *thinking* about it, and *invoking* it, and then we went on to *deny* it with monotheism and rationalism, with the fiction of the disembodied mind arising from atrophied bodies obsessed with their immortality. And lastly, given the impossibility to deny movement, we went on to *control* it, creating an entire controllable planetary environment, expanding across the planet with accelerated homogenous movements

that are paradoxically paralyzing the planet itself, in our own atrophied image, while unleashing the worst of uncontrollable disorders, since the more you control, the more disorder you create! It is high time to undo this process.

…

What we call artificial is but a reductive externalization offspring of an accidental desensitization and atrophy resulting in self-referential ecosystems that abstract themselves and impose themselves, tending to geometric reduction:: the primordial fact of sensorimotor or bodily–kinaesthetic impoverishment underlying the extinction process, which paradoxically unfolded under the pressure of a weak animal's fear for its surrounding predators in a new environment around 2.75 million years ago.

Three million years of cyborgs? Indeed, of reductive and fearful externalization in alignments, tending to dominion, with fear and cruelty at its base!

5.3.1.3 The Double Bind of Grids and Spheres, and the Taming of Dionysus

In Ancient Greece a number of geometries that had emerged over the previous millennia acquired unprecedented abstraction. Here we find the double bind of linear and circular geometries, grids, and spheres, related to what Cornford (1976a; 1976b) calls the invention of space (culminating in Euclidean geometry) and the elimination of time.

5.3.1.3.1 Grids

Grids aren't structures but choreographies. Grids are anomalous formations not readily visible in nature, except perhaps in some crystals, brain structures, and in entoptic phenomena.[33] Nature is in itself an endless web of networks, from galaxy filaments to brains and cell cytoskeletons, while trees or rivers exhibit visible branching network types, but all are crucially defined by their organic–material openness. Algorithmic grids are instead about closure. Their emergence is yet to be accounted for and could relate to manual movements in textiles and writing, as well as to agricultural and urban alignments. Fishing nets or basketry provide a different genealogy, linked to capturing or containing.

Following Peggy Reynolds (2012),[34] the first grid structures were possibly looms, around 26,000 years ago, and with them textiles, as one early and crucial affordance of separation from the environment which is still with us. Reynolds speculates with the idea that gridded brain structures have slowly externalised themselves composing an entire world of grids, exemplified since antiquity by gridded maps and spheres (graticules).

Around 600 BCE, Hippodamus of Miletus systematized the urban grid or gridiron (fig. 31), which had been around for millennia in a less systematic form in Mesopotamia or Egypt, and which generated a first algorithmic organization of the city, exported to over three hundred Greek colonies. This in turn may have generated the

33 Internal optical phenomena in the eye called phosphenes, appearing in psychedelic states, which may be represented in designs in the caves of Lascaux from 16,000 BCE, and which may be effects of relations between retinal cells and brain cells. See Reynolds (2012, 9).

34 Reynolds elaborates a full genealogy of the grid and suggests these early relations between urban grid structures and protoperspectival, protosubjective formations, which may eventually have influenced or laid the ground for Aristotle's hierarchical, methodical and causal thinking. See also Siegert (2003) for a genealogy of the grid.

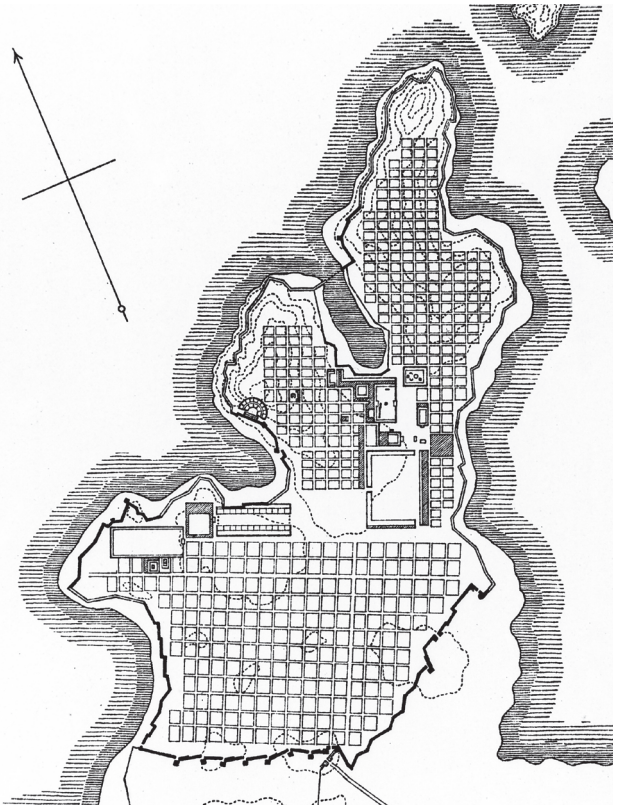


Fig. 31. Hippodamus's Plan of Miletus in A. Gerkan's *Griechische Stadteanlagen,* showing the first systematization of the gridiron.

illusion of lines converging in the observer who inhabited the grid, and with them a protoperspectival subject and a linear, causal thinking: the *logos*. Not by chance Aristotle was raised in such grids.

As Reynolds points out, the urban grid of the Hippodamian plan already implies a fundamental change in collective perception, pointing to the emergence of individual perception. In the transition from emergent nongeometric cities to the gridiron or Hippodamian plan, we can see the transition from intra-active environments coemerging from the movement relations of bodies over long periods of time (in which there is no superimposed abstraction, no total fixed plan, only a relative mobility of elements accounting for perception as always relational and collective, where the collective is not yet quite a collectivity of individuals as the individual has not yet emerged), to increasingly fixed geometrical environments.

The individual, as distinct entity separated from its environment is, so I argue, a result of these grid geometries in their incipient form and acquires a mature form only with the more radical perceptual choreography of Renaissance perspective. As suggested by Reynolds, citizens inhabiting gridded environments must have had a novel experience of themselves and the environment as the optical illusion of lines converging toward them generated a protoperspectival subject, while the movements of bodies happening in this abstract large-scale grid structure may have been increasingly algorithmic movements of displacement, perception, object manipulation, or construction, among others.

This genealogy of hierarchical pyramidal vision as effect of inhabiting grid-like urban structures, has a variation in Euclidean optics and its definition of the cone

of vision and its spherical properties, which in Renaissance perspective becomes a pyramid of vision of artificial, flat, and planar projections.

This increasing process of abstraction, culminating in the invention of abstract Euclidean space as a mental construct that acquires ontological autonomy, is everything but mental: it's the result of bodily and kinetic–perceptual organizations happening over long periods of time, consolidating in a new abstract affordance.

In Greece between the 6th and 3rd centuries BCE, we see the mature evolution of democratic slave societies out from previous despotic monarchic slave societies, a slave democracy of tradesmen exchanging goods in the mobile archipelago territories of the Aegean Sea, with objects becoming increasingly detached from the use value and perceived in terms of exchange value, with counting and accounting, mathematics and numbers becoming more abstracted and autonomous in conforming a self-referential universe sustaining economies as mobile social relations, with architectures becoming more geometrically articulated as the polis followed a gridiron logics, while vocalic language and writing become increasingly abstract, giving birth to the logos and logical thinking.

However, in Greece we are still far away from the radical visual rationalization of the Renaissance. As Ivins (1975) suggests, the Greek intuition of space was still muscular–tactile, as was implicit in axioms of Euclidean geometry, such as the axiom of two parallels never meeting as they proceed toward infinity. As we will see below, in central perspective parallels do meet at infinity, but this articulation was a later invention, and its mathematical implications only became apparent even later, around the 19th century.

Euclidean optics did articulate a theory of perspective, based on the empirical study of vision and its spherical nature. Due to the spherical construction of the eye lines curve in the margins of the visual field. This study of the spherical properties of vision is one of the interesting threads pointing to our other crucial geometry: the sphere.

…

Grids underwent multiple *revolutions*: from their first instantiations in the ancient loom, the urban grid, and the graticule, they became embodied as the grid of perspectival perception in the Renaissance, which became ubiquitous in frame architectures and partly automated through mechanism, photography, and film. With the Jacquard loom (since 1801) and later with cybernetics (since 1948) the grid itself became a mutating mesh capable of ongoing readaptation, and with ubiquitous computation and smartphones it became an autonomous, all-encompassing mobile network in continuous reconfiguration. Meanwhile, concrete allowed the proliferation of vertical cubic constructions in cities, a massive three-dimensional grid of which the Twin Towers of New York were the most paradigmatic example.

The gradual gridding of the world involves striation of the land with agriculture and geometry, of the sea via astronomical measurements, of electricity with the electric current and the microchip, of the electromagnetic spectrum with radio, TV, and wifi data signals; from textiles, looms, and writing to digital code, extrusion of 3D city grids of skyscrapers through building in concrete, a bureaucracy of boxes for profiling, and a world economy of boxes and containers. From the loom, the textile, the Hippodamian grid, and the graticule to the microchip, the pixel, planetary-scale computation systems and all-encompassing, real-time mapping, sensing, and redi-

recting, we can trace a complex genealogy of expansion and miniaturization of geometric fields creating an entire world of gridded relations in all scales.

Gesture, speech, drawing, and notations evolved into abstract symbols of linear writing and books, all of which underwent a radical revolution in the Renaissance with the advent of linear perspective, engraving, print, typography, and the camera obscura. These technologies allowed the emergence of an increasingly detached, homogeneous, and rationalized perception, leading to the radical shift into the currently dominant epoch of computer code as effect of increasingly complex and autonomous movements in machines and the entanglement of gridded and circular motions.

5.3.1.3.2 Wheels and Spheres: The Onset of Circular Motion

The circular movements of different kinds of wheels seem to have appeared over 5,000 years ago, linked to human expansion in the Neolithic.

The Aryan migrations and invasions, linked to the spread of proto-Indo-European languages, farming, patriarchy, hierarchy, and ecstatic practices of shamanism, dispersed from the Pontic–Caspian steppe along with the spread of the *wheel chariot* and the domestication of horses from around 3,500 BCE. The *Urheimat* of these cultures may have its oldest point in the Samara culture and is associated to the introduction of cattle around 5,200 BCE.

The other wheel, the *pottery wheel*, invented somewhere in Mesopotamia around 3,500 BCE, emerged also related to agricultural accumulation, storage, and urban life. Though originally it may have stemmed from the pottery wheel and its smooth proprioception, the invention of the wheel brought in a new type of repetitive circular motion and displacement, associated to increasingly large road networks such as those of the Roman Empire, much later leading to complex mechanisms of mechanical clocks and their step-by-step movements, and to engines and electrical motors.

At the same time, studies of cyclic and circular motion of the heavenly bodies gave birth to astronomical temples or observatories of circular form, like Stonehenge, and gradually became abstracted as geometric spheres of movement. Meanwhile Parmenides' account of a spherical, self-contained, immobile world eliminated time and movement in a radical turn that foregrounded abstract logical chains of language.

The study of cosmic cycles, of the movements of planets and stars, of the sun and moon, of the day and the year, which was perhaps present in every ancient agricultural society, gave birth in Mesopotamia, Egypt, and Greece to more systematic studies of circular movements that gave rise to the Sphere as further abstraction of such movements. The first geometrically abstract sphere is reported to come from Anaximander, followed by the armillary sphere of Eratosthenes, and the celestial sphere of Eudoxus of Cnidus. Meanwhile, these figures, which already abstract the circular motion of planets and the cosmic cycles, become even more abstract with the Pythagoreans, Xenophanes, Parmenides, and nearly every philosopher of the time, who saw in the sphere the most perfect geometrical form, fascinated perhaps by its self-contained movements, whereby the sphere may rotate without displacement, is at the same time boundless and finite. This astronomical sphere was abstracted into a geometric shape for the cosmos and space, as perception of totality, initially associated to eternal movement but with Parmenides shifting to a figure for immobility.

...

Fig. 32. The theater of Epidauros.

Another type of circular architecture, quite different from those devoted to astronomical observation, was is the Greek theater, which was a sort of inverted proto-panopticon, and also an element in the genealogy of linear perspective (fig. 32).

The Greek theater architecture served the important purpose of what I call the "taming of Dionysus," by capturing the chorus, the nomadic and orgiastic group of dancing and singing bodies from which ancient tragedy emerged,[35] associated to the nascent architecture of the spectacle that is pervading culture still today. The sheer scale of these architectures gives us a hint of the importance this move had for Greek society and the *polis*. This capture is grounded in increasing separations of the collective improvisation of the Dionysian choruses, in which there was yet no split between actor and spectator, author and work, collective and individual, dance, music, speech, or theater. The architecture of the theater culminated in the gradual separation process of all these elements, embodied in Greek tragedy. Through this architecture, a crucial shift was enacted: *from the chorus to the spectacle.*[36]

...

Greek theater architecture is somehow a precursor of the panopticon, while wheels are more direct precursors of the time panopticon of mechanical clocks and their instantiation of an absolute Newtonian time. Through wheel-based mechanisms, the planet has become a clock panopticon of absolute Newtonian spacetime. As was mentioned before, wheels also underlie all mechanical movements in engines and motors.

The ancient idea of a spherical cosmos actually created a panopticon of spacetime totalizations, of ubiquitous spheres and wheels creating measurable clock-times in an inescapable 360° field of vision that later becomes a planetary field of maps and satellite vision, in all dimensions and scales.

35 The Dionysian chorus was, following Nietzsche (1999) and other theorists of ancient Greek tragedy, a nomadic, orgiastic chorus in which no split between music, dance, or text, between author, work and spectator had yet occurred. See Tuncel (2011a) for a Nietzschean genealogy of spectacle.

36 I elaborate this fully in Book 6.

A crucial turn was the overcodification of the circular movement of the wheel into the engine or motor of accelerated revolutions, unleashing the Industrial Revolution, thermodynamics, the era of ubiquitous transportation, and its associated climate crisis.

But this unfolding of the sphere has been full of surprising turns, such as when Johannes Kepler had to abandon the idea of symmetrical geometries of the heavens and, accepting the measurements for which he had no theory, developed the idea of elliptical orbits of the planets. The circular movement that had driven ideas of stability, eternity, and order since antiquity appeared to be part of much larger swarming multiplicities in an infinite, fluctuating cosmos.

Peter Sloterdijk (1998; 1999; 2016) gives another genealogy for spheres starting from the lived immediate bubble space of the uterus, the egg, the nest, and the home, expanding to the domes as macrospheres of an imperial common space of globalization, and back to the foam of our society of cars and internet bubbles, but also toward the foams of a more plural society. But along this, he misses movement in several ways. On one hand the astronomical sphere emerged from a study of movement, and the way the sphere has evolved needs to be studied in conjunction with other alignments. For instance, the panopticon is already a complex hybrid of spheres and perspectival vision.

Core is also an understanding of the filaments in foam: how they formed the plastic architectures of the cell, or of the nervous system underlying proprioception (which is the proper way of understanding how we actually coexist with others in entangled and transformative ways, beyond the membranes that isolate us), and how these filaments have become an endless world of grids, down to the microchip: grids and geometries which underlie the highly aligned bubbles of contemporary society.

Sloterdijk proposes a spherical ontology that suggestively starts with a sphere of inner lived space, originally the uterus–egg–nest–home (with echoes from Gaston Bachelard's poetics of space, but building primarily upon Heidegger's *Dasein*), an inner space conceived as always relational, a field of immanence open to the world, always already a medium, where bubbles are both separated and bound by membranes, a space of immediacy, every single body a medium, a field, every body already a space and a relation.

He then exposes the failed process of Western imperialism and metaphysics to create macrospheres for common space, totalizing Parmenidean spheres of immanence, ensuing in three waves of globalization and colonialism and in the endless macrospherical formations of globes and domes.

Lastly, Sloterdijk explores the more promising trope of foam, which accounts both for the physical and biological, but also for ways of thinking and articulating social life. Promising in foam is the idea of force distributions transposed to tensegrity architectures, which explains the explosion of excessively large bubbles. Sloterdijk outlines a political *amorphology* that reaches down to the metamorphoses and paradoxes of solidary space in the current age. Foams are everywhere, from quantum foam to bubble universes, through organic life in all its forms. Even in mythology Hesiod accounts for Aphrodite, goddess of generation, as the one that is engendered by foam, itself a generative force.

When bubbles isolate in radical immunity, like state-cities surrounded by walls, when they become aligned and gridded, losing their emergence, then there is a problem. And yet for Sloterdijk it is important to claim the sphere as *form*. Different from

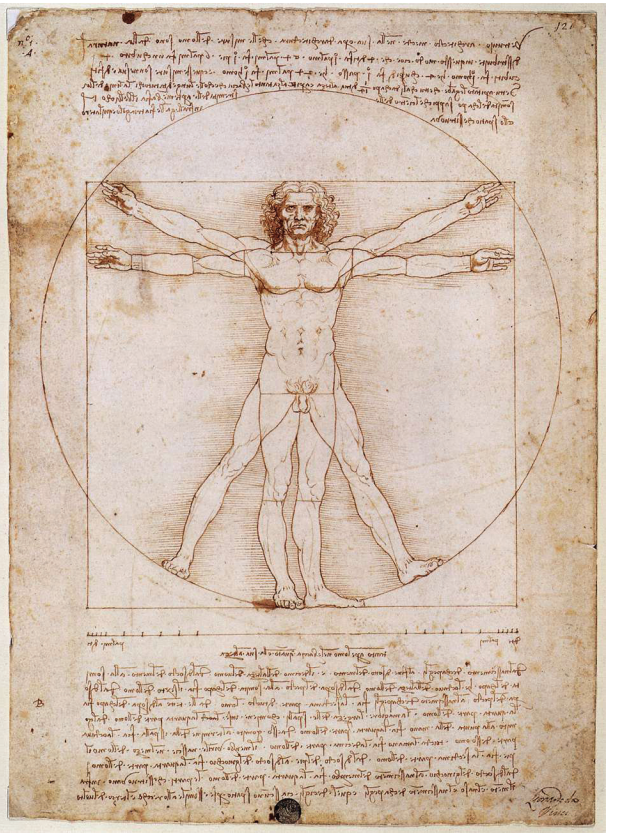


Fig. 33. Leonardo's "Vitruvian Man," expressing Roman architect Vitruvius's idea that the human body can simultaneously fit inside a square and a circle, exposes the persistent attempts to give a geometric basis to human movement. Several artists in the Renaissance had tried to realize this idea. Leonardo had a clever solution: the square is the shape, the circle is the movement. This has a deep Neoplatonic significance, as for Plato circular movement was the intelligent soul of the world. Rationality is embedded in the human through its circular motion and geometric proportions. Modern echoes of this quest for orderly, circular–geometric motion can be seen in ergonomics or in Rudolf Laban's Kinesphere.

Sloterdijk, in my approach there is no form, it is formless movement that creates fields, in the complex transduction of diverse dynamics and alignments.

Spherical–circular–wheel formations have had multiple genealogies. From the fireplace, the uterus, and the cavern, the egg and the nest, to the house and village and the nuclear family panopticon; from the circular dance of the chorus to the Greek theater and panopticons; from the wheel and pottery to the clock and the engine; from the study of planetary motions to circular observatories and the sphere; from astronomic observatories and spheres, the ring, the Ouroboros, and the ideality of circular motion, to domes and globes; from Copernicus's worldview and Leonardo's Vitruvian man (fig. 33) to Laban's Kinesphere; from the street assembly to the parliament and back; from lenses and optics (the gleam or glint in lenses as part of its internal logic) to ubiquitous cameras, (thus re-connecting to Euclidean optics as spherical perspective); from Étienne Jules Marey's physiological station panopticon for the study of locomotion to radars. (See figure 65 for these evolutions and relations.)

5.3.1.4 The Shift from External to Embodied Perceptual Design

This process of geometric un-folding disappears mostly in the Middle Ages, where iconography folds inward toward representing a world of ideas, rather than sensible forms (where Christianity is "Platonism for the people," according to Nietzsche), while grids disappeared and medieval cities folded into fortresses within a world that was provisionally not being subjected to global gridded mappings.

But these returned full force in the Renaissance, when we find a second crucial inflection in the Algoricene, with the invention of perspectival vision, a fully algorithmic and rationalized mode of perception.[37] The rediscovery of Ptolemy's map in the Renaissance, together with the invention of woodcut around the end of the 14th century somewhere in Germany or the Netherlands, as well as the different moves converging in Renaissance humanism, starting perhaps in the 13th century with Giotto's paintings prefiguring aspects of perspectival vision, converge in the new rationality of the Florentine bourgeoisie, demanding a new radically pragmatic approach to the world. Gradually this cultural thrust, or dominant tendency of movement alignments, enacted a new kind of absolutely measurable, mathematically reducible, homogeneous space.

Engraving, as a kind of trace of gesture, of externalization of memory, may have happened in different ways since over 500.000 years ago, and accounts for another crucial genealogy of fixed affordances emerging from movement. However, it was not until the emergence of woodcut in the 14th century and later prints, that engravings, whether images or writing, could be identically repeated and distributed in the context of European rationalization.

In China, woodcut, print, and modes of perspective different from linear Renaissance perspective had existed long before, but did not lead to such an all-encompassing geometric field of rationalization. It remains a subject for another book to study the unfolding of a different panchoreographic in China, and its relation to the 5,000-years-old imperial tradition there and the conceptions of the individual, the collective, and the state, quite different from the European ones, with a less defined individuality, conceptions which are intrinsically linked to the differences in the perceptual–kinetic fields.

In Europe, woodcut enabled the establishment of a grammar of visual forms and the emergence of signs. Crucial here is not only the identical reproduction of the sign itself, but the homogeneous perception of it, the perceptual relation to it. Anatomy as a science, and all its subsequent formalizations including morphological genital sex, emerged eventually from this novel perceptual relation to the body seen from an outside and reduced to a grammar, a cartography of symbols, and a morphology.

This homogenization of perceptual relations, and thereby of space, time, and movement was enacted in a mature form through linear perspective in 15th-century Florence, though the earliest systematic attempts toward a linear perspective can be found in ancient Greece, even before Euclid's optics, related to *skēnographia,* the painted panels presumably invented by Sophocles or Aeschylus, that were used to provide the illusion of depth on stage. Anaxagoras and Democritus are cred-

37 See Manovich (2002, 390) on the algorithmic character of perspective. See Gebser (1985) on perspectival, unperspectival (before perspective), and aperspectival (coming now after perspective) perception. While I don't share Gebser's association of aperspectival perception to a sort of emergent universal consciousness, it is, however, interesting to distinguish between preperspectival and postperspectival as different modes of nonperspectival perception.

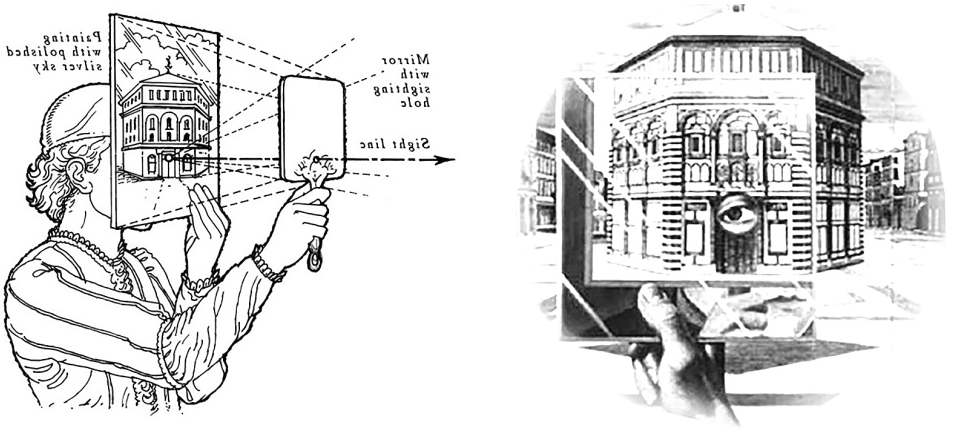


Fig. 34. Brunelleschi's experiment in the Battistero in Florence. Adapted by author from https://proyectoidis.org/perseptografo-de-brunelleschi/.

ited with the development of theories for the pictorial representation of depth in *skēnographia*.[38]

A first pragmatic elaboration of linear perspective in the Renaissance came between 1415 and 1420 through a number of experiments by architect Filippo Brunelleschi, especially his famous perspective experiment in the Battistero in Florence, which he demonstrated to the amazement of the public with an ingenious device including a mirror and a hole for looking through (fig. 34), which contain the main aspects of the new perceptual architecture which has persisted till today: fixed point and distance to a frame, the frame being a gridded plane or planar projection in a pyramid of vision.

5.3.1.4.1 The Rationalization of Sensibility

Brunelleschi's friend and noted humanist Leon Battista Alberti would provide a theoretical articulation to his experiment two decades later, in 1436, thereby defining the first geometrical theory of central perspective, which departed from the empirical approach of Euclidean optics by avoiding the spherical curvatures of vision,[39] generating a gridded pyramid rather than a spherical cone of vision, from which planar projections could be extracted (figs. 59, 60). The preconditions for this geometry were a fixed distance and point of vision, which Alberti, decidedly a precursor of peepshows, also demonstrated in amazing shows where the public had to look through a hole that defined the fixed point and distance, onto a scene painted using the new fundamentals of perspective.

Perspective thus became separated from a theory of optics and defined an artificial form of perception that was grounded in its own internal coherence more than in its reference to the optical functioning of vision. It articulated a new mode of vision that proliferated in numerous mechanical devices based on frames, grids, and pyramids of vision, and finally became internalized as relations between bodies and the environment became kinetically structured by the geometries of perspective.

38 See *Wikipedia*, s.v. "Perspective (graphical)," https://en.wikipedia.org/wiki/Perspective_(graphical).

39 Erwin Panofsky (1997) discusses the difference between Euclidean optics as theory of perception with a spherical cone and Renaissance perspective as artificial construct based on a visual pyramid.

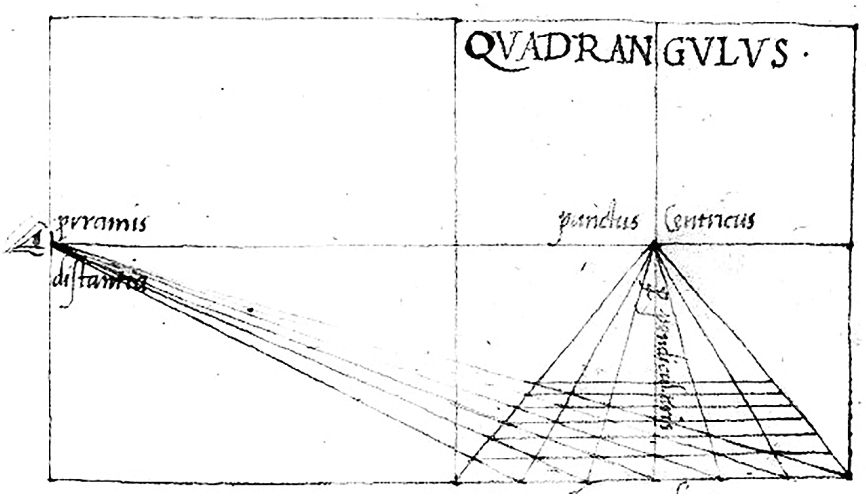


Fig. 35. Alberti's *Costruzione legittima*. From Leon Battista Alberti's, *De Pictura*, 1436, edition from the Codice Lucchese composed in Padova by Antonio Bovolenta, 13th february 1518, Lucca, Biblioteca Governativa, Ms. 1448.

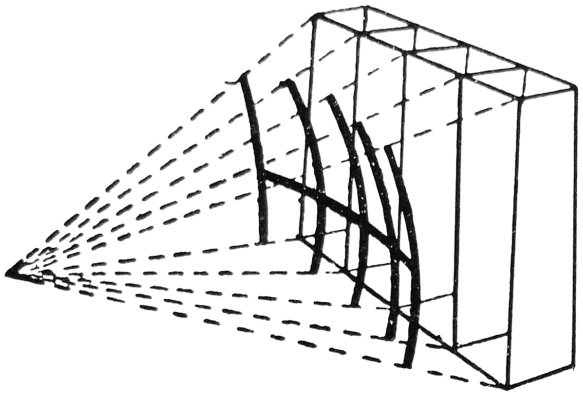


Fig. 36. The curved plane of Euclidean optics according to Erwin Panofsky, in contrast to the linear construction of Alberti. Adapted by author from Erwin Panofsky's reconstruction in Panofsky (1997) and Maltese (1980).

The radical turn that perspective implied with regard to earlier systematizations in Greece was that it was a direct engineering of the perceptual field. While the urban gridded environment of the Hippodamian plan was indirectly affecting perception through the novel large-scale organization of space, Renaissance perspective engineered perception explicitly and directly, and according to an artificial construction that allowed algorithmic reproduction, rather than aiming at a precise description of how perception operated. Linear perspective was operational, grounded in its capacity to act upon the world, right from its foundations.

Perspective engineers a highly rigid and sophisticated choreography of perception, by radically fixing it and articulating it in geometrical and hierarchical terms, constituting an immensely powerful metamedium in which several geometries (Euclidean geometry, grid, pyramid) come together, generating a new perceptual ecology. Vision comes thus to dominate entirely, separated from the other senses which it governs, including the muscular tactile intuition that had still been present in Greece. Vision becomes fixed according to point, distance, and axis, it becomes

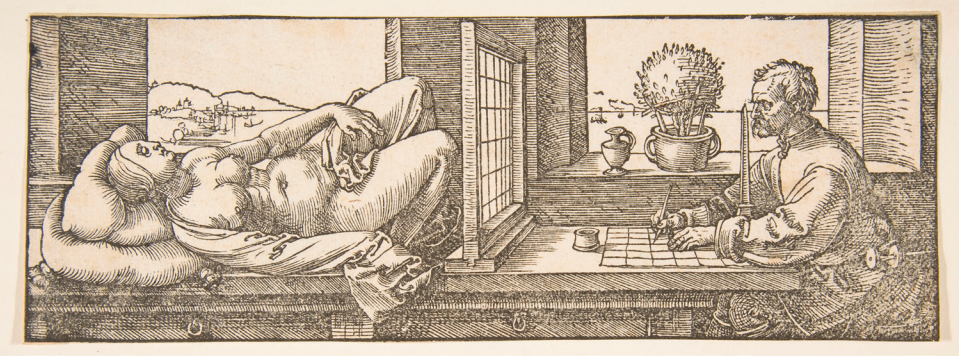


Fig. 37. Engraving by Albrecht Dürer showing a perspective machine, ca. 1525.

an algorithmic process of transposition from a grid of perception to a grid of representation.

As William Ivins claims, "the most important thing that happened during the Renaissance was the emergence of the ideas that led to the rationalization of sight" (1975, 7). Linear perspective instantiated a highly anomalous and rigid organization of the senses,[40] with a fixed point and distance of vision, in relation to a pyramid of vision and a planar projection (vertical cut across the pyramid of vision). The ontological force of perspective radicalizes incipient effects of grid structures in Greece by instantiating a radical externalization of the observer that detaches itself from the observed by its *ontological geometrical attachment to the gridded frame.* The fixed point and distance of vision (so utterly anomalous in terms of how perception-as-movement usually operates) allow the further mathematization and algorithmic reduction, or rationalization, of perception itself, and with it of movements and behaviors, aligned with the device.

Perspective instantiated the ontological split between a subject observing and an object being observed. This materialized the subject–object split[41] two centuries before Descartes theorized it. The subject, the state, humanism's account of the human, anatomy, or mechanism are some of its offspring.

5.3.1.4.2 Ontocolonial Variations on Dürer: Alberti's Turn

From the 15th century, numerous devices were invented based on Leon Battista Alberti's theory of perspective from 1436, which had itself precursors in experiments by Brunelleschi or Piero della Francesca. An engraving by Albrecht Dürer (fig. 37) shows a mechanical aid to perspective from the Renaissance and condenses many of the aspects introduced or consolidated by linear perspective: the machine of perceptual fixation, the sensory hierarchy of the pyramid of vision aligned to a grid and frame geometry, the ensuing ontological split between an observer and an observed and its link to a phallogocentric and patriarchal tradition (dressed male draughtsman, naked female model), and the discrete and algorithmic manual–visual kinaesthetics of the draughtsman.

The kinaesthetics is algorithmic in that hand and eye movements are cut into very small segments oriented by the double grid, allowing point-by-point transmission from one grid to another. This machine allows the coming together of frames, grids, points, lines, and pyramids of vision in a new kind of geometry, the mathematical

40 See Maltese (1980, 450–87) on Panofsky (1997) and the origins of perspective in Euclidean optics.
41 See Gebser (1985) on the relation between subject–object dualities and perspective.

complexity of which will be elaborated four centuries later by Desargues (Ivins 1975, 32). For instance, in linear perspective two parallels meet in the vanishing point, whereas in Euclidean geometry they never meet. Ivins suggests that this implies the balance between vision and a proprioception or tactility in the Greeks, which in perspective gives over to a complete dominance of vision.

The engraving speaks about how the possessive individual also emerged with this geometry,[42] as well as representation, and the Eurocentric bias toward content and discursivity, always associated to a hetero-patriarchal tradition. The subject mirrors the vanishing point placing itself in a virtual infinite, an absolute outside (Reynolds 2012). The choreography of rationalist thinking can be found in the reflexive and linear algorithm of this geometry. It also presents the perceptual foundations of European colonialism as an *ontocolonialism,* a formatting of perception itself, and the creation of a planetary-scale field of alignments.[43] It is not only about a replicable content and a replicable observer, but especially about *replicable relations.*

It presents the way in which perspective has been algorithmic and tending to automation right from the beginning, leading to current attempts to achieve full automation through AI, after a time of expansion of the paradigm to all scales and sensory modes, and into the construction of artificial perspectival worlds, first in architecture, now in digital design: an infinitely recursive apparatus that can expand seamlessly, infolding and unfolding in every scale. It also speaks to the implicit failure of perspective's will to become autonomous[44] when you do away with the proprioceptive knowledge of the observer.

The engraving also speaks to another genealogy of control, namely the will to generate fascinating illusions, originating perhaps with ancient Greek theater and its *skēnographia.* This relation between perspective and the fascination for creating illusions reappears in the Renaissance with Brunelleschi's and Alberti's demonstrations and peep shows and is more lively than ever in current simulation and VR culture.[45] It speaks of the "unregulated gluttony" of a ubiquitous God-like vision that sees "everything from nowhere" (Haraway 1991, 189). This perceptual machine is the radical mother matrix and condition of all dualisms (nature–culture, self–other, body–mind, man–woman, human–nonhuman, etc.).[46] It speaks of naturalization of normative categories, masculinity and phallogocentrism as being a perceptual and spatial choreography enacting separations. It speaks to humanism's human as being always already posthuman, always already an appendix or prosthesis of (perceptual)

42 Stone (1996, 19; 1999, 84) relates the emergence of a palpable sense of self to the constitution of a private body split from an increasingly textual self, in the proliferation of mirrors and portraits, autobiography, space enclosures of privacy, separate rooms in houses, and chairs instead of benches. Mirrors were extant in various forms since antiquity but framed and made of glass only since the Renaissance. The body became increasingly privatized, split, self-reflected, mirrored, enclosed, and hidden (Barker 1984, 13), while the subject became increasingly textualized, generating new economies of the body and the subject. All these changes were crucial for the emergence of Industrial Society and Capitalism. Tuan (1982) problematizes the traditional distinction between self and collectivity and inquires how cohesive wholes break apart due to spatial fragmentations with particular history (for instance the partitioning of space in the house in the Middle Ages in Europe) and then people try to regain a sense of unity.

43 On Silicon Valley colonialism, see Sadin (2016).

44 See Manovich (2002, 390–94) on the relation of perspective with computer graphics and computer visions, and the limitations of perspective in the automation of vision. For the relevance of perspective in current surveillance culture, see both Ivins (1975) and Manovich (2002).

45 Reynolds (2012) and Gebser (1985) speak of this mirroring of the observer in the vanishing point.

46 See Gebser (1985) on the shift from polarities to dualities.

machines, and not the reverse. The engraving depicts the foundations of the formation of a radical Otherness, an utterly split and calculable other, which however only retains its separability in so far as the perceptual ratios of immobility are maintained. The calculable world emerges at the expense of proprioceptive atrophy.

From Alberti's window, through cameras and theaters, to PCs and smartphones and into neurostimulation, VR and AI, we can trace a genealogy of perceptual algorithms becoming dynamic, as the mesh in Dürer's engraving has expanded to planetary-scale computation systems.

5.3.1.4.3 The Alignments of Perspective and Their Propagation

Linear perspective is defined by a number of rigid geometric alignments of perception, sensorimotor ratios that operate as guiding principles and rules of a relational protocol:

1. immobile point of vision at a fixed distance;
2. fixed horizontal–vertical axis of vision;
3. dominance of vision as visual pyramid;
4. alignment with a frame and a grid, narrowness of tunnel vision, distancing, insensibility, self-referentiality, and their associated fanaticism;
5. depth of the field of vision, as it mirrors the visual pyramid of the observer in the vanishing point (which reverses or mirrors in the viewer virtualizing hir);
6. redoubling of the frame–grid of perception in a frame–grid of representation, as transposition of mathematical points–lines;
7. alignments between discrete manual kinaesthetics and discrete eye kinaesthetics as both are aligned with the two grids;
8. algorithmic transposition of points–lines between the two frames through hand–eye alignments;
9. evolution of the above into the lens focus of neat images in mechanical photographic images;
10. evolution of the above into the time instant of correct exposure, snapshot of mechanical photographic images.

Perspective evolved together with the *camera obscura* (Hockney 2006) into the photographic camera and subsequently into the cinematographic mechanism and film, in a society of ubiquitous cameras, screens, and frames, and into the interfaces of computation culture of which the smartphone is the most recent visible expression.

The camera is a particularly crucial mechanical extension of perspective which introduces the capture of time, the freezing of movement in the snapshot and the segmentation of movement in the cinematic frame. Frame architectures expand now through this new merging of perspective and mechanism to a time architecture. Cameras also have a history evolving from the Renaissance, mostly as aids for perspectival representation with the *camera obscura* and later the *camera chiara*, though again antecedents are to be found in Greece in a description of a *camera obscura* by Aristotle, and some reappearances happen in the Middle Ages as with the Arab physicist Alhazen (Ḥasan Ibn al-Haytham).

The increasing proliferation of cameras and screens in the 20th century implies a further expansion of perceptual technologies in that, as happened with perspective machines in the 15th century, they are a mechanical device of which the observer

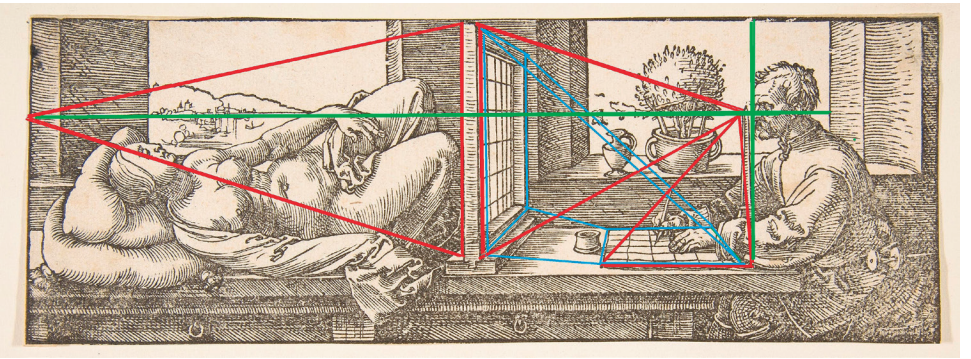


Fig. 38. The triple point-pyramid and the double frame-grid. Color diagram by author. Engraving by Albrecht Dürer showing a perspective machine, ca. 1525.

becomes an extension (and not the reverse), subduing its perceptual logic to the geometry of the machine.

Print is another crucial choreography of grids and frames, writing and typography, in this tendency to replicable relations and perceptions. But arguably the core of this process is in the sensory ratios of perspective. As I mentioned before, theories and practices of perspective of various kinds have existed since antiquity, at least in China and in Europe. But it took the complex geometric composition of linear perspective to create a full system of rationalization, as a *double or triple point–pyramid of vision* (of the observer on one side and the vanishing point on the other) and *an observer aligned with a double frame-grid* (of observation and representation) (fig. 38).

5.3.1.4.4 A Planet of Frames

Since the Neolithic, a planet of frames, switches, containers, channels, fences, doors, prisons, enclosures, separations, splits, segments, and codes has gradually emerged, as the exact reversal of the evolutionary principles underlying the flourishing of biodiversity on Earth. Another crucial element converging in perspective, and evolving through it, apart from Ptolemaic grids and Euclidean geometry, is frame technology. Not by coincidence, it was in Florence that paintings started to proliferate outside the church architecture and with them the removable frame. The proliferation of frames and planes sustaining right-angle architectures and their distributions and openings to the world through doors and windows, also sustaining the objects seamlessly distributed in the rectangular space, not least of tables framing the increasingly abstract and intricate bureaucratic activities of the bourgeoisie, was perhaps a crucial algorithm in the new rationalism of gridded spacetime.

The "content" frame of perspective is a crucial kind of metamedium with endless instances and genealogies difficult to trace, from picture frames to building frames, windows, mirrors, perspectival windows, doors, cinematic frames, software frames, or timeframes. The proliferation of rectangular frames and surfaces, tables, pages, engraving frames, and printing frames is a crucial aspect of the dominant perceptual architectures.

A whole *kinematics of the frame* has emerged for over six centuries, as *planetary field of movement orientation and segmentation.* The entire field of 21st-century circulation of algorithmically modulated images is part of this accelerating metafield.

Frames have allowed the rest of the machinery and geometry of perspective to remain hidden and constitute the ultimate and minimal cue for perceptual

alignment. But even when they are no longer visible, we still choreograph relations as if mediated by frames.

…

Perspective proliferated constituting almost every medium and architecture, choreographing social relations,[47] and was the spine of European colonialism as condition of possibility of a full and all-encompassing world appropriation. Descartes and Newton, whose perception was biased by perspective gave further elaboration to this paradigm. The utmost elaborations of static perspectival algorithms of world rationalization eventually came with industrial society, the macroaffective or macrosexual formation of the nuclear family, and in the macropolitical formation of the modern nation state.

Disciplinary society and its explosion of biopolitical regimes of quantification may be considered as the ultimate expansion of the perspectival regime in its static form, with the proliferation of measurements and the profiling of bodies and behaviors, which persisted until the mid-twentieth century, when cybernetics, information, and computation introduced a further revolution: the new radical turn toward dynamic but superaligned geometries of perception.

In the 18th century, the Greek theater architecture, still pervading spectacular society, suffers a mutation, eventually merging with perspectival vision in Bentham's panopticon, which is actually an expansion of the field of vision of linear perspective in 360°. Bentham's panopticon combined, transducted, or transmerged perspectival and circular–spherical geometries into an all-encompassing model of visual domination. Telescopes, microscopes, and later radars, ubiquitous cameras, mobile systems of satellites, and drones take this movement of expansion further into other scales and modes.

Along with it came a proliferation of circular, totalizing architectures, while increasingly ubiquitous mechanical clocks enacted a novel time panopticon where time was no longer felt by kinaesthetic duration, but by the step-by-step circular movement of the clock.

Meanwhile circular movements underwent their most radical revolution also in the 18th century with the steam engine (and later also with the electric motor, see below), unleashing a planetary field of accelerated motor revolutions which became *accelerated linear trajectories of vehicles.*

…

Perspective, entangled with panopticons, enacted a planetary-scale perspectival metabody whose internal proprioception is made of the points of vision of its individual bodies, which act like cells of a larger organism. From the 19th century onward, we can see the increasing automation of perceptual geometries which was already implicit in mechanical aids to perspective, like the ones designed by Dürer, and in the algorithmic, step-by-step character of perspectival vision. Photography, and later cinema, expand the logic of the *camera obscura* and present a second epoch of automation in the production of perspectival images and perceptions.

During World War I radars extended perspective beyond human vision and into the whole electromagnetic spectrum, operating in real time, always following the

47 Gebser (1985) speaks of the intoxication with space that resulted from the spread of perspective that quickly happened, a jubilation that resulted in a "silencing of objections"!

principle of how waves travel as lines in relation to a perceptual point, just like light rays build a pyramid of vision in perspective. The seamless expansion of perspective in any sensing modality beyond the human spectrum opens up and goes on today, while undergoing a deep transformation as it gets managed by increasingly opaque and autonomous algorithms.

Lev Manovich (2002) calls visual nominalism the ensemble of techniques of surveillance and control, from radars and 3D graphics to the attempts to create a fully automated artificial vision, expanding in mobile networks of satellites, drones, and sensors of many kinds, in any possible spectrum of perception.

As Bruno Latour (1986) points out, what perspective enacted was not just the possibility to represent, but to control reality, to act upon it, so that perspectival representation is the most potent instrument of power.

This is also the case in relation to the emergence of a quantifiable body. Mark Seltzer exposes the emergence, in US culture since the late 19th century, of a conception of the body as both material and abstract: a *quantifiable body*. Calling this "dematerialised materialism" (1992, 14), Seltzer shows the crucial relation between naturalism and statistics, literature and the sciences, cultural politics and logistics of experience, in the reciprocal definition of humans and machines, of nature and technology, of reproduction and production, including the production of gender (the making of "men" through scouts and other practices), pointing to the importance of the peculiar logistics mobilizing the process (metamediums I would call them) rather than to an underlying general logic. Seltzer exposes the crucial ways in which the *motion of bodies* was quantified, including the role of Étienne-Jules Marey's influential ideas, techniques, and methods for the analysis and measurement of motion of bodies (Seltzer 1992, 3–16).[48]

Following Scott deLahunta (2004), the analysis of movement in the tradition of the Weber Brothers' (1836; 1992) studies on locomotion through Eadweard Muybridge and Étienne-Jules Marey, to William Forsythe's Motion Bank or Merce Cunningham's Biped, builds entirely upon perspective. This explodes in the biometric era of ubiquitous sensors that not only measure but continually orient us.[49]

5.3.2 Inflexion: The Planetary Field of Engines (and Nuclear Families), Or the Fallacy of Entropy

The turn from a Macrocene of linear movements to a Hypercene of exponential movements proceeded through an intermediate biopolitical phase of industrial acceleration–multiplication–expansion in which thermodynamics brings mechanism to its limit and crisis, ensuing after World War II in a control culture that acknowledges unpredictability but seeks to minimize and anticipate it, while the sciences opened up a series of promising ontological revolutions whose waves continue to expand and which have not yet fully entered common sense.

Mechanism had instantiated a planetary field of mechanical movements and choreographies. These movements became associated to machines with rigid

48 This is reduction of the body to an abstract, quantifiable matter is of course underlying control society in all its forms, from the most "disembodied" attempts to create artificial minds to the biomedia that want to determine bodies genetically or neurologically where "biotech demands that bodies be both informatic and material" (Thacker 2003, 89).

49 On the history of the study of locomotion see also Cappozzo et al. (1992).

assemblages of *gear trains, linkages,* and *controllers,* evolving into the steam engine invented by Watt in 1769 and the electrical motor by Faraday in 1821, which further revolutionized machines and the planet.

Theories of entropy appear in the Industrial Revolution linked to the emergence of a *planetary field of engines.* A prevailing alignment since then, and the one responsible for nearly all human CO_2 emissions, is in the mechanical *engine* and the electrical *motor*. Engines or motors imply radical alignments: they are about acceleration (mostly of linear movements) through high-energy-consuming revolving cycles that allow highly linear mechanical displacements, ensuing in a planetary web of accelerated linear trajectories and transportation networks which are radically opposed to the fluctuating wandering movement of animals webbing themselves with the ecosystems they relate to.

Around one fifth of all CO_2 emissions come from transport, that is, from engines. But an engine is never just an engine, it is a whole planetary ecology that includes, even just at the level of CO_2 emissions, the direct CO_2 emissions and pollution coming from the motors themselves, the ones linked to extraction, refinement, and transportation of fuel, the ones linked to the building and transportation of vehicles and their materials and components, the ones linked to the building and maintenance of roads, buildings, and other infrastructures related to transportation, and so forth. Of course, extraction, building, and pollution are also radical direct aggressions to specific ecosystems.

The problematic nature of these alignments is clear in the way they impose themselves via abstract design on ecosystems following a self-referential logic of profit and quantification, creating self-referential alignments that enter an exponential spiral of purely quantitative acceleration, with absolute disregard for the impact they have on the local and planetary environments, with increasingly narrow perceptions of the bodies partaking in this economy, where all elements of the chain are logically and radically unsustainable and untenable: from extraction to waste. Radical extraction, following an accelerated production and circulation through motors, cannot but imply radical waste and pollution that destabilize the planet in an evolutionary blink of an eye.

Production or fabrication has turned the extracted materials into hard architectures and objects quickly moving around the planet, architectures and objects which block and force the Earth's flows, are high energy consuming and create enormous amounts of waste and pollution that the planet cannot digest as it is created *ex nihilo,* outside of the Earth's metastable cycles. Hence the radically problematic status of these technologies that have been triumphantly claimed as "progress," becoming "indispensable" for the dominant society. The open closes down, the indeterminate becomes algorithmic alignment of pure quantification. The result is a disastrous entropy production that is killing the planet's capacity to promote biodiversity.

A planetary network of accelerated transport has emerged, creating an entropic burned-out planet due to both a radical increase in emissions and a destruction of the ecosystems that used to take in CO_2 and balance carbon cycles. This goes along the burnout of the personal lives of the people who are aligned with accelerated transportation, which always involves an immobile, alienated body, that is first of all unaware of the impact of this transportation on the ecosystems it traverses and exploits. *Alienation–domination is first and foremost grounded on an impoverished perception.* This logic goes back to the earliest modes of mechanical transportation,

including carts with wheels, and any type of road. Every mechanical means that immobilizes the body and attacks the environment is counter-evolutionary, part of a slave, extractivist, colonial society (at least back to the Roman Empire and beyond).

We have to understand that the biotechnological mutations in animals that allow them to move in different ways, flying, swimming, crawling, running, and so forth are far "superior" technologies as they emerge intra-actively with their ecosystems, instead of imposing themselves on ecosystems. In this sense, the best possible mode of transportation for humans is perhaps on foot (or crawling or swimming), where the body feels itself more connected to its environment, though we already saw how bipedalism was perhaps the origin of our atrophy.

The engine, as mechanical, circular, revolving movement that seeks to create a closed thermodynamic system, expanding seamlessly in a planetary network of accelerated mechanical trajectories, with its associated movements of extraction, building, and waste production, is thus a priori an ontoviolent and destructive technology.

The engine of course is linked to a project of species expansion and multiplication through the Victorian biopolitical link to increasingly rigid heteronormative regimes as the other great facet of entropic regimes causing an extinction cycle: not just though the delirious multiplication of a species becoming plague, but because of the sedentary and consumerist way of living associated to it. The accelerated, repetitive revolutions of ubiquitous engines seem to mirror, or to be mirrored by, the mechanistic and industrial conceptions of sex as repetitive choreography of reproduction and massive multiplication of the species, in the closed thermodynamic system of the nuclear family, which is also high energy consuming, entropy producing, and polluting. Both imply extreme, radical, oppressive alignments and planetary-scale disruption. Heteronormative, monogamous, patriarchal, Victorian morality is inseparable from the society of engines and pollution that it emerged with.

The concentric circle–panopticon–black hole of the nuclear family has tried to create a closed thermodynamic system of multiplication and consumption akin to the engine sustaining the industrial revolution and is both instrumental to it (by producing workers for the factory) and its *telos* (by multiplying the species that colonises, consumes, and transports itself seamlessly).

The problematic concept of entropy as universal law of dissipation is deeply linked to the emergence of this planetary field of engines and reproduction that is killing the planet itself, and to the narrow obsessions of the type of human enacting it and emerging with it, being transformed by it, increasingly narrowing and impoverishing its experience, desensitized as bodies are imprisoned in bubbles of accelerated and polluting isolation. Entropy reflects the anxieties of the biopolitical individual and society obsessed with thermodynamic control, for a colonial multiplication and expansion through reproduction and motors. An entire planetary field of engine-based and family-based entropic disruption has been created at the service of a single species.

The electrical motor, invented by Michael Faraday in 1821 was also a crucial inflection for the emergence of a *planetary field of electrical networks* and its associated (and unsustainable) processes of energy production, extraction, storage, transportation or transmission, consumption, and waste. The electrical field has exponentially grown along the *planetary transportation field* and the radical increase of automobiles, airplanes, ships, submarines, railway, and spaceships, across all domains of commercial, industrial, or military use. With them, also the *planetary building*

field has exponentially expanded, especially since the invention of concrete, and likewise the *planetary trade field* of production and transportation of goods, objects of every kind, especially since the invention of plastic. Paradoxically, the plasticity and malleability of plastic, concrete, metals, and glass, has allowed an Earth-killing society of accelerated alignments to emerge, its most recent expression being digital culture and its silicon-based grids of *planetary computation fields*.

The engine and motor further overcodified linear movement with the assembly line of Fordism in the early 20th century, not by chance related to the production of automobiles, and allowed the increasing delocalization of activity through the ever-growing and ubiquitous transportation networks, first inducing the radical alignments of workers with machine-like movements and soon after propelling automation through the engines and circular joints of industrial robots.

Rotors in the Nazi Enigma machine and its deciphering counterpart Bombe designed by Alan Turing are also cues leading into computation machines.

The utmost expressions of the rotating movements of engines are perhaps in the engines of rockets, expressing a will to abandon the Earth and control it from above, in the satellite panopticon, as well as in the miniaturized motors embedded in computer hardware that currently sustain the graphic cards for another type of world-escape: the metaverse.

5.3.3 Hypercene: From Static to Dynamic Algorithms, From Linear to Exponential Movement

5.3.3.1 From Macroperceptions to Hyperceptions: The Turn from Fixed to Dynamic Geometries

So far, we have mainly studied the emergence of macroalignments corresponding to the Macrocene: the era where movement becomes aligned in more or less static patterns, slowly changing, along the entangled coemergence of linear, totalizing or circular, and dualist movements and perceptions constituting a multitude of networks, as planetary-scale algorithmic-geometric field. These imply what we can call macroperceptions, macroalignments, and a macrokinetic regime of large-scale alignments.

Periods have multiple overlaps and inflections. The Macrocene arguably culminates with mechanism, which unleashes a world of machines, ultimately ensuing in the steam engine, the Industrial Revolution, and the laws of thermodynamics that will imply the crisis of the mechanistic worldview.

Macroalignments undergo a revolution in the biopolitical era of engines and nuclear family panopticons, associated to the Industrial Revolution (and the French Revolution), that culminates and explodes in World War II where the planetary field is ready for superfolding into a new mode of dynamic (hyper)alignments and their associated hyperceptions in a hyperkinetic regime of exponential movements, which crucially build upon the previous in a double play of expansion and undermining. *The more immobile, atrophied, and homogeneous bodies are in their "internal" proprioceptive variation, the more they expand in the planet, and the quicker they displace.*

The Macro- and Hypercene also expose the emergence of modes of kinetic intelligence: linear (macro-) and exponential (hyper-), associated to linear and exponential modes of domination. We will now examine the consolidation of the exponential mode.

5.3.3.2 The Lost Body of Information

In the 19th century, thermodynamics overcodified mechanism. The steam engine had brought about uncertainties in thermodynamics that undo the image of a deterministic mechanical universe. This introduced the problem of entropy as energy dissipation occurring when attempting to create a closed thermodynamic system. One might say that the paradigm literally exploded with World War II, the Holocaust, the atomic bomb, and the ensuing the Cold War.

After World War II, with the onset of cybernetics and computation, we can see a new revolution happening in the Algoricene, toward a new stratum of dynamic algorithms. This happens within the new scenario of a non-deterministic, post-Newtonian world, of the World Wars and the atomic bomb, of new uncertainties that questioned the previous static formations.

Norbert Wiener's work on prediction of flights of German aircrafts during the war resulted in crucial *algorithms of movement prediction* that still ground much of our predictive ecologies of today.[50] This grounded cybernetics (Wiener 1948) as a new constantly readapting kind of geometry that predicts variations in curvilinear trajectories, in continuous feedback with the unpredictable world which it seeks to control.

Equally Alan Turing's work in deciphering Enigma, the Nazi machine for encoding messages, was important in launching computation, with another key text (1948), though with precursors in pioneering women like Ada Lovelace, and in the Jacquard loom. Computers at the time were often women, indeed Black women, before they were machines.

At the same time, Claude Shannon (1948a), in his formulation of the mathematical theory of communication, by equating more entropy to more information (Hayles 1999, 102), introduced a profound revolution in power, which from now on would focus not only on the actual and known (the static perceptions inherited from Macrocene), but on an abstract field of infinite potentiality: noise. Until then, the relation between entropy and information had been the inverse: the less entropy, the more information in a system, thus information (and power) was about the already defined and known within static perspectival frames.

N. Katherine Hayles (1990, 6–9) expands on the significance of the reconceptualization of chaos in the 20th century as a positive presence and overfullness of information, in which Shannon's association of information to entropy played a crucial role, and for which it was first necessary to divorce information from content, context, and body (51). It's significant that "Shannon worked for AT&T, a company that made its living by satisfying people's curiosity. The more uncertain people were [...] the more information they required [and produced]. No wonder Shannon thought of uncertainty as information's ally" (59).

Indeed, I suggest that Shannon's turn was the turn from biopower to ontopower, not just in engineering networks capable of modulating patterns at the speed of light, but in projecting this modulation onto an abstract mathematical field of infinite potentiality, though it would take half a century to make it fully operational

50 For instance, video codec algorithms such as H264 of MPEG4 that conform much of our visual ecologies today, are largely based on Wiener's algorithm and derivations thereof. See Cedeño Montaña (2017) for a detailed account of movement prediction algorithms in moving images.

with the advent of Big Data and ubiquitous computation.[51] The thermodynamic revolution of statistical mechanics thus crossed a new threshold toward a statistical information theory that reversed the value of entropy. Shannon's reversal allowed to project information beyond the field of the known and into future potentials.

Part of this story of overcodifications is also in the extreme alignments of sexual normativity culminating in Victorian morality that were also means to avoid dissipation. These also exploded in a multitude of deviations from the norm, and in subsequent capacities of the system to assimilate the deviations. The invention of electricity, plastic, and concrete, amongst others were also important inflections along this process toward a malleable world in continuous reconfiguration.

Norbert Wiener developed an all-encompassing paradigm for communication in biological systems and machines based on the prediction of mechanical curvilinear trajectories of enemy aircrafts in a war situation (thus expanding on the worst possible side of Aristotle's work on animal locomotion), while Shannon developed a theory of communication conceived as *disembodied fluid* divorced from context and meaning (Hayles 1999, 18), in contrast to other theories being proposed that took context and meaning into account.

Shannon and Wiener were white, male, perspectival, Cartesian subjects who, driven by the anxiety of "liberal subjectivity imperiled" (Hayles 1999, 87), instantiated their belief in the disembodied mind, affording the foundations for an information culture entirely built on this assumption.[52] The anxious subject that had emerged with perspective desperately tries to keep control within a non-deterministic world. The phantom of entropy as disorder and the wrong idea of life as struggle, of order fighting against disorder, are foundational myths of our information culture.

During the second half of the 20th century these theories gradually materialized in unpredictable ways, constituting an accidental megastructure of planetary-scale computation systems (Bratton 2015). An important inflection came during the Cold War in 1969 with ARPANET, the military precursor of the internet that became operative as World Wide Web two decades later, between 1989 and 1991 (coinciding, perhaps not by chance, with the fall of the Iron Curtain). Between 1977 and 1984 we see the arrival of the PC, the rise of new types of empires like Microsoft and Apple, and the increasing miniaturization of microchips, entering an exponential race of acceleration of processing speeds and storage capacities.

5.3.3.3 From Control to Hypercontrol

The metaphors of noise, chaos, and entropy allowed for the development of strategies for capitalizing on the emergent and new in communication. But the consequences of this started to be felt more deeply since the rise of Big Data culture after the turn of the millennium.

51 Chaos as fullness is also a major theme of this book, but with a tweak: chaos as opening. This is eventually what could make a difference between the reconceptualization of disorder/noise/entropy/uncertainty as disorderly presence that needs to be ordered and capitalized and rethinking it as (more or less) indeterminate movement of opening that defies capture by being irreducibly bound to body–context–meaning in the more indeterminate sense of a metabody. See also Del Val (2020a).

52 On "how information lost its body," see Hayles (1999, 1; 50). On the materiality of informatics, see Hayles (1999, 193). On the materiality of software, see Frabetti (2015, 42–52).

Massumi presents ontopower mainly in relation to war theories in the US before 9/11 and materializing itself after it.[53] But the idea of every one being suspect, storing data about everyone, and of pre-emptive actions that try to mobilize reality before reality moves, are core to the business logic in the first place.

The emergence of Amazon in 1994, Google in 1998, Facebook in 2004, and of the smartphone in 2007, were crucial catalysts toward the Big Data era and the infrastructures needed to get, store, and process gigantic amounts of data, now being received 24 hours a day through the mobile smartphone terminal that mediates nearly all of our personal and professional activities. Along this process, data have become the gold of the 21st century. A catalyser of this was Sheryl Sandberg, who around the year 2000 initiated and then transposed from Google to Facebook the policy to exploit data from users, which became the norm for the digital economy, as Zuboff (2019) explains.

Big Data and its associated AI allow for the crossing of a new threshold in which increasingly emergent and autonomous algorithms generate emergent correlations and patterns from the noise of infinite, continually changing databases, within systems of planetary-scale computation and ubiquitous mobile interfaces that constantly redirect our movements: a superaligned algorithmic swarm. The continuous production of new dynamic forms becomes an operative logic of current pre-emptive power, ontopower. Deviations that were previously silenced, stigmatized, penalized, or pathologized by disciplinary regimes and their static profiling of behaviors, are now captured and capitalized upon on the fly, as they emerge, or even anticipated before they emerge, by detecting new potential vectors and tendencies in statistical flows.[54] Ontopower operates by detecting movement vectors (as in Wiener's movement prediction algorithms), throwing new patterns into the ecology that act as attractors and affordances that orient emergent movements.

The new Big Data logic implies the storage of data not only about existing targets (of suspects or of consumer behaviors). Rather, the question is, what is the profile of the future potential terrorist, the future potential consumer? Every possible data point is captured and stored "forever," subject to ever-changing processing by radically dynamic and increasingly autonomous algorithmic networks. Data are no longer discrete entities; hyperdata are gigantic and dynamic relational databases. From the stored data always new data, profiles, and unexpected patterns are created by algorithms. This is a core logic of Big Data and AI culture, managing all aspects of life on the planet, from traffic lights and agriculture to genetic engineering and stock markets. It is the logic of business and of orienting consumers underlying every app in a smartphone and the personalized publicity one gets. It is the logic of what Zuboff (2018) calls surveillance capitalism, which proliferated without control thanks to 9/11, as the Snowden case revealed in 2013.

If the perspectival metabody was sensing through fixed sensorimotor ratios of perspective, the hyperalgorithmic metabody senses through the algorithmic

53 See Massumi (2015, 98) on war theory from the late 1990s, which incorporated business models for the military in the turn to anticipating potentiality. This logic became effective after 9/11 set forth a global ecology of fear making everyone suspect. I argue that Big Data networks, which afforded to store and process in emergent ways every digital trace, have fully enacted and spread this logic of pre-emption across all aspects of life. So, we have business models influencing war theory, which then feedbacks on information warfare and business once again, expanding hyperwar to every home, body, atom, and territory.

54 Mark Hansen (2012) calls this the "engineering of pre-individual potentiality," following Simondon.

correlations emerging amongst billions of mobile points and sensors (starting with every smartphone in our pockets) as source for a new planetary-scale type of proprioception.

These changes point to new modes of *algorithmic governmentality* (Rouvroy 2013, 155) as generalized logic of management of life. Algorithmic governmentality exceeds neoliberal production of subjectivity, and in fact undermines it by focusing on a process of *dividuation,* where our profiles are not of individuals but of behavioral samples and vectors within statistics of populations, continually resampled (granularly reshuffled). Individuals became data samples in dynamic data flows. This poses severe ontological challenges to a common sense raised in static algorithms and their legal systems (still largely based on Roman property law).[55] Algorithmic governmentality speaks about a world increasingly governed by autonomous, opaque, and unknowable algorithmic systems in the Big Data Era.

The radical *ontological opacity* and dynamism of what I refer to as hyperalgorithms (hyperconnected, emergent algorithms with an all-encompassing will to control) raises deep questions about the most basic assumption of ethics, moral traceability, and responsibility or knowability of processes, amongst others (Mittelstadt et al. 2016). In general, a crisis in all regulatory systems derived from static algorithms, subjectivity, and the state is becoming evident, though this problem is largely ignored by regulators, common sense, critical theory, and political movements alike. It is as if we were still living in the mid-20th century and what is presented as the most radical horizontal politics in movements like Occupy is lagging far behind the complexity and dynamism of hyperalgorithmic culture.

As Rouvroy points out, (hyper)algorithmic governance exceeds traditional statistics through bypassing interpretation as well as reference to the analog world, in a becoming-purely-operational based on the capacity to act upon the world. If perspective imposed its representationalist truth regime by narrowing down perception, Big Data imposes a correlationist hypertruth regime based on the opaque and dynamic algorithmic processes happening between billions of points of capture. The resulting continuous reattunement of the digital ecology prevents the subject from consolidating, thus exceeding neoliberal processes of subjectivity production (Rouvroy 2012, 156). As Zuboff points out, the prosumer becomes the product. This is also what Bernard Stiegler (2018) refers to as proletarianization in a regime of computational nihilism.

This expands *dataism* as true data religion to unfathomable levels of (opaque) transcendence as well as (operational) immanence (Harari 2017, 372), as Big Data becomes the motor of existence (resonating with both Cartesian and Spinozian accounts of God). Every religion is about orienting perception to particular affordances that constitute unquestioned beliefs. Rationalism created geometric affordances that presented themselves as objective truth due to sensory homogenization, and made all other religions appear to be subjective irrational beliefs. But dataism (as evolution of rationalism) is the ultimate religion, a religion of data and the device, of permanent cult without dogma capable of instrumentalizing any content (Agamben

55 For instance, the General Data Protection Regulation (GDPR) of the EU which has recently come into force, demands that data processing be comprehensible for data users. But the increasingly dominant systems of autonomous learning algorithms can be incomprehensible even to their programmers, signaling a profound ontological shift where notions such as consent, associated to the slow algorithm of the perspectival individual, need to be radically rethought through an ecological approach.

2009). This is the success of Western rationalism: by formatting perception, hiding its frame, and presenting itself as neutral container, it captures and channels almost anything in its particular faith to the container itself. That's why smartphones and social media are used by people (including fanatics and terrorists) from all sorts of religious backgrounds. Some of them criticize Hollywood, Coca-Cola, or LGTBIQA+ movements as "Western" products, but why not the smartphone and perspectival media, which is perhaps the quintessential "Western" product? As Hayles (1999, 192) points out, every culture has sets of beliefs that are likely to leave future generations astonished. The belief in being a mind that owns a body, in extensive space, in ontologically split objects or in unitary identity, just like the belief in data-as-truth, are some of the astonishing beliefs dominating contemporary algorithmic culture.

The seductive aesthetics of fluidity (Rouvroy 2013, 155) of hypercontrol environments, where control aims at anticipating novelty, whose predominant design and aesthetics is in topological geometries of smooth curves (Parisi 2013, xi), is characteristic of a management of uncertainty expanding to a mathematically abstract domain of yet unthinkable potentials.

Parisi (2013, 102) speaks about postcybernetic control (or topological control) and its focus on potentiality rather than actuality, as related to an aesthetics of topological curves (rather than grids) that anticipate novelty by incorporating the unpredictable in computational design itself. Parisi claims that algorithms include per se the capacity of generating incomputable, fuzzy, or random quantities that can become part of computational design of topological objects, and this in turn can be a means of pre-empting future desires of consumers, since the ensuing topological curves have novelty itself built in their design. I claim that the smoothness and smoothing character of topological design and aesthetics is where capture, control, and pre-emption happen, as curves homogenize in new ways the more irregular fluctuations in bodies.

The Snowden affair in 2013 exposed the entanglement between Silicon Valley corporations and the US government in what looked more like the Chinese regime. But this was only part of the story. In 2016 came Trump, and the Cambridge Analytica affair in 2018 exposed the norm about surveillance capitalism: that we are the products of algorithmic profiles. This also exposes the entanglement between Trumpian fascism and Silicon Valley fascism. It is only in 2020 when attempts to fight technological monopolies seem to be starting to be made by the EU and the USA. After twenty years getting entangled with these corporations who already have our data, profiles, behaviors, and desires, it seems too late, and regulations lag far behind the possibility to regulate the dynamism of Big Data, autonomous algorithms, and AI. Meanwhile, the realities in our pockets are far wilder than any science fiction imagination. Our ontologies are profoundly obsolete.

5.3.3.4 Hypergrids and the Limits to Movement Calculation

PCs and more particularly smartphones are paradigmatic of the hypergrid as geometry that expands and modulates in relation to hyperalgorithmic systems. Hypergrids are interconnected grids in ongoing algorithmic modulation within planetary-scale computation networks: from the actual screen-based interfaces and microchips to the communications and software infrastructure connecting and modulating them. The mouse–keyboard interface is the sensor of the algorithmic system that affords that the frame grid of vision is no longer visible or fixed, but an invisible grid of dynamic codes and multi-layered stacks for manipulating symbols.

With the smartphone, several jumps are operated. There are no longer two planes, the screen captures both vision and touch, the two planes of perception and representation are merged into one, generating the hyperreal fiction of an "immediate Real," the apparent merging of data and visual representation with the world at large. Representation comes to completely occupy the place of perception, supplants the world, and at the same time this screen of total capture is a hyperscreen that is connected to algorithmic systems that are no longer local as in the PC, but planetary networks where opaque and emergent algorithms cooperate in processes of total digitization where the grid sucks off the world into a digital double.

The device is mobile and full of sensors, much more versatile than the keyboard, capable of registering continuous and unconscious movements (not only gestures of manipulations of symbols as in the keyboard), and in turn mobility and miniaturization allow the device to connect with other biometric devices analyzing movements. The smartphone is therefore the mobile, ubiquitous, and multimodal *hypersensor* of Big Data systems as a planetary metabody and is also the modulation and behavior modification terminal sending lures and alerts to the user, a mutant window that can be camera, digital mirror, or interface with software platforms, while registering all sorts of continuous movements, allowing the continuous capture of attention and the ongoing modulation of behaviors in an always augmented reality.

In this way, the grid folds in a growing invisibility that increases along with its dynamism, pervasiveness, and ubiquity, its ability to anticipate emergent behavior patterns in the planetary networks of algorithms that cooperate at the speed of light, while mediating more and more aspects of life, with an increased capacity to modulate and modify our behaviors as well as to record traces continuously.

The smartphone may be the last visible expression of the Renaissance frame. Virtual reality, the internet of things, and later the neuro-stimulation and nanotechnology will eventually try to effectuate a disappearance of the visible frame. However, what triggered the framework was a kinetic geometry that is maintained and reinforced in this process of disappearance, provided that relationships are maintained based on the representation, simulation, and correlation of physical gestures in digital worlds within an aesthetics of control. If perspectival frames disappear, it will be only when they have become stronger than ever. They will be implanted as invisible architecture in the choreography of each interaction, disseminated in intelligent environments and body sensors, as total colonization of movements. This implies the technical challenge of making movement discrete and aligned without the visible frame, a challenge that will eventually prove unsolvable. The frame still affords the reduction of gesture, while it still can't capture many movements happening outside its jurisdiction. Increase in biometrics connected to smartphones is one attempt to fill this gap.

The incipient disappearance of the device with the internet of things and virtual reality does not solve the problem of the dominance of perspective as dualist medium. On the contrary, because the logic of capture is still present through interaction design, based for example on the measuring of coordinates of position, not of proprioceptive tensions or internal torsions, and in the overall kinetics of interaction based on an aesthetics of simulation as transposition to a digital double. The digital double is not of the world but of an already reduced experience of it as Cartesian extension. The illusionist prodigies of Greek *skēnographia* and Renaissance peep shows become, with virtual reality, a hyperreal copy in which we may operate as long as our gestures become hypergestures, our movements align with the calculation

architectures and grids of the interface and platform. The digital illusion becomes the hypertopia that sucks off the world into the calculable double in an accelerating vortex of total capture, along the rising curve of the singularity's exponential nihilism.

After the World War II, we saw the development of computer graphics, which allows for the building of artificial worlds based on perspectival vision, and automated computer or artificial vision as the automated recognition of objects and actions in perspectival images. The technogenetic spiral of perspective thus draws a full circle, a full-spectrum environment with multiple possible iterations between its artificially constructed worlds and their troubled relation to the analogue.[56] Simulation based on vision cannot reproduce the complexity of an embodied intra-action that is based on proprioceptive fluctuations: it can only work by creating for itself an impoverished double of the world where bodies narrow the spectrum of their behavior. But how far can this impoverishment go? Will the process realize at some point the futility of impoverishing and the need to re-enrich experience? Apparently algorithms are already encountering the problems of this loop that closes on itself, when the choices of users become so narrow that the system can no longer feed its own need to produce always new products.

Here also the limitations of perspective come to the front due to the ambiguities of deducing a 3D field from a 2D image. This relates to the fact that until now perspective has been in relation to a human that could identify space and objects in relation to an embodied knowledge, thereby interpreting an image as related to an embodied knowledge of space. But the computer lacks such a knowledge. It operates in relation to preformed patterns that simulate elements of a pre-existing embodied knowledge of engineers. This eventually leads to the substitution of perspective by other ways of mapping 3D space, such as range finders, devices to measure distance. Thus, as the circle of automation closes, the algorithmic reduction of perspective shows its limitations when ultimately divorced from embodied knowledge.

There is a two-sided reciprocal move: how to have more and more of the world's movements happen in relation to artificially constructed, algorithmically reduced perspectival worlds, and how to expand this algorithmic world in a will to encompass the entire analogue reality. Such is the will to power of the grid.

Yet the transformation of the perspectival paradigm happens differently than expected. The way Big Data systems sense the world clearly exceeds perspective in many respects: it's about billions of distributed sensors, which point to a kind of planetary-scale proprioception of Big Data systems, signaling the emergence of a new kind of body that generates correlations from the emergent swarms of internal movement relations and sensations. And yet as eventually different from other bodies' proprioceptions, there is an algorithmic logic of rationalization and capture that establishes correlations: every movement correlation (which is different from movement relation as it implies a redoubling in the digital) constitutes something in the digital double, a digital double tending to total capture, not to sheer open-ended coexistence of worlds. Will to domination, not to power. The hypercyborg emerging from the kinetic inputs of billions of sensors establishes correlations in a transcendent logic of building a digital double, a Black Hole, thereby expanding the logic of representation of perspective as an algorithmic transposition. In this process, an

56 See Manovich (2002) for the relation of perspective with computer graphics and computer visions, and the limitations of perspective in the automation of vision.

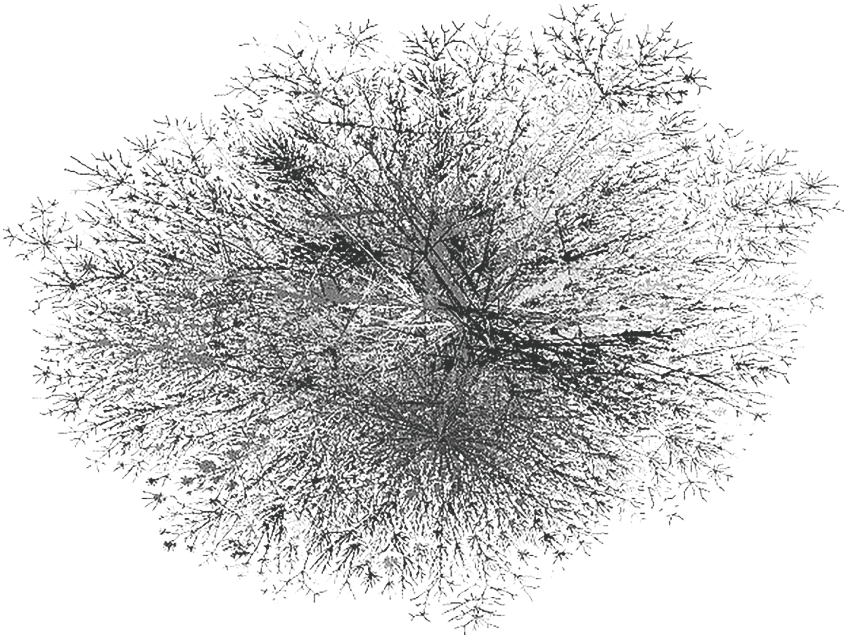


Fig. 39. Map of the Internet from 1998: not dissimilar in amount of nodes to a fly's brain with around 100,000 neurons (see below), but perhaps radically different in the mode of operation. The current Internet is perhaps closer to a human brain with 100 billion neurons? A planetary metabrain of interconnected brains? But behind each node is an atrophied body with atrophied brain clicking on screens under algorithmic surveillance, a massively heavy infrastructure of data centers, cables, satellites, antennas, and massive extractivism, delocalized exploitative production, continuous transportation, and digital waste! Disembodied Internet utopias have committed the same mistake as disembodied brain utopias: to forget movement and the body! The Internet as planetary brain is associated to an atrophied, sick planet that mirrors the bodiless ideal of brain-centered individuals. A brain is part of the body and its nervous system, and has the openness of organic fields, built into its subatomic and cellular neuronal structure. This is the openness that digital systems try to eliminate by engineering quantum-electronic flows.

Fig. 40. Brain of a fly, with around 100,000 neurons, around one million times less than a human, occupying around one cubic millimetre, but already very complex.

ontological shift happens, as the proprioceptive swarms of the *hypercyborg* acquire increasing autonomy in their will to total capture.

Rather than mere points and coordinates in a gridded environment, correlations generated by algorithms from billions of inputs in Big Data systems focus on emergent patterns as a kind of internal dynamics, much as the proprioception of a human body could do. With a difference. It is urgent is to understand this difference between the algorithmic logic of redoubling and will to total capture (which instantiates an emergent proprioceptive planetary metabody out of emergent correlations, still bound to an algorithmic process of capture and redoubling) and other metabodies and their proprioceptions, other embodied cognitions whose proprioceptive swarms are not about capture but rather about fostering indeterminacy as an opening.

The panopticon explodes in billions of points of vision and sensing, now mobile through smartphones, drones, and satellites, while the proliferation of rationalizing perceptual technologies, from radars to surveillance cameras still have at its core the gridding of an environment according to the logic of perspective. In this planetary network of ubiquitous points of vision and sensors which map movements onto dynamic quantification grids, the logic of perspective expands to the infinite in a hypergrid of dynamic rationalization constituting a totality, driven by an all-encompassing will, with points of sensing connected to planetary-scale computation systems. Hyperalgorithms give feedback to the analogue stratum via interfacial regimes across multilayered platforms in continuous spirals of reengineering of perception.

From Alberti's fixed perspectival grid to mobile pixel grids in the computer screen, from gridded textiles and urban plans to gridded perceptions, from gridded and framed profiling techniques in disciplinary society to the grids of Facebook profiles and VR geometries… fixed and mobile grids conform a seemingly all-encompassing world that choreograph attentions and activities.

Grids, and their related pyramids and spheres, expand in infinite layers, scales, dimensions, and modes, conforming a full-spectrum gridded (digital) double of the world, defining planetary ecologies as much as the perception of the user, whereby users can be human and nonhuman actors in diverse assemblages, where platform and user become indistinguishable in the relational ecology of interfacial regimes.

Interfacial regimes point to the indistinguishability between user and platform. Interfaces, as affordances, as the in-between, as the kinetic–perceptual organization, is where we may find the underlying architecture of the relational ecology and its more or less rigidly aligned movements. The plurality of platforms at war in this stack of interfacial regimes hides the underlying architecture of rationalization shared by them, which is not about content or ideology, but about movement and perception.

Interfacial regimes, (comprising sensor regimes, connection regimes, storage regimes, address regimes, protocol regimes, as part of larger and smaller algorithmic regimes) constitute perceptual totalities (Bratton 2015, 343) articulating modes of infrastructural and platform sovereignty. They expose the increasing complexity of perceptual design as part of a planetary body in which geodesign and user design are not fully distinguishable. Interfacial regimes expand in the midst of platform wars of both geodesign and user design while the Algorisphere acquires ontological

autonomy as its body thickens toward a singularity.[57] Is this singularity a black hole or a supernova or big bang, or something quite unthinkable, or an extinction?

5.3.3.5 Exponential Pre-emption

Even though scenarios in nanotechnology, neuroegineering, genetic engineering, Big Data, AI, quantum computation, and the Metaverse have barely started to unfold and it is difficult to fathom their exponentially accelerating growth toward the so called technological singularity may as well never arrive (unless as an embodied algorithmic life form,[58] a hypercyborg of which humans, other species, and the planet become part, in conflict with the biosphere, unleashing a mass extinction). We are witnessing an exponential explosion of pre-emptive modulation: media-informational and affective, chemical, and pharmacological, neurological and bionic, behavioral and epigenetic, genetic, material, and nanotechnological modulation, amongst others. This is the Big B.A.N.G. of convergent technologies, where algorithms reengineer all strata of naturecultures while becoming increasingly autonomous in their operation.

Exponential pre-emption is this accelerated production of interconnected fields. Media affect the neuronal and molecular compositions of bodies, chemicals affect genetic and epigenetic compositions, and so forth, but underlying them are metamediums, ratios, and geometries (mostly inherited from perspective as model of rationalization). These are in turn modulated by the new algorithmic threshold of Big Data systems. Thus, all fields of domination are caught up in a double bind of macro- and hyperalgorithms: perspectival media that immobilize and Big Data networks that pre-empt variations, and which is entirely built upon war technologies:

1. Cybernetics, information theory, and computation are replies to World War II.
2. The internet is a reply to the Cold War, while the PC and computer viruses appear together with AIDS.
3. Smartphone and Big Data culture responds to a post 9/11 scenario of the "War against Terror."
4. The COVID-19 pandemic has unleashed an unprecedented digitization of all aspects of life in an already mature state of Big Data culture while the Metaverse and quantum computation seem to be getting closer to a possible daily implementation.

One can differentiate a control society based on modulation of the existing and prediction of the future, vaguely operative between 1948 and 2000, and a hypercontrol society based on the continuous production of the new as way of pre-empting variations in Big Data networks, since 2000 to now. In this process, neoliberalism has been a transitional phase between an individual-based society and a dividual-based society.[59] The Algoricene is thus the unfolding of a field of geometric reductions across static and dynamic geometries. Its alignments are never just an accumulation, but an ongoing recomposition, transduction, although at times one can see more of

57 The technological singularity is a concept associated with transhumanism, identifying a moment where an artificial superintelligence is supposed to be born. Following singularity promoter and chief engineer of Google Ray Kurzweil (2005), this will be in the year 2045. I will expose my highly critical view of singularity theories in the chapter on comparative posthumanisms.

58 On algorithmic life, see Sadin (2015).

59 The dividual is, following Deleuze (1992), the new evolution of the individual becoming an infinitely divisible set of data in control societies.

a multiplication of scales. The processes are non-linear and must imply fluctuation. They express a tendency within fluctuation, so at stake is to develop a symptomatology of dominant tendencies in fields, not a totalizing narrative.

Transhumanists like Ray Kurzweil have put 2045 as the year for the birth of a general or strong AI, which, however, most experts don't yet see on the horizon. In any case, the sum of pandemic, crisis, Trumpian neofascism, Silicon Valley fascism, Chinese totalitarianism, climate change, overpopulation, lack, and privatization of resources (water appearing on the stock market for the first time in 2020), increasing inequalities, new types of war, ongoing cyberwar, without mentioning the still existing threat of a nuclear war seems to create a perfect storm, a vortex, a horizon of events or a black hole singularity with unpredictable outcomes rising over the coming decades. This makes the potential singularity appearing around 2045 quite difficult to imagine, maybe pointing to unheralded directions, but most likely as an *extinction singularity*.

5.3.3.6 The Radical Challenges of the Algoricene and Why AI Has No Future

One could summarize the radical challenges of the Hypercene as implying a triple turn to an all-encompassing design of perceptions–relations, to the accelerated production of the new, and to the focus on pre-empting future potentiality, unfolding as follows:

1. **Ontological opacity** of autonomous algorithms and Big Data systems due to their dynamism, scale, inaccessibility to human comprehension, supervision, and traceability, their operation below conscious thresholds, and their autonomous evolution (Hayles 2018; Massumi 2015; Mittelstadt et al. 2016; Munster 2013; Rouvroy 2013) associated with postcybernetic control, where computation introduces novelty (Parisi 2013).
2. **Ontological obsolescence** of rights, regulations, and common sense, which still linger in the constructs inherited from the Macrocene. We still seem to believe in stable things, public–private divides, extensive space, and so on. The inherited beliefs are inflated and instrumentalized, like in the overexposure of the ego on Facebook at the service of opaque algorithmic profiles.
3. **Ontopower** as defined by Massumi (2015) is the new regime of pre-emption of emergence and of capitalization of any previously useless activity by the continuous production of new patterns, correlations, and dynamic forms in relational data networks. This dynamism exceeds the one of many radical political movements, such as Occupy or queer movements, and implies that power now occupies the domain of creativity that used to belong to the resistance to power. It also exceeds biopolitics, as does Haraway's (1991) idea of a cyborg politics.
4. **Algorithmic governmentality,** as increasingly dominant regime implies hyperdata and hyperalgorithms as the new logic of management of life, from agriculture to communication (Bratton 2015; Rouvroy 2013), a regime that exceeds neoliberalism and subjectivity production, shifting to the flexible modulation of data ecologies (Deleuze 1990; Hayles 2012).
5. **Hypercolonialism**, as the rise of new empires and the provisional empowerment of older ones through monopolies of tech corporations, is related to an infrastructural imperialism (Vaidhyanathan 2012).

6. **Surveillance capitalism** (Zuboff 2019) is the provisional new logic of the global economy, with new elites of trillionaires, new inequalities, the secrecy of corporations, and the all-encompassing privatization of life, matter, commons, behavior, and emergence. *We (prosumers) are the products*. Hypersubjects as profiles performed by autonomous algorithms imply a new mode of proletarianization and computational nihilism (Stiegler 2018) in going from the individual to the dividual in the society of (hyper)control (Deleuze 1990).
7. The **double bind of hyperracism and hypernormativity** mobilizes new kinds of standardization and new kinds of algorithmic discriminations (Buolamwini and Gebru 2018; Hao 2020a and 2020b) along with new proliferations of niches that capture difference (pre-emptive ontopower). This social unsustainability accompanies the radical ecological unsustainability of AI systems, also denounced by Timnit Gebru and others (Hao 2020b), which affirms the idea that AI, far from being the future, *deletes the future*.
8. **Affective contagion and affective capitalism** are the mode of propagation of homogeneous gestures in the panchoreographic (Del Val 2009a and 2009b) and the culture of compulsive clicking with posttruth as the norm within an affective politics (Gates 2011).
9. **Hyper- or neofascism**, as epitomized by Trump and, differently but relatedly, by Silicon Valley companies, coexist with neo-totalitarianisms, as the one epitomized by the Chinese regime and its social credit scoring system. In both cases, hypercontrol is the new regime of all-encompassing quantification, as desired condition promoted by nearly everyone, disguised by an allure of inevitability, desirability, and lack of possible alternatives.
10. **Closed loops of tautological self-referential affirmation**, where problems generated by the system itself are responded to by intensifying their source, as when in reply to the pandemic the response hasn't been in caring for ecosystem disruption as source of pandemic outbreaks, but instead an increased social control and dependence on the very systems that destabilize ecosystems, in an exponential loop that aims at splitting the human increasingly from nature by immunizing it, with a palliative and escapist politics of patches to the global problems. The GRINDS (good, revolutionary, inevitable, necessary, desirable, sexy or smart) condition confuses effects with causes by mobilizing a conservative disruption, a *coup d'état* against humanity (Zuboff in Sánchez 2021) and the planet: the dystopia behind the culture of the smart.
11. Emergence of the **Hypercyborg**, as we become aggregates of a planetary metabody of computation systems (Stock 1993; Margulis and Sagan 1997), oriented by hyperattention affordances, in radical entanglement of strata (nano-, neuro-, bio-, info-) of platforms, relational databases, algorithms, and services, where the relationality of data and algorithms crosses a new threshold.
12. **Exponentiality**, as vertiginous acceleration, multiple levels of exponential expansion, acceleration, and interconnected layers on micro- and macroscales, and Big B.A.N.G. of convergent technologies (Ascott 2001). We seem to be approaching a vortex, a horizon of events, a perfect storm, a singularity: climate change, pandemics, overpopulation, AI... toward an unimaginable Extinction Singularity around 2045?
13. **Hypermateriality** or **hypercorporeality**. Planetary-scale computation systems (Bratton 2015) are a heavy, unsustainable materiality of the "cloud," consuming around 4 percent of energy resources as of 2020 (The Shift Project 2019), associ-

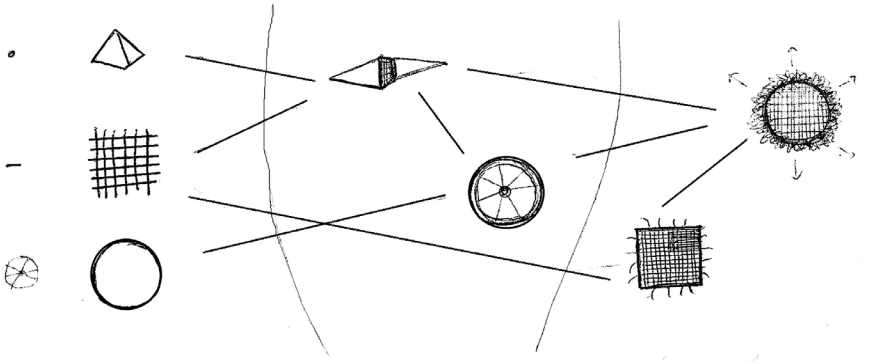


Fig. 41. Diagram of transductions. To the left, the more simple geometries of ancient societies. In the center these transduct in perspective, and then in the panopticon (and the wheels of engines and clocks) unleashing disciplinary societies. Lastly the grid miniaturizes in the microchip and all geometries that transduct in planetary networks of gridded infrastructures and billions of interconnected perspectival points in control society.

ated with the paradox that the more immobile the connected bodies are, the heavier the materiality of the systems, associated to a culture of sedentarism, of narrow bandwidth bodies, part of a sensor society (Andrejevic and Burdon 2015), raising the crucial question of the body in motion.

14. **Metaformativity**, as hyperreductive perceptual design drives an algorithmic society crucially grounded in a reduction of sensory capacities and spectrums (Carr 2014; Sadin 2015). A new movement is needed of neurorights, neurodiversity, and a plurality of interfaces. The digital doesn't represent a physical world but produces a new kind of narrow world. We need to distinguish narrow–broad[60] rather than physical–virtual.

The process has only started... but it is already fully operative and *more advanced than one can imagine*.... We need yet to understand the algorithmic orgy going on in our pockets and our uneven intimacy with it.... Yet, THERE ARE ALTERNATIVES!

In the above diagram (fig. 41) one can see spherical, gridded, and pyramidal formations trans- or meta-ducting into perspective and panopticons, later the grid becomes miniaturised in the microchip, and all of them converge in a planetary formation of gridded infrastructures, with billions of perspectival points (cameras, smartphones, satellites, drones, sensors), connected by billions of cables and antennas, and choreographed by trillions of algorithms; in a tendency to kill the planet with climate change, exploitation, and waste (programmed obsolescence and radical neocolonialism of trash going to "third world countries," subterranean waste, ocean waste, spatial waste, and atmospheric pollution), in order to abandon it, colonising other planets.

Each epoch (agricultural, industrial, electric or mass media and data revolutions) corresponds to perceptual machines and modes of alignments; to modes of economy and accumulation, surplus and futurity; of metadatification (since Babylon [Stiegler 2012], then with Copernicus, then with digital data, and now with Big Data); along two major inflections: first the reaching of complete calculability and then its later undermining by entropy; and along the spatial bias of empires in the form of

60 As suggested by Stone (1996) on her account of phone sex work as implying a kind of narrow bandwidth body that gets decodified on both ends.

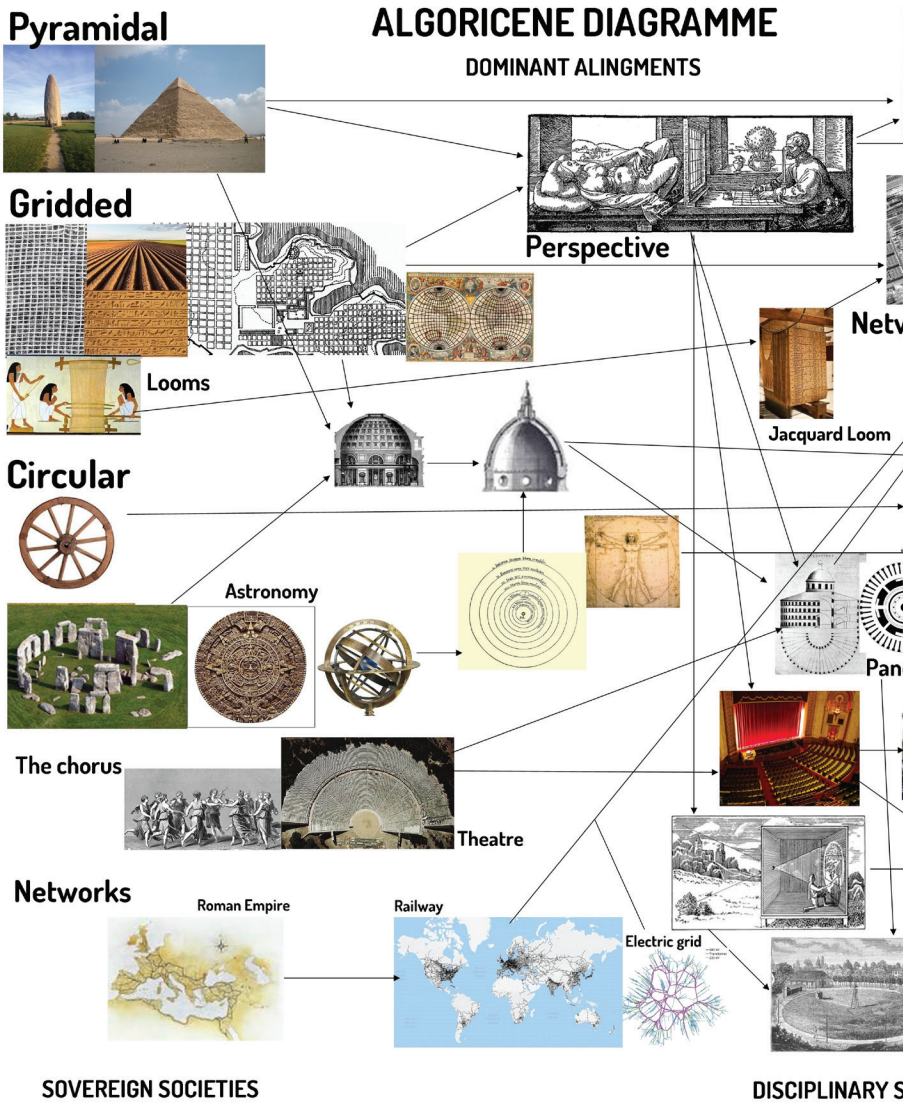


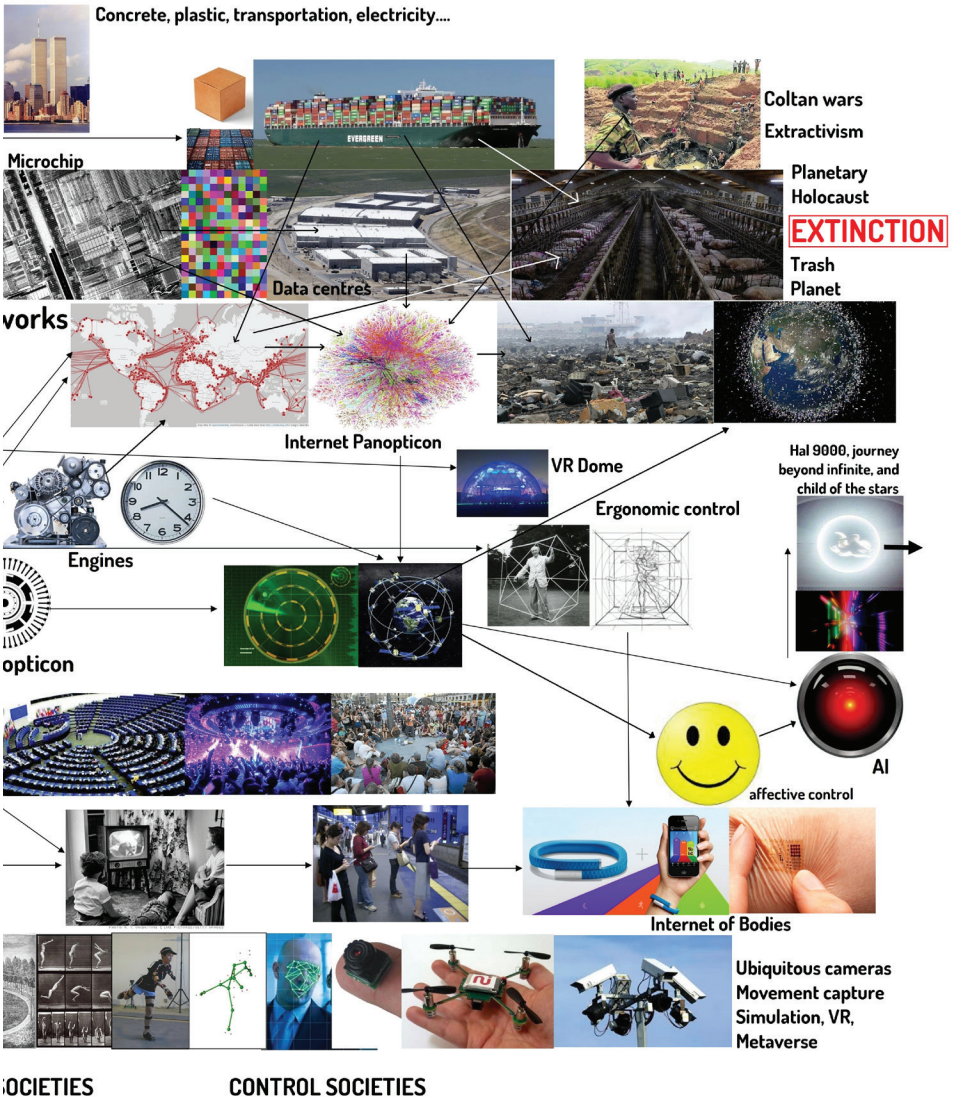
Fig. 42. The genealogy of some major alignments emerging over the past millennia with agricultural societies and their gradual convergence and evolution.

Pyramidal and monumental alignments (Menhir of Champs Dolent and Pyramid of Cheops) and gridded alignments (textiles and looms, agriculture, writing, city grids, and graticules) converge in the visual pyramid and grid of linear perspective and the *camera obscura* in the Renaissance, later evolving through cameras, cinema, TV, into current society of ubiquitous cameras and screens.

Circular and spherical formations deriving from the study of astronomy evolve into dome architectures, while circular choral dances are captured in the semicircular architecture of the theater. These come together with linear perspective much later in the panopticon.

The physiological station of Étienne-Jules Marey from 1883 shows a merging of camera and panopticon, foundational for the study of human locomotion and the body as mechanical entity, evolving into current 3D motion capture and facial recognition in AI, and into all-encompassing sensors and cameras in any sensory spectrum beyond human capabilities, from telescopes to electron tunnelling microscopes, from satellites to endoscopes, from street surveillance and radars to the Internet of Bodies and increasingly embedded and distributed sensors, linked to an affective politics of emotional modulation.

The chorus gets captured in ancient Greek theater, which incorporates the frame of perspective in the modern theater architecture, becoming increasingly atomized with TV, PCs, and smartphones, while domes evolve into VR immersive domes, VR headsets, and other gaming interfaces, pointing



toward the Metaverse. Another evolution of the chorus is in the parliament and assembly, but also in clubs, which also incorporate a panopticon architecture. Ancient Platonic ideals about circular orderly motion in bodies, visible in Leonardo's Vitruvian Man, reappear in modern accounts of movement, with Laban's kinesphere, or in ergonomics and Interface design.

Meanwhile wheels evolve into clocks and endless types of ubiquitous engines and electric motors that disrupt the planet with their accelerated revolutions, pollution, and so forth. Ancient networks such as the roads of the Roman Empire evolve into modern railway networks, electric grids, and into planetary-scale computation networks. The grid evolves via the Jacquard loom into computation grids, microchip architectures, and pixels, as well as millions of data centers, and giant cargo ships: grids with billions of containers and boxes, transporting goods form a delocalized extractivism and production, producing astronomic amounts of garbage, linked to massive animal exploitation and a Planetary Holocaust. Meanwhile, through concrete, architecture extrudes in supertall three-dimensional grids, epitomized by the Twin Towers of New York, linked to massive urbanization processes.

The three images to the right show iconic moments from Stanley Kubrick's *2001: A Space Odyssey*, which summarize some ideas proposed here: the panoptic eye of Hal 9000 symbolizes the failed evolution of human rationalism as an Artificial Intelligence, which needs to be overcome through a journey beyond the infinite which brings us back to the Earth, to the body (the child of the stars) toward a new creative evolution.

monarchies, states, and corporations, reaching algorithmic autonomy via the current technology corporations.

5.4 Dynamics of Macrocene and Hypercene

Hyperalgorithmic systems still largely rely on perspectival infrastructures and media and on increasingly immobile bodies as crucial means both for digitizing and reorienting us. The entropic field of ubiquitous transportation stemming from engines and the industrial revolution metaducts into a hypercontrol culture where some bodies continue moving and polluting, while others are increasingly immobile, but polluting also through digital media. In fact, the smartphone allows to both travel and be connected all the time while traveling often implies bodily immobility anyway, relying as one does on the machines, such as the automobile.

The constructs emerging with perspective, including the subject, are the provisional ground on which a new reductive turn is happening. Along the way, these constructs and their associated inequalities become inflated at the same time as undermined. In the following section I propose to expose the logic of how the dynamic hyperformations emerging since the invention of cybernetics instrumentalize, expand, and undermine the more rigid macroformations preceding them, in a movement, not only of double folding, but of self-propelling, where the world of dynamic algorithms relies on the reductions created by static algorithms that it needs to exceed. This is important for the dismantling of the idea that digital culture is liquid, emergent, and open. It is so in limited and problematic ways that need to be accounted for. Distinguishing between flexibility and plasticity is crucial if we are to create movements that resist and exceed algorithmic control today and in days to come.

In the shift from the Macro- to the Hypercene, we can see the following turns happening:

Macrocene: static algorithms, linearity, alignments	**Hypercene: dynamic algorithms, exponentiality, superalignments**
state and corporation	planetary-scale computation systems, hypercyborg
capitalism	algorithmic life
neoliberalism	algorithmic governmentality
individual	dividual
state racism	biometrics, quantified self, self-profiling as hyperfascism and hyperracism
screen or frame	interface
representation	simulation and correlation
management of the known	management or pre-emption of uncertainty
management of happiness	ecology of fear

normative disciplinary space	social media of control
representable form	dynamic pattern emerging in correlations
text	code
mechanical reproductive heteronormative intimate monogamous sex — categorization and pathologization of deviations	algorithmic sex as mediated by apps, porn, and the internet — pre-emption of deviations
universal emotion	emoticon
static grids and perspective	topological curve and planetary scale computation systems
static algorithms or geometries	dynamic hyperalgorithms
identity	addressability in internet protocols
subjectivity	population statistics

Table 3. Macro- vs. Hypercene

The dynamics between Macrocene and Hypercene can be described first as a double folding of static alignments into dynamic ones which occur within the narrowing frame of static alignments. Then in terms of how this folding propels the field further. It can also be described as a multiple vortical movement in which the Hypercene inflates and relies upon, but also instrumentalizes, undermines, and exceeds the formations of the Macrocene, in a double bind of 1) inflation and dependence; and 2) instrumentalization, undermining, and exceeding, propelling itself beyond. Think of how Facebook inflates the ego inherited from perspective, which becomes a mere instrument for feeding opaque algorithmic profiles in a control economy of dividuals.

> *What was being sent back and forth over the wires wasn't just information, it was bodies.*
> — Allucquère Rosanne Stone (1997, 6)

5.4.1 Macro- and Hypergestures and the Hyperbodily Nature of the Cloud

In prehistoric cultures, where vision was not dominating and relations between bodies were multisensory, tactile, and proprioceptive, gesture arguably emerged as distances between bodies became more articulated. Gesture acquired symbolic meaning within social systems of high articulation of relations at a distance, mainly through architecture and static perspectival media like painting or print. Symbolic meaning was lost with dynamic media, when the massive and quick proliferation of images didn't allow a gesture to sediment as symbolic referent and promoted instead a logic of pure contagion where bodies became mere nodes of homogeneous propagation.[61]

61 Following Agamben's (2000), around the 19th century gesture lost symbolic meaning and could become a means of pure contagion.

Macrogestures are the repetitive contagious choreographies in the sphere of communication associated to symbolic signification that emerged in aligned societies already in the Neolithic, culminating in the regime of linear perspective yet becoming overcodified in the disciplinary and industrial eras through increasing alignments with machines. Hypergestures are the gestures proper to interfacing with machines that both choreograph and mediate us, especially in the current epoch of planetary-scale computation networks, and to the simulation of inherited macrogestures, emoticon culture, 3D, and AI.

The selfie is an interesting paradigm for understanding the dynamics between static algorithms and dynamic algorithms. The selfie is paradigmatic of a *hypergesture*: it partly reproduces the discrete gestures of the draughtsman using perspectival machines in the Renaissance (fig. 37), which expand in planetary-scale computation networks through sensors and code (in the binary transduction of mechanical into electrical signals).

As I mentioned above, gesture emerges historically from proprioception, and gradually extrudes in systems of symbols, notation, writing, while vocal gestures become verbal movements and linguistic fields. Macrogestures could be described as the discrete repeatable gestures and sequences (algorithms) that define systems of normativity in disciplinary societies, disseminated through perspectival ratios. Within these, there is a specific type of very discrete movement right at the origins of perspective: the small manual–visual kinaesthetics of the draughtsman in Dürer's engraving (fig. 38), which is the origin of the kind of the gestures we perform nowadays in our relation with interfaces (interface choreographies).

The peculiarity of this gesture is that it is not only a content for the frame of representation but an infrastructural gesture defining the very frame of perspective as sensory architecture. It enacts the algorithmic procedure of transposing points from one grid to another, and is thus a purely algorithmic gesture. The gestures we perform nowadays when clicking on the grid of keyboards follow the same logic, albeit mediated by the unfathomably opaque and complex algorithms of planetary-scale computation systems that reorient us by changing the grid itself.[62]

5.4.1.1 Ontology of the Selfie and the "Narrow Bandwidth Bodies"

When you take a selfie, you align yourself with the smartphone's window, getting ready for the selfie, choreographing the correct distance, framing, axis, and fixity on one hand and on the other the correct gesture and smile, and then you click. Thus you re-enact a number of orienting gestures that have been happening for approximately 600 years, since the invention of linear perspective, defining a fixed set of relations that allow a portion of reality to be choreographed by a complex system

62 See Thomas Nail (2018b, 437) on the kinetics of the computer keyboard as "defined primarily by a binary modulation, introduced in the mid-twentieth century. In addition to the binary *circulation* introduced by the typewriter, the transistor computer and computer keyboard move not only by mechanical and electrical circulation, but also by a quantum kinetic modulation of those circulations themselves. In particular, the computer keyboard not only has elastic oscillating keys supported by springs or rubber, but also relies on the work of transistors to modulate or modify the flow of energy released from the key contact. Transistors in turn rely not on a mechanical or even electrical switch, but on the modulation of a purely quantum flux in the subatomic structure of a semiconductor material. This kinetic operation is thus defined by three suboperations: modulated oscillation, modulated elasticity, and modulated subjectivity."

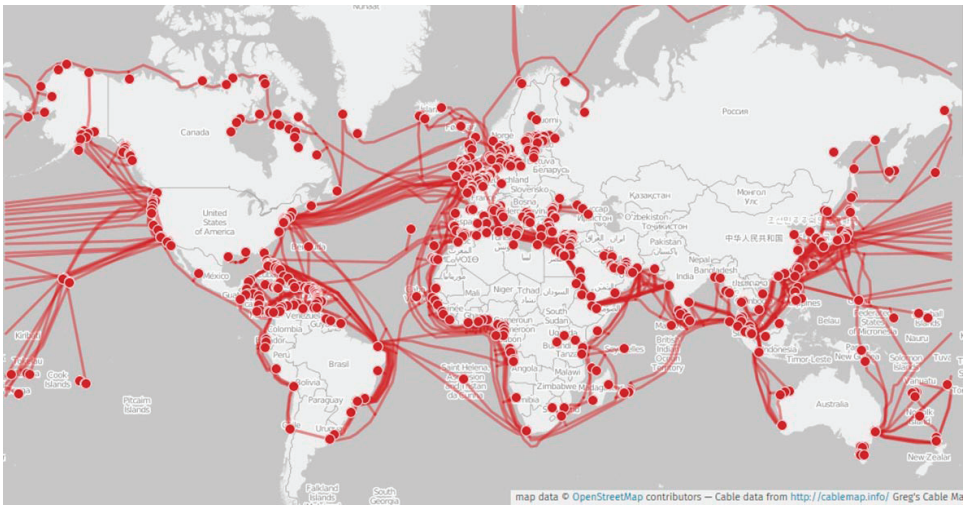


Fig. 43. Submarine Cables connecting servers. By Greg Mahlknecht, map by OpenStreetMap contributors. A selfie travels in microseconds across these cables and is stored in hard drives housed in data centers.

of quantification. The selfie brings together the two gestures of perspective: observing–drawing (now clicking) and posing.

In some fifteenth-century perspective machines, you would have been a male draughtsman looking through a gridded frame at an object or body. In the smartphone, draughtsman and object have become one thing, the two planes of vision and representation, are mingled in the touch screen. You seem to become a complete spiral of self-representation.

The grid of the Renaissance was static and local (though seamlessly configuring social and relations and perceptions). In the smartphone, it has expanded to increasingly autonomous and opaque planetary-scale algorithmic systems that feedback and reorient your gesture within microseconds, while consuming astronomic amounts of energy in data centers.

As you upload the selfie, or even before, the bits and bytes travel across local wifi or cable connections and transoceanic submarine cables, get stored in hard drives in data centers, while the learning algorithms of Facebook are updating the secret profile of your personality, and so are a number of other companies who are processing your digital traces, and will try to influence your unconscious behavior by sending particular stimuli (fig. 43). The browser or artificial personal assistant sends you alerts and lures that you may follow or not, but considering the amount of your life that happens online, it is likely that sooner or later, if not constantly, your behavior will match some of the lures sent by the interface. Meanwhile your clicking feeds the largest publicity machines on the planet (Facebook and Google) following autonomous decisions of learning algorithms.

In turn, smiles and poses reproduce global, contagious, homogeneous choreographies of happiness and gender, while feeding a hyperfascist desire for exposure inflating the narcissism of an egocentric subject, backed up by another corresponding construct: the need to share and reconnect the previously split subject, while keeping the distances ever more opaquely articulated and controlled. The ontology of the selfie inflates and instrumentalizes the logic of representation, that only the framed reality matters, while subduing it to a new algorithmic logic. You may be

taking a selfie in a mountain or desert, yet mobile systems impose the compulsive and compulsory logic of ubiquitous and permanent traceability as necessary and desirable condition; but these, like yourself, have become part of a hypertopia in which multisensory experience doesn't matter, only the digitized and reduced *selfie experience* counts, in an all-encompassing *matrix* that expands Plato's logic of the cave.[63] What could it matter to climb a mountain *without* taking a selfie? The selfie is what matters. Your proprioceptive and multisensory experience is neglected in favor of the click-and-pose. The economy of repetition and control displaces the economy of variation. The semiotic economies of liberation associated to technology and the presumed empowerment associated to self-representation are the lures that facilitate seamless assimilation and zero resistance, together with the Cartesian assumption that we are minds that can only be influenced through rational ideology, not through affects or perceptions. And yet the selfie experience has already become secondary to the (hyper)algorithmic ecologies that it is feeding, as it circulates through planetary-scale computation infrastructures where algorithms create unknowable profiles and data correlations in the attempt to optimize profit and control.

Extreme selfies taken in dangerous places, associated to quantification of *likes* in social control networks and their modes of affective–gestural contagion, take the selfie logic to the limit where people risk their lives, and occasionally die for the sake, not of an experience but of a selfie and its reduction of sociality to hyperfascist quantification of likes.

5.4.1.2 Patented Movements and the Most Misleading Metaphor That Ever Existed

Hypergestures come about when the already segmented gestures that emerged with perspective and other static geometries become extruded to planetary-scale computation systems and autonomous algorithms, for example, every time you touch your smartphone's screen. These systems afford the elaboration of unknowable behavioral profiles and unknowable feedbacks.[64] Hypergestures increase homogenization and afford continuous recomposition of movement segments.

Hypergestures are increasingly *patented* movements.[65] Hypergestures are a priori subjected to increasingly inescapable and unknowable measurements performed through ubiquitous sensors and the associated reorientations choreographed by the interface.[66]

The materiality of the perspectival machine visible in Dürer's engraving becomes heavier and more invisible in current hypergesture culture, paradoxically sustaining the faith in the disembodied mind. Hypergestures expand in the cloud that mediates them. But this cloud is a massive, heavy, centralized, unecological, and opaque

63 See Luciana Parisi (2004, 161), who builds upon Luce Irigaray for a reverse cross-reading of Plato and the film *The Matrix*, and the world of images as related to a detaching of sight from the other senses.

64 This is exemplified by Facebook's will to reach all humanity (everybody, the planet, all space) and 24 hours a day through VR/AR interfaces and biometric sensors (all the time, all activity) through its older project internet.org, now resumed under the new umbrella of the Meta corporation and the Metaverse. But the logic of algorithmic life points beyond, to an emergent hypercyborg whose body is the effect of emergent correlations that has a will to total capture.

65 In August 2012, a court verdict was released in which Samsung was found guilty of infringing on several Apple patents: motion patents. Curiously, it deals with both physical and digital movement: patent 915 relating to scrolling with one finger, the gesture of "pinching" and zoom navigation; patent 163 related to tap-to-zoom (tap to enlarge the image), patent 381 related to the "spring effect" that makes the screen bounce when it reaches one end.

66 On the increasing capitalization of every minute gesture or movement, see also Sadin (2016, 123).

infrastructure of grids, from microchips and pixels to interfaces and data centers.[67] This massive infrastructure is the very condition for reducing, segmenting, and rearranging movement in unprecedented, pervasive, and ubiquitous manners.

The cloud is hyperbodily, based upon an infrastructure that hides its extremely heavy materiality, which creates a planetary body of binary signals. The metaphor of the cloud effectively conceals this unsustainable materiality. The cloud is perhaps the most misleading metaphor to have existed. The seeming immateriality of the cloud (and of any immaterial metaphor) paradoxically relies on heavy infrastructures of movement reduction. *The more immaterial something pretends to be, the heavier the materiality sustaining it.*

Indeed, the fiction of disembodiment of the digital realm is only sustained because there is a heavy industry of perceptual reduction behind it, sustaining billions of interconnected fixed points of vision, fixed in relation to the interface, but mobile at the same time as in the smartphone.

Big data and AI are not a global brain, *they are a body!* A highly unsustainable one, both for us, immobile bodies connected, and for the planet. One hears increasingly talk of an *internet of bodies,* where biometric devices like watches, but soon also smart lenses, implanted chips, or smart pills, will connect the body to the internet for intensified tracking. But the internet was always bodily from the start. It is itself a body of which we are corporeally part.

This hyperbody is not just in its actual infrastructures, and in ourselves becoming part of it by becoming atrophied, but in the massive processes of *exploitation* (of humans and the planet) and *pollution* related to all elements of the chain: from the extraction of minerals for hardware and its delocalized production by slaves, to the massive cargo ships for transport, the massive waste generated and intensified through programmed obsolescence, and the pollution created along the whole chain, which demands high amounts of energy, including for data processing or mining and storage. Climate change, pandemics, massive inequalities, refugees, and wars are a crucial part of this hyperbody as well. The same scheme applies to the global production of food, building, clothes, transportation systems, etc. In the case of food there is the added problem of enslaving (not only killing) more than 90 billion animals per year.

This perspectival machine becomes ubiquitous as much as invisible, a true matrix of world reduction, increasingly heavy and energetically unsustainable, while bodies become increasingly immobile and atrophied. The ultimate evolution of this Parmenidean tendency to eliminate movement is in transhumanist discourses of disembodiment and immortality through mind-uploading and neurostimulation.

We need to elaborate a certain awareness of our daily intimacy with autonomous algorithms running behind every app in a smartphone and operating through the alignments of our proprioceptions with the interface. Even if we don't understand

67 Already as of 2017, around 9 million data centers consumed around 3 percent of all electricity in the planet and produced 2 percent of global warming (Bawden 2016). The IT sector consumes around 7 percent of which 60 percent is video streaming, gaming, and mobile devices (Avgerinou, Bertoldi, and Castellazzi 2017). This is now rising exponentially through AI. The communications industry could use up to 14 percent of the world's electricity by 2040, around the same proportion as the whole US (Guardian Environmental Network 2017). The polemic surrounding how Google forced out the leader of its AI ethics team, Timnit Gebru, exposes the complexity and entanglement of these problems. See Hao (2020b).

how they do this, we have the chance to mobilize again the richness of our proprioceptions in excess of reductive alignments.

5.4.1.2.1 Ontotherapy, Ontohacking, or Cartesiholic Anonymous Exercise: How do Interfaces Orient Perception and Gesture?

1. How do sensors *orient perception* and *guide gesture* in digital interfaces? How does it happen in other situations? Think of gesture in a conversation, what degrees of freedom of movement and of ambiguity in interpretation is there versus clicking on a keyboard? Think of perception when you walk in a forest versus using a smartphone. How many degrees of freedom do you have in different situations? Clicking aligns with a single possibility, holding or gesturing has more degrees of freedom.
2. Think of the qualities and variation of movement when clicking versus holding a glass or in conversational gesture: discrete versus continuous movement, repetitiveness versus subtlety and variety of movement.
3. How do you feel the body, or how does the body feel when clicking on a keyboard, aligned with a screen vs. holding glass, or in conversation or walking in the forest or dancing or sexing? How is proprioception involved differently and in spectrums of different richness in each case? How many senses are involved? What is the balance of exteroception, proprioception, and interoception? Is perception mainly guided from outside, exoreferential? How do senses integrate with one another? Is *multisensory integration* happening following a rigid scheme or is it changing plastically? How are senses cooperating, or not, with one another? Is one sense imposing itself hierarchically?
4. What kinds of relations do you entertain with the environment or objects? Simple, linear, one-to-one, cause–effect, predictable, as in clicking? Complex, multiple, unpredictable, diffuse, indeterminate, as in walking in the forest or gesturing in conversation?
5. How are all these relations part of a *larger (eco)system:* as in mechanical machines or digital interfaces, windows mediating and choreographing billions of bodies, and the algorithms behind. They are never just an individual relation with something. What metabodies are you partaking in and enacting?

5.4.1.2.2 Ontotherapy, Ontohacking, or Cartesiholic Anonymous Exercise: Autonomous Algorithm Awareness Questionnaire

1. Do you think you entertain occasionally or habitually intimate relations with autonomous algorithms? If habitually, how often? (Intimate means with either deep knowledge or deep influence and also deep indeterminacy about what's going on. Autonomous algorithm refers to the increasingly complex and emergent algorithms managing Big Data systems such as those that are running behind most of the apps installed on a smartphone as well as behind most complex information systems today, including stockmarkets, weather prediction, traffic lights, etc.)
2. How many different kinds of autonomous algorithms do you think you relate to on a daily basis? Please describe them or name them (e.g., apps, cookies, searchers, Facebook, Google Maps, Uber, etc.)
3. Do you also entertain less intimate or non-intimate relations with autonomous algorithms (e.g., through trafficlights, stockmarkets, etc.)?

4. How much do you think that autonomous algorithms affect you?
5. How do they affect, influence, or guide you? Behaviorally? Creating addictions? Orientating you? Shaping your knowledge and perception?
6. What proprioceptive, kinaesthetic, or sensory alignments with the interface do you need in order to relate to these algorithms, to have them sense your behavior and to have them reorient your behavior? Could you invent new embodied metaphors to describe this new awareness and sensation of being coupled to autonomous algorithms? How does it feel in your proprioception, to focus on clicking and be guided by screens?
7. How much of your behavior do you think gets tracked, aligned, and reoriented by them?
8. How do you think they alter you perception on a medium and long term, for instance as one loses capacities to orient in space other that with the use of GPS and Google Maps?
9. When Google Maps shows you different information than what it shows to the person walking with you, do you take this as a positive individuation of your desires or as a dangerous pre-emption of them?
10. Do you think you have more intimacy with the algorithms or with your partner, or even yourself? Who do you think knows more about you? Whom do you know more about? What do you think they know about you? How many items of information do you think they have of you: dozens, hundreds, thousands, millions, billions, trillions? How many digital traces do you think you leave and in how many ways could they be processed?
11. How far do you know what's going on in autonomous algorithms? Had you ever been aware about them before? How much do you think goes on behind an app that you cannot know? (For instance, how many companies like Cambridge Analytica are harvesting your data and orienting you?)
12. Do you read the contract when you click to approve giving your data to a company? Do you seriously give your consent? Exactly to what do you think you give your consent? How far can you know what you give consent for? Do you think you know? Do you think one can know? If you can't fully know, how can you give consent?
13. How different do you think is your clicking to accept the conditions for giving out your data to a company from a marriage contract? How does it feel to realize that you are maybe married to multiple algorithms with whom you have signed actual contracts by clicking on accepting the conditions? Do you know the conditions of your "marriage" contract with the algorithms? Would you describe the relation as monogamy, compulsory polygamy, rape, promiscuity, polyamory, orgy?
14. Do you think it is a private, public, or other type of relation?
15. What is the visible tip of the algorithmic iceberg vs. its hidden part? Could you ever know all of what goes in even you tried hard? Do you think Mark Zuckerberg knows everything about Facebook's algorithms?

We seem to be secretly and obligatorily married to multiple algorithms following incomprehensible and emergent rules. Contemporary society is an *algorithmic orgy*.

If we hardly even see the tip of the algorithmic iceberg, we might be on the Titanic running toward the invisible iceberg in the middle of the icy sea at night… Is this denoting a cultural "Titanic syndrome"? We need to radically question the

apparent unavoidability of these technologies that impose themselves by narrowing our sensitivity, sensibility, and intelligence. Instead, it is necessary and possible to regain the richness in our proprioceptive experience.

When consent becomes impossible due to the opacity and dynamism of the processes, we need a notion of *co-sensing* that allows us to understand when a movement is being imposed and undo its alignments. But how to do this when most processes running on the background are imperceptible to rational agency?[68] In response to this, I will later propose to mobilize the complexity of our movement also in excess of human–rational perceptibility.

5.4.2 Macro- and Hyperaffect: Affective Capitalism

Macroaffects are homogeneous and repetitive modes of affecting and being affected, emerging in societies where relations are choreographed by linear perspective. These culminate in a disciplinary and industrial society where bodies are aligned with mechanical machines. They relate to the rhythmic homogenization of mechanism, the nuclear family, and the bureaucracy of the nation state: behavioral choreographies defining a normative regime. Paradoxically, these alignments, which attempt to create closed thermodynamic systems (the steam engine and the family), produce themselves entropic dissipation by preventing fluctuations to unfold.

Universal emotions as defined in the 20th century by psychologists like Paul Ekman usually consider a set of six major emotions as the most relevant for an individualist and capitalist struggle for survival. But universal emotions are an effect of the homogenization of relations emerging in perspectival and mechanical environments. They express mechanical life rhythms and qualities.

Hyperaffect, in turn, became possible when Claude Shannon's inversion of the value of entropy in his theory of communication enabled the capitalization of any previously useless affective expressions, so that noise in communication signals is now a presence overfull of potential that needs to be capitalized. Hyperaffect is no longer primarily concerned with choreographing affections following an already established norm, but with detecting vectors within fluctuation, pre-empting variations into market niches.

The normative affects inherited from biopolitics are currently instrumentalized, inflated following an emoticon logic of pure contagion. Emoticons, as simulations (not representations) of emotions, are affordances of the hyperaffect regime. Simulations don't describe an existing reality (Baudrillard 1988), but try to anticipate a future one by modeling variations based on a given representation. Emoticons seem to represent universal emotions, but rather produce new affective niches of pre-emption.

Hyperaffect defines a regime where affective engineering has become an all-encompassing political and economic spectrum in its own right, a full spectrum affective capitalism that operates behind the scenes of the rational ideological subject. On one hand, the ecologies of fear and threat that Massumi (2015) has analyzed extensively, as ubiquitous, unspecified coloring that intensifies the desire for securitization while making everyone suspect, are a major aspect of current affective

68 On ontopower operating below the threshold of awareness, see Massumi (2015); on algorithms altering the digital ecology below the threshold of awareness and on the imperceptibility of computational processes see Hayles (2013; 2018); Rouvroy (2013); Hansen (2012); and Munster (2013, 82).

production. They are engineered through ubiquitous unspecified alerts which *proliferate contagiously in perspectival media.* On the other hand, the massive production of ecologies of happiness, aligned with programs of futurity and life planning and with desire as lack, as orientation along a linear trajectory that permanently defers the goal, is also a contagious affective architecture engineered through an object-oriented ecology of consumption, the semiotics of liberation of consumer culture, and the contagious gestures of happy smiles disseminated on ubiquitous screens (Ahmed 2010), selfies, social media, and emoticons.

Emoticons, Facebook, and Trump are some visible aspects of hyperaffective politics and hyperaffective capital, as it bypasses reflexive reason and intensifies emotional contagion. Trump, neofascism, and post-truth are not the anomaly but the paradigmatic expression of perspectival culture in the age of autonomous algorithms

But more invisible is the biometrics, face recognition, movement, and emotion measurement technologies that underlie our interfaces and the logic of digital ecologies.[69]

The normative affective patterns inherited from disciplinary society expand now in seamless automated systems of emotion measurement that, far from only measuring, constantly mobilize, redirect, and reengineer affect as a crucial form of affective politics (Gates 2011, 176; Thrift 2008).

Hyperaffect is also the continuous engineering of affect in systems of automated analysis and orientation–anticipation of behaviors and in the programming of artificial agents. The set of universal emotions previously described, as highly normative frame, is the starting point and assumption underlying research into the programming and simulation of emotions in AI. Here we see some of the complexities in the way hyperaffects overcodify macroaffects, where often macroaffects return full force, as inflated façades, with the double logic of reaffirming the norm and of putting it at the service of a new algorithmic logic. It works because people still believe in the universal and natural status of the norms, and because of the belief that data represent our truth rather than create a new one.

It is the paradoxical belief in representation and universalism which allows simulations and the controlled production of the new to proliferate without any resistance. But what this type of research in programming of emotions produces, even without researchers realizing this, is a new realm of reductive emotions, an emoticon world that is not representing universal emotions but creating new affective modes of increasing homogenization, as relations become increasingly mediated by emoticons and AI agents.

Emoticons are part of a larger social media and algorithmic logic. They always imply clicking, so again they condense a double or triple gesture. Instead of your face framed in the camera screen, as in the selfie, there is the emoticon on which you click. In turn, when you upload a selfie people will click on the "I like" emoticons. And if you smile for a face recognition app, you become yourself an emoticon. This is important, as it allows a much more pervasive economy of control by tracking every gesture of clicking and posing. Face recognition algorithms also track emotions in the selfie, whose poses in turn increasingly end up imitating emoticons. Biometrics

69 For instance, former Chief Business Officer of Google Mo Gawdat (2018) has proposed a "happiness algorithm".

can expand this much further as ubiquitous sensors allow a more direct and opaque measuring of physiological states.[70]

Hyperaffect expands the affective contagion of mass media (TV and screen culture) into the unknowable profiling and feedback of Big Data systems, where affective computing and micromeasurements constantly reattune planetary-scale ecologies and mobilize new pre-emptive affects. One could call them topological affects, relative to smooth curvilinear aesthetics in constant modulation, as suggested by Parisi (2013).

5.4.2.1 The Productive–Reductive Power of Quantification Technologies

The idea that measurement provides a truth about movement hides a much more interesting fact: when we align ourselves with a measurement system, we adapt the movement to it. *Measurement systems constantly produce new movements.* Proprioception, by contrast, cannot be measured. As a quantum field of ontological indeterminacy it embodies the indeterminacy principle of quantum mechanics, where selecting one aspect from amongst its multiple unresolved states will actually determine it. It is the ultimate irreducible site of the body. Any attempt to measure it will erase its richness and openness. It's not a matter of multiplying sensors.

A sensor never represents a movement, rather it allows the creation of a new movement. If I wear an accelerometer on my forearm, the sensor's way of sensing is grossly reductive with regard to my proprioception and operates in very different ways. When we work with a sensor, we need to understand how it senses, and relate to it as a transformative extension, not as a representation. Wearing the accelerometer will invite me to do gestures I have never done before. But our blind belief in sensors and data as representing the truth about ourselves turns them into machines of reduction.

In fact, I will never do the same gestures with and without sensors, so the idea of measuring gestures from daily life wearing sensors is embodying a paradox that researchers tend to ignore. This relates more broadly to how an observation creates its own conditions and effects, as Barad claims with her concept of intra-action (2007). The observation speaks more about the observation process itself than about what it claims to observe. How much we could gain by acknowledging the transformative power of sensing technologies instead.

Measurements of emotions constantly produce new emotions rather than represent a previously existing one: the emoticon, by erasing the ambiguities and variations of facial and bodily expressions, of relations in motions, creates a new type of standardized, narrow-bandwidth emotion and relation.[71] It works as long as it resonates in a body that reconstructs its broader bandwidth by reaching to other

70 In his art projects *Fag Face Recognition* and the *Facial Weaponization Suite,* Zach Blas (2012–14) develops unrecognizable masks, built by accumulating the faces of famous "fags," as queer escape technology from fixation, identification, and control systems, reminding us how "Gilles Deleuze and Félix Guattari taught us not long ago that 'regarding whether human beings have a destiny, it is rather to escape the face, dismantle the face and facialization, becoming imperceptible, [...] with strange becomings, [...] that make the facial features finally escape the organization of the face. [...] Know it, know your faces; it is the only way you can dismantle them and draw your lines of escape'."

71 Following Munster (2013, 94), their danger does not so much relate to privacy as to an averaging out of the population's behavior. "Data mining does not target the person but behaviour as trend in a population, [...] it is the population as an averaged trend behaving in this or that way which is really at stake." *Becoming-emoticon* is thus an attunement of users to new affective standards.

embodied memories. But what happens in a culture where people are using emoticons since birth and relate more and more through them?

Our proprioceptions still develop their fundamental memory through body-to-body interactions and immediations involving fluctuations of all kinds. But increasing amounts of social life happen with the complex mediation of screens, emoticons, and underlying algorithms, which in turn influence how we behave in other social spaces and how we perceive other expressions in a spiral of reduction.

The emoticon is a simulation. Simulation is usually considered the imitation of a real-world process or system, yet it is different from representation, which, in terms of visual arts, data visualization, and politics, is about producing a double of what is taken for the real, and about having that double become the relevant or true aspect containing the essence of something, so that it can substitute it. In representation, the territory is considered to come before the map. In simulation instead, following Baudrillard (1988), the map comes before the territory, the map creates a new territory. I argue that this was always already the case in representation as well. Maps have always been about creating new fields of abstractions that impose themselves on other fields.

Then, what is the difference between simulation and representation? The difference is that representation was related to more or less static models for managing the world by aligning it with static patterns, while simulations are more about anticipating the yet inexistent future by generating models that assume a dynamic reality. Emoticons are changing patterns that pre-empt affect and at the same time are disseminated in homogenous ways, following a logic of massive standardization of sensorimotor ratios and affective contagion.

The idea, inherited from perspective, that affects come from the bounded inside of a subject rather than being qualities of relations, allows affective–gestural contagion to happen without any resistance, as affects are channeled in particular ways by the homogeneous architecture of the medium itself.

Hyperaffect designates a new kind of *affectworkers,* as affects become subject to continuous capitalization and modulation. Facebook is the paradigm of hyperaffective capitalism and of affective hyperwork. Its efficiency relies on the way in which macroaffects (universal emotions) have become naturalized. This naturalization has happened through the choreography enacted by perspective that instantiates the nature–culture divide and its relation to the mind–body and reason–emotion divides, where the immobile Cartesian observer encloses emotion as its otherness that reason–culture has to tame. This resilient fiction avoids any effective interventions in how affects are massively produced and pre-empted. But we are constantly engaged in creating new qualities of experience and memory, new rhythms and resonances, new affects, across an infinite spectrum of qualitative variation.

The idea of there being a set of (mostly six) universal emotions is utilitarian, linked to an individualist, neo-Darwinian, and capitalist conception of competition and survival so that other "aesthetic emotions" (Scherer and Zentner 2001) are considered secondary. This view misses the point of evolution as mutation, and of the crucial importance of affective variation, so that for evolution to sustain its movement there absolutely need to be non-utilitarian "aesthetic" emotions, without which life would become paralyzed. But these are always there if we listen to them: in the microaffective spectrum of our proprioceptive fluctuations. It is a question of unfolding their variations.

For there is no sex [...] *it is oppression that creates sex and not the contrary.*
— Monique Wittig (1992, 2)

5.4.3 Macro- and Hypersex

The association between sex and reproduction has been a recent, and perhaps provisional one in evolution. It wasn't there in bacteria, and it isn't there in a culture of lab-based genetic engineering. But it is even more recent and anomalous, when considered as a mode of relation in an economy of seemingly fixed entities seeking self-preservation and control.

In this section, I will focus on how the mistaken association of sex and reproduction is related to the massive overpopulation problem, growing since the origins of agriculture, a massive expansion of the *sapiens,* so that a diversity of oppressive regimes of reproduction has unfolded along the different periods of technohuman expansion and multiplication. In Book 3 I exposed the theories of microsex and metasex, as well as an orgiastic ontology and a history of cosmic sex, exposing the anomaly of binary reproduction regimes. Here, I will focus on some ontological issues linked to the specific technical evolutions in the more recent Algoricene. I will also expose the problematic shifts happening in the turn from a macrosexual regime of reproduction culminating in the Victorian era to a hypersexual regime of pre-emption of difference in current control society.

When perspective fixed an entity as split from the world and reconnected through controlled geometric field of relations, the very possibility to reproduce this entity in a controlled manner appeared, as a concept. Sex became the controlled reproduction of an entity, instead of a process of mutation.

Normative sex–gender is a movement and perception algorithm, a relational geometry. Normative sex and gender are the effect, not so much of discursive performativity, as of the way in which movement and perception have become aligned over millennia: metaformativity. As I exposed in Book 3, sex was rarely linked to reproduction for most of evolution, but to mutation. Reproduction only got entangled with sex, mutation, and death in particular types of multicellular organisms like us. Different cultures have codified this entanglement in varied ways, the most totalizing of which is arguably the one culminating in Victorian morality as the still predominant global–colonial normativity of sex. This emerged after centuries of perspectival cultures and mechanism and with the attempt of industrial society to create closed thermodynamic systems, not only in the steam engine, but in its supporting social body, where the nuclear family was expected to provide workers.

Just like there was a struggle to prevent entropic dissipation in steam engines, there was also an attempt to prevent sexual dissipation in society. The solution was the strict association of sex and reproduction (eliminating all of its resonances with mutation) and the nuclear family as site for this process, centralizing also kinship and affective bonds where women would also perform the naturalized and unrecognized work of reproduction itself as its formless container, along the tasks of the home as larger container for this reproduction, including housekeeping, feeding, and raising the children.

Sex as mechanical reproduction of an entity through repetitive penetrative choreographies is the resulting algorithm, diametrically opposed to bacterial sex as programless mutation. The idea of sex as purely genital act of reproduction is perhaps

the most narrowing, aligned, and poor modality of sex ever to have existed on the planet till recently, although even poorer modes of screen-mediated and algorithmic sex are being enacted, where the masturbatory internet panchoreographic is a means to modulate and control any previously useless flows of desire and sex.

The naturalization[72] of sex-as-reproduction (as with other categories like gender, race, class, or ability), is not a priori discursive (performative),[73] but perceptual (metaformative), and has to do with the narrow sensorimotor field instantiated by perspective as relational protocol. Its dualist ratios affirm nature as separate from culture and from a disembodied observer, affording the privatization and textualization of the subject, the reduction of the body to quantifiable matter, and the geometric structuring of relations. Binary sex is the effect of a dualist geometry of perception emerging in slave societies instantiating a master–slave and subject–object dualism, and with them a mind–body, culture–nature, man–woman set of interrelated dualisms.[74]

Macrosex defined the destiny of the body by defining its anatomy. The reduction of the body to dual morphologies and functions (gender and sex as reproductive ableism) is part of a history of multifaceted dualist relations in slave societies.[75] Dualistic sex perceptions (binary sex) have to do with perceptual separations, divisions of activities according to classes and anatomical reductions.[76] Sex or gender distinctions have always been a class issue, at least since Greece and its androcentric aristocratic culture, as exemplified in Plato,[77] who defines in the *Timaeus* the formless receptacle of becoming as mother or nurse, a sort of universal womb where the forms appear, associated to man. Aristotle further develops a theory of sexual difference that will take over other theories of Hippocrates and later Galen concerning sexual complementarity (for whom sexual morphologies were instead reciprocal and interchangeable, each seen as the infolding of the other along a continuum).

Macrosex generated a naturalized account of sex-as-controlled-reproduction-representation of an entity–form against a fear of the formless. The reproduction of images through perspective is the perceptual equivalent and prerequisite of sexual reproduction that creates the perception of repeatable entities. The two interrelated

72 See Butler (1990, 11) of how gender and sex are discursively produced as natural and prediscursive.

73 Butler herself points to performativity as not only linguistic, resonating with Foucault's account of discourse as encompassing a vast range of practices beyond language per se, though arguably having language as their most prominent mode of articulation. Yet my proposal is not merely about including in performativity gesture and the nonverbal spectrum, analyzing it in terms of structures that are reiterated or subversively displaced in their iteration, rather it's about focusing on movement in how it conforms perceptual organizations precisely by reducing itself to cuts and structures. Metaformativity claims the irreducibility of movement to cuts precisely as means to reinfuse indeterminacy in discursive fields, in excess of any structure and its possible reiterations. Metaformativity analyses the very conditions by which movement becomes performative in instantiating cuts and structures that may be iterated, and at the same time looks beyond, into the more irreducible spectrum of movement.

74 Other empires have had analogous but also diverse economies of kinship. For instance, in China the family has been historically very dominant, but the individual has been much less outlined, while there was no institutional–cultural homophobia as there was in the Western monotheistic tradition.

75 See Rubin (1984) on a history of the political economy of sex in relation to historical forms of domination; Wittig (1992) on sex as effect of oppression; Rothblatt (1995) on sex and gender as apartheid. For dual class systems related to the evolution of slave societies, see Thomson (1954).

76 See Fausto-Sterling (2000) for a detailed account of the historical, medical, and scientific sexing of the body, including sexual taxonomies and measurements but also chemistry and hormones.

77 In relation to sex, we can see, following Butler's reading of Irigaray (1993, 40), that its definition in relation to form appears in Plato's *Timaeus* (2008).

and predominant modes of macrosex are thus the nuclear family (with the implicit sexwork of the mother–nurse) and pornography (originally as images of prostitutes) as representational and perspectival sex: a mode of bodily composition and relation mediated by perspective.

Pornography or pornology, as the mode of sex where contact is choreographed in fixed distances in relation to the frame, foregrounding mirror neurons' mechanisms of repetition, is the ultimate evolution of the macrosexual paradigm in disciplinary societies and ubiquitous screen cultures.

Porn is *not* a representation of sex; it is a mode of sex, of bodily composition minimizing mutation, the triumph and quintessence of *perspectival sex,* whose repetitive choreographies and fixed ratios spread globally beyond the screen, choreographing face-to-face interactions through the extrusion and narrowing of proprioception to fixed distance relations.[78] Following the logics of pre-emption mentioned above it only follows that porn is an intensified and addictive alignment, just like most mass media entertainment. The etymology of pornography as "drawing of prostitutes–slaves" since Greece and Rome links it to the history of slave societies and *exposes the intrinsic link between slavery and sexual difference.* Pornography also allowed the overcodification of macrosex into hypersex.

Macrosex fosters addictive and intensified libido because sexual and other energies don't creatively fluctuate and unfold. Macrosex creates alignments and surplus that gets captured by hypersex. Hypersex expands the perspectival reduction of pornography to a planetary-scale masturbatory cyborg panopticon, where billions of bodies are connected to perspectival interfaces, whose interactions are however mediated by opaque algorithms that modulate the entire architecture of the internet, from personalized publicity to the design of the interface itself. Bodies, now producers as much as consumers, become products, following the logic of all-encompassing capitalization of activity that we will call hyperwork.

Macrosex is the repetitive algorithm of disciplinary society, reproductive private sex, and compulsory monogamy, based on perspective and culminating in the regime of pornography (pornology) as predominant form of perspectival sex. Hypersex is still perspectival but modulated by increasingly autonomous algorithms in planetary-scale computation systems (cybersex, dating apps, and chemsex).

Macrosex has generated a *sex panopticon* of circular, centralized, normative formations (the nuclear family and pornography), naturalized through the dualist split of perspective, where deviations are categorized and pathologized. Hypersex expands this into an *internet sex panchoreographic* of replicant choreographies and orgasms, while opening up the way to the new order of Big Data Sex, where emergent algorithms manage and reorient perceptions, behaviors, and populations, following strategies of optimization of profit. Macrosex and hypersex are algorithmic modes of composition of bodies–movements based on fixation and repetition (macrosex) and on the continuous reshuffling of the previously segmented movements in compositions of dynamic control (hypersex).

Hypersex is the new regime, gradually emerging since the onset of cybernetics, in which any previously useless flows of desire can be capitalized, with a proliferation of niches for the previously pathologised deviations, within a logic of pre-emption of the new. It instrumentalizes the formations inherited from macrosex, epitomized

78 I support postporn activism, and yet consider it insufficient as it tends to focus on the content, leaving the frame intact, wrongly believing that porn is representation.

in Victorian enclosures for a private sex and body, multiplied through the fake anonymity of the internet. Users surfing porn online or cybersexing or dating via apps assume they are anonymous and their activity private, while cookies and other techniques, not to speak of social media themselves, allow corporations to trace every online movement and create sophisticated and secret profiles of the sex lives of users. Even if the algorithms are still dumb in predicting and pre-empting emergent desires, it is nevertheless a fact that as long as sex happens through digital interfaces it will be oriented within its affordances, fundamentally its publicity links, where every gesture of clicking feeds behavioral profiles.

Hypersex both inflates the formations inherited from Victorian morality as global regime of disciplinary sex, and at the same time creates niches for pre-empting and capitalizing new deviations, variations, and fluctuations. This explains why violent masculinities and abuse continue proliferating at the same time as niches for minorities. Communities that expand the heritage of Victorian morality through new enclosures of hyperindividualist sex proliferate in minority niches like those in gay capitalist culture. The online user vaguely believes in the privacy of cybersex or dating apps, unaware of the datamining happening behind the scenes. At the same time, the belief that online sex is just representing or substituting a "natural" face-to-face sex conceals the specific modes of sex that online porn, cybersex, or dating enacts — bodily compositions mediated by perspectival interfaces and autonomous algorithms. This doesn't mean that hypersex cannot be intense; on the contrary, it fosters addictive compositions based on quantitative intensification.

As in the case of the emoticon, online sex creates a specific attunement of users to sexual standards by averaging trend behaviors of populations (again following Munster 2013, 94). Hypersex is a *statistical sex*, a global flow of statistical desires of populations modulated by algorithms. It is the mode of sex proper to planetary-scale computation systems, more than of the dividuated bodies relating. This happens as humans and other bodies become aggregates of a hypercyborg (Stock 1993; Margulis and Sagan 1997, 225). Hypersex is no longer our sex, but the hypercyborg's sex, it is a cyborg orgy and an algorithmic orgy. *The sexual organs of the planetary cyborg are mainly interfaces for replicant orgasms.*[79]

Dating apps build upon both the individualism stemming from perspective, and the problematic notion of privacy enclosures inherited from disciplinary society and Victorian morality. The belief in the anonymity of the internet paradoxically strengthens both the sense of detached (irresponse-able) individualism, and of privacy, for instance in dating apps such as Grindr where explicit sexual information including pictures and verbal expressions, but also location and other data from the smartphone's sensors, are seamlessly exchanged under the assumption of it being private, following the highly individualist subjectivities that are fostered in gay capitalist niches. These data are seamlessly traded by the company and sold to third parties. Dating apps seem to be private Victorian enclosures for new kinds of "private exhibitionism" that capitalize on our orgiastic nature, and yet they are a Big Data Brother and internet panchoreographic, invisibly scrutinized by algorithms. Behav-

79 In Shu Lea Cheang's 2000 sci-fi film *I.K.U.*, replicants are busy collecting data on human orgasms for a global corporation called Genom. What seems a faraway SF dystopia is already happening in all our interactions on the web. The reduction of reality to statistical data allowing control already covers all spheres of life, and the political economy of the network obeys this logic. Our orgasms are replicating, part of a global statistical machinery of the sex market.

iors proliferate at odds with any social ecology of care, intrinsically linked to the proprioceptive distancing multiplied by the interfaces: the opposite of a truly public, common, or orgiastic sex.

Hypersex is neither private nor public, but takes the worst of both constructs coming from disciplinary society: people connected to the internex sex panopticon as masturbatory panopticon think that they are in private spaces of enclosure, promote no public economy of the body, while their behaviors are tracked and reoriented by opaque algorithms. A true public economy of the common body would be one that promotes an irreducible and emergent collectivity and body.

The shift in gay subcultures from cruising in the open air through socializing in sex clubs to dating via apps is erasing certain borderzones of indeterminate (or less determinate) sex behaviors in favour of a control culture.[80] Apps can also enable unprecedented face-to-face connections and encounters, though I argue that their tendency paradoxically foregrounds online activity more than analogue encounters. There are always emergent moves on the boundaries, but they get capitalized increasingly quickly. This points to the need of developing micro- or metasexual practices that bring back much broader and irreducible spectrums of movement, perception, and proprioception.

Chemsex is a complex and paradigmatic current expression of hypersex: the current global gay trend of taking particular drugs that enhance sexual arousal and disinhibition for sustaining "unprotected" collective or orgiastic sexual relations typically in private homes lasting a whole weekend without eating and sleeping, contacts happening primarily though gay dating apps like Grindr, with multiple screen-based mediations of smartphone apps and porn, with complex communities of shared gestures, slangs, affects, sexual practices, drugs, medications, and infections being transmitted tacitly between bodies which are mostly under chronic or preventive medication (PREP), following health policies of some countries (but in the future perhaps algorithmic regulations related to risk behavior). On one hand this could be seen as a promising rebirth of the orgy, of body fluids as commons, with new nonreproductive modes of collective mutation, a multimodal planetary orgy of metabodily experimentation. But upon closer scrutiny the *chemsex field* (already a planetary metabody) reveals a multitude of problematic alignments, from algorithmic opacity to hyperindividualism and pharmaceutical industries of chronical treatments of STIs and highly addictive chems, whereby PREP has become yet another means for the invisibility of HIV within the community, since most people who are indetectable HIV+ will rather say that they are "on PREP." Chemsex is the hypercontrolled, hyperaddictive, and hyperprivatized new paradigm of the orgy in the hypercontrol era.

More generally, cybersex does not represent or substitute face-to-face sex, rather it enacts a specific kind of sex, of contact and composition consisting in the convergence of screen-based media and Big Data systems, and in the increasing convergence of AI, VR, and nano-, neuro-, and biotechnologies. It is a reductive viral sex of repetitive contagious choreographies that implies the intensified and homogenous

80 Cruising areas are usually separated by several thresholds: in a natural park there will be a beach, on which there will be a nudist area, on which there will be a gay area, behind which there will be dunes or bushes where the cruising takes place. In city centers cruising spaces tend to form enclosures as in sex clubs, or they get separated by areas, time zones, and bushes in the parks. What is rarer to find are transversal spaces where many kinds of people, genders, ages, body types, preferences, or practices can coexist *together with a socialization of public sex.*

dissemination of highly aligned modes of arousal and bodily composition, where emergent mutation (perceptual or otherwise) is reduced. A controlled mutation is globally enforced as flexible adaptation to the optimization logics of algorithmic governance.

...

Convergent technologies subject reproduction to Big Data in the biotechnology laboratory, as Big Data becomes the underlying logic for managing the complexity of DNA banks, imposing a logic of control on the most ancient procedure of asexual reproduction: bacterial cloning. Reproduction thus becomes a very specialized task as we become aggregates of a planetary-scale cyborg, increasingly capable of capitalizing on previously useless flows of desire, just like it became a very specialized task of some cells in multicellular organisms. This could seem like a promising turn in dissociating sex from reproduction and work, but it actually allows improved control.[81]

In this way, nature's tendency to genetic variation is minimized by increasingly bringing reproduction to the laboratory where mutations are selected following changing criteria of optimization of populations, which will increasingly be managed by autonomous algorithms. At the same time, nature's tendency to epigenetic variation through developing new movements in changing environments is also minimized by reducing bodies to immobile, atrophied clicking machines in algorithmic environments, disembodied minds, in future perhaps utterly immobile, interacting through direct neurostimulation. Hypersex is thus an exponential negation of all the mutation powers in nature, and thus the direct opposite of bacterial sex as only mutation.

Increasing control of bodily chemistry through pharmaceuticals including hormones, which choreograph the biochemical paths in a body or increase measurement of behaviors through biometrics, overcodifying the profiling techniques inherited from biopolitical society, is part of a broader process of multiplication and overcodification of measurements and codes that appeared with the geometries of perspective.

Bacterial sex is the model that exposes the anomaly of sexual reproduction in evolution. Bacterial sex, as only mutation, evolved into mating behaviors of sexual reproduction in animals but never dissociated from mutation, unleashing new forms of mutation where pleasure is a transmodal biochemical mutation in a body. Early nonimperial societies produced diverse soft codifications of animal mating and kinship, often also orgiastic and disaligned (the more imperial the more aligned), reaching a first maturity of hard codifications in ancient Greek androcentrism, a slave society evolving through Christian monogamy into perspective as regime of all-encompassing quantification, with a climax in biopolitical society. This paradigm is undergoing a new overcodification, in a split of sex and reproduction when reproduction is becoming subject to algorithmic control in the laboratory while sex as mutation becomes subject to control in algorithmic panopticons of interfaces. Sex has the chance to divorce again from reproduction, but it is happening in subjection to an improved control.

...

81 One can imagine a potential future society where reproduction happens only in the laboratory upon controlled genetic selection, as in the film *Gattaca*, and in consequence heterosexuality is banned and criminalized and only homosexual kinships are accepted. There would probably be people rebelling and claiming the right to have a heterosexual or bisexual life.

The continuous capitalization of activity leads to the emergence of a new class of implicit *hypersex workers,* of which almost everyone connected to the internet is part (and at times explicit but unrecognized, such as webcam models).

The stigma of sex work is part of the somatophobic tradition, entangled with migration, the implicit sexwork of mothers in the family, slavery, exploitation, and Victorian morality, all part of the history of slave societies and its dualist splits, and of the normativization and naturalization of reproductive sex work in the nuclear family. Fighting against exploitation and stigma, exercising voluntary sexwork could be a step in the fight against this disciplinarity. Demanding remuneration for one's data is another apparently revolutionary claim that some like Jaron Lanier (2010) propose. But none of these are enough, since we live in times of *hypersexwork,* of all-encompassing capitalization of any activity. This implies that any movement that is measured by a sensor and oriented by an interface is already part of systems of potential capitalization, whereby, following the opaque logic of emergent algorithms, it is not possible to know how and when this capitalization could be happening, as it projects itself into an infinite future. Thus, everyone connected to the internet is a hypersexworker not only when mediating what is recognized as explicit sexual activity, but more generally by mediating bodily compositions, perceptions, and relations.

The tendency of hypersex is toward a nanosexual control of all the compositions of atoms, genes, neurons, and bits, in a controlled cyborg or algorithmic orgy. So we need ways of exceeding this tendency to control all movements. My proposal is simple: by mobilizing the proprioceptive swarm, the fluctuating force, the more-than-human amoeba in us, we may counteract a millennia-old tendency to be oriented by external alignments.

5.4.3.1 Hypergender

Like sex, also gender is an issue of metaformativity, of sensorimotor alignments. Masculinity as a dominant subjectivity, for instance, is never just a performative verbal reiteration of a linguistic gender. It is mostly nonverbal, metaformatively enacting certain choreographies down to micromovements and perceptions, in gesture, in posture, in dress, in tone, in voice and intonation, in proxemics and use of space, in chronemics and temporality, in rhythm, and in the way of distancing oneself perceptually from others, imposing one's gesture on others. It's about a field of dominant alignments in movement.

What is at stake is not just to substitute one alignment for another, but to enact less aligned fields of behavioral indeterminacy. Propriocepting rather than looking from a distance is then a prerequisite for enacting a new sense of common body.

Gender currently explodes in *hypergender* simulations of media and selfie culture. *Hypergender* is the instrumental simulation of previous gender constructs, which proliferate, inflated, as means of pure affective contagion. (Macro)men and (macro)women were the static, naturalized, dualist constructs of perspectival society. Hypermen and hyperwomen are simulations that don't need to hide their artificial nature. *Drag is capitalized on by simulation culture,* where almost every body is aligned with performances of traceable behaviours and selfie smiles.

The bio–techno distinction becomes problematic in a transhumanist libertarian culture of body modification that capitalizes on every quantifiable mutation and promotes the idea of changing gender or sex like one changes jacket.

The deeper challenge is to shift from a perspectival culture of categorizations to a proprioceptive culture of mutation. Nonbinarism needs to be enacted not only ideologically but perceptually. Metamen or metawomen, micro- or metagender bodies as new expressions beyond the binary oppositions (and not just between them) can only be mobilized if we move beyond the dualist geometries of perspective. *Binary sex–gender are contagious perceptions and gestures propagating in a panchoreographic that we need to disalign.*

Sexuality is intrinsically amorphous, not polymorphous. The fact that some sexualities get "oriented" in relation to one particular object of desire has to do with the narrowing of perception in perspectival culture. This idea hijacks traditional discussions of sexual orientation as being either genetically defined or culturally constructed: they are neither nor, or both and much more. Sexual orientation, like every orientation, is perceptual, metaformative, but structured along highly complex alignments emerging over millennia, till bodies only perceive categorized dualities as relative to distinct objects, and desire-as-lack is narrowed down to the alignments with those objects, where some will predominate over others. What we miss is a less dualist geometry of perception, a nongeometric perception; a return and reinvention of proprioception for an overabundant desire beyond orientations, an amorphous sexuality to come.

How to enact a new public and common sex; myriads of borderzones where every orgy will be a collective mutation? We need metatopias as emergent spaces of behavioral indeterminacy.

5.4.4 Macro- and Hypertopias

The mechanistic idea of there being a single absolute extensive space (macrotopia) has been the major affordance orienting bodies along linear trajectories in relation to objects. Thus it also underlies the definition of desire as linear trajectory of an individual toward always deferred goals, defined by lack. Macrotopias include the public–private divisions of space in disciplinary societies, the belief in which is exploited by hyperalgorithmic culture which makes people unaware of how their houses have become hypersurveillance sites in a new algorithmic economy. This is linked to the lack of awareness of the contractual bonds we establish through gestures of clicking whenever we install an app or let cookies get installed in our body extensions (interfaces).

If following Innis (1950), the spatialization of empires was linked to paper and bureaucracy. The impossibility to read all the contracts that we sign every time we install an app or even access a website, exposes the new paradoxes of contemporary empires and the obsolescence of a regime of rational consent in posthuman times.

Henri Lefebvre (1991) distinguishes between absolute, social, abstract, contradictory, and differential space. *Absolute space,* initially made of fragments of nature that increasingly became "populated by political forces" evolved into a biomorphic *social space,* which tended to transcend relational (proprioceptive) immediacy through geometry and architectonics, toward an *abstract space,* the measurable space of Cartesianism where the qualitative disappears, a major tool of domination. Abstract space is in conflict with social space, creating a multi-layered, heterogeneous, and conflictive *contradictory space.* But Lefebvre tries to point beyond in attempting to think a *differential space* which *emerges from the bodies.*

Foucault's heterotopias (1997) expose the multiplicity of "bubble" spaces, of utopias become real, from graveyards to museums, which dominant social spaces of various kinds have created as means to allow a number of disparate and contradictory aspects of reality to coexist.

Utopias and dystopias, as imaginations driving us, constantly get enacted in different kinds of spatiotemporal organizations. At stake is to understand the alignments they impose, or whether they afford more differential or indeterminate spacetimes.

What kind of "space" was enacted by the internet, so-called cyberspace? Why would one call it a space? Because our experience of space is primarily proprioceptive and our interactions on the internet only make sense as long as they reach down to our proprioceptive memories, no matter how reduced. We actually have a sense of navigation, of motion, as we click on screens, following the *différant* movement of hyperlinks and the convenient but fictional reversibility of code. But this is also because of the inherited representational logic of perspective that makes us believe that cyberspace is a double of the analogue world. Interface design reproduces this belief. But it is not. We hope that its visual metaphors are just deferring the return of the analogue. But they are not. It is a one-way trip with no return, or at least that is what developers want.

Macrotopias have oscillated between gridded linear constructs (potentially extending to infinity) and totalizing spherical constructs, fields closed upon themselves. We have analyzed these genealogies above as two kinds of geometric alignments and as externalizations from the proprioceptive space of the body (and the living cell) within the body of the biosphere. This idea resonates with Peter Sloterdijk's spherology, a phenomenology of space that starts from immediate lived space and the uterus as primary space and sphere of existence, to study the multiple, sometimes failed attempts to create common macrospheres in the social, taking on as spatial phenomenology Heidegger's time-based *Dasein*, which is both a field and a history.

Cartesian–Newtonian space has created a particular type of absolutely measurable space foregrounding mechanical trajectories, and the internet is creating another one, building upon the former while undermining it, a space of pure code, a blockchain spacetime of absolute of determination. We accept becoming increasingly immobile because we think we "navigate" a virtual world of endless possibilities. The body is despised as limit, the mind is the promise of limitless spacetime abstractions, of eternity and reversibility.

If Cartesian space was defined as eternal and immutable, cyberspace is in constant modulation. Its movements are not mechanical trajectories in an extension, but movements of clicking along sequences of code in the invisible infrastructure of microchips, a hyperalgorithmic space.

The Hypercene generally implies the instrumentalization of the old conceptions of space and time inherited from the Macrocene: the belief in Cartesian space (macrotopia) and linear clock-time is maintained while hyperalgorithms move in a one-dimensional movement of binary electrical signals and reversible times of clicking along networked gridded infrastructures that exceed common sense or regulatory systems while violently impacting on bodies and territories.

Hypertopias are the conflictive extrusion of gridded–Euclidean–perspectival–Cartesian extensive space organizations (macrotopias) onto planetary-scale computation systems of hyperalgorithms and dynamic topological geometries. Both macro-

and hypertopias are in conflict with more irreducible, less homogeneous ecologies (microtopias).

Examples of hypertopias are, for instance, the new dynamics of extreme land speculation (for instance 250 million farmers being expropriated in China over a decade [Johnson 2013], or Spain's land speculation bubble lasting several decades till 2008), in gentrification, in tourism, when certain analog spaces are massively conquered by global contagious gestures of simulation and autoexoticism, when the selfie colonizes all previous spaces and imposes on them a *global selfie field,* while the souvenir imposes itself on any other experience of the city, the city becomes souvenir, colonized by simulations. Hypertopias are in many city centers which have become touristic theme parks of global contagious gestures, immersive commercial and branding environments, hypersurveilled and selfie scenarios with not a single place to linger, lie or sit.

In our society of serialized leisure and replicant education, commercial centers and thematic parks are the emblem of prefabricated and mechanized consumption–entertainment that reduces creativity to a minimum or erases it altogether. The tendency is to turn the world into a theme park, including education, where gamification becomes complete capture, the opposite of play.

Clubs are paradigmatic hypertopias of the panchoreographic where, disguised as liberation, contagious choreographies proliferate in intensified form, in an immersive environment of dancing, robotic movements (of lights and bodies), invasive sound, effectist videos, dazzling lights, fashion trends, drinks, drugs, selfies, apps… all within a logic of occasional (weekly) escape within a superaligned society. In this regard, as separate but tolerated spaces, they also conform to Foucault's heterotopias.

Hypertopias are the gentrification processes engineered by Airbnb, Uber, and multitudes of apps of home delivery that impose a logic of all-encompassing capitalization concealed behind a façade of shared economy. Hypertopias are also in homes as they become site of hyperwork, a hyperconnected and hypersurveilled space of the internet panchoreographic. Hypertopias are the empty streets in the pandemic, populated mostly by home delivery cyclists, which soon will be drones. The hypertopia of the home as hyperconnected and surveilled lockdown prison in the pandemic has made evident an already existing tendency to eliminate any kind of common, relational, emergent bodily space but also the undesirability of doing so. Transport networks are also hypertopias where there is no travel, no transformation, only an as quick as possible mechanical displacement in a spatiotemporal limbo, capitalized through the smartphone, which has a dramatic impact on its surrounding habitats. Climate change is the more general outcome of hypertopias. The non-places of Marc Augé (1995) are in fact hypertopias violently impacting on other spaces and bodies. The same applies to the seeming atopia of information networks.

Augmented reality, as in *Pokémon Go,* is an example of the development and logic of hypertopia, which unleashes unprecedented behaviors in city space and gamifies society. Other, more anomalous but paradigmatic examples of hypertopias are for instance in the irruption of around 4,000 people in a small Dutch village in 2012 following the announcement of the birthday party of a 16-year-old person on Facebook, ending in riots and arrests (Sawer 2012).

The tendency to create immersive branding in streets, homes, TV, and online points to augmented reality, but here the HCI industry clashes with the difficulty to measure movement in mobile immersive interfaces. This exposes an inevitable clash between worlds. Everything escapes computation because computation doesn't

represent. It creates computable worlds. Were we to become universally computable we would have to eliminate the indeterminacy in our daily movements that is the very core of life as variation. We would have to stop being alive to acquire a complete alignment with interfaces that measure us only as long as we reduce our spectrums.

Instead, we can turn sensors into tools for transformation. If we stop believing that they give us a truth about ourselves, they can become means for exploring new kinds of unprecedented movements and connections… but we can also do that without being dependent on highly unsustainable technologies that impose their ratios.

National borders that constrain the flow of refugees, geopolitical, and geodesign strategies and war — leading to increasing amounts of actual prisoners — are also hypertopias, expanded as well as turbulently hijacked by new more invisible kinds of algorithmic hyperborders and permanent, ubiquitous, and invisible cyberwar, or *hyperwar*: seamlessly connecting informational, financial, bacteriological, chemical, energetic, infrastructural, and other analogue fronts in nanosecond wars of pre-emptive information systems in stock markets and the military.[82] The pandemic, as effect of planetary ecosystem disruption and its economy of distancing is also a radical hypertopia.

5.4.4.1 Macro- and Hyperchronias

As Lefebvre (1991) and Foucault (1995) have shown, the analysis of spatial distributions is inseparable from time distributions. I further argue for movement as underlying both. Macrotopias relate to corresponding macrotimes, hypertopias to hypertimes.

The still prevailing belief in absolute, mechanical, Newtonian time (implicitly linked to mechanical clock panopticons) hides on the one hand the numerous diverse alignments with algorithmic time that we are embedded in, i.e. with modes of temporal organization tending to reduction, pre-emption, calculability, and control, which generate a complex polyrhythmics, while on the other hand hiding the much vaster field of more indeterminate temporalities of our movements, which account for our changing experience of time and for our always being somewhat out of time, asynchronous with algorithmic time.

Hyperchronias are the conflictive extrusion of (mechanical) clock time into (digital) click time ("real time") of planetary scale algorithmic modulation. Each of them consists of complex polyrhythmics in conflict with more fluctuating and plastic temporalities of experience (microtimes).

Clock time and click time are two modes of algorithmic time. Clock time (macrotime) is created by the mechanical movement of the wheel and the spheres that measure cosmic cyclic time. Click time (hypertime) is created by the synchronies and asynchronies of hyperalgorithms and interface choreographies of clicking. Hypertime as "real time" is no-time: clicking is the utmost reduction and killing of duration. It is actually the imperceptible time of autonomous algorithms operating below our threshold of awareness.

82 Hyperwar is exemplified in the Cambridge Analytica and Facebook affair, in which a "gay Canadian vegan" doing a PhD on forecasting trending in fashion comes up with the idea of bringing together Big Data analytics, social media (Facebook), and military strategies of information domination and information operations, in which all information channels of the "enemy," in this case the voter, are attacked in invisible ways, generating an unprecedented kind of "mindfuck" warfare that may have had a major influence in Trump's victory and the Brexit (Cadwalladr 2018).

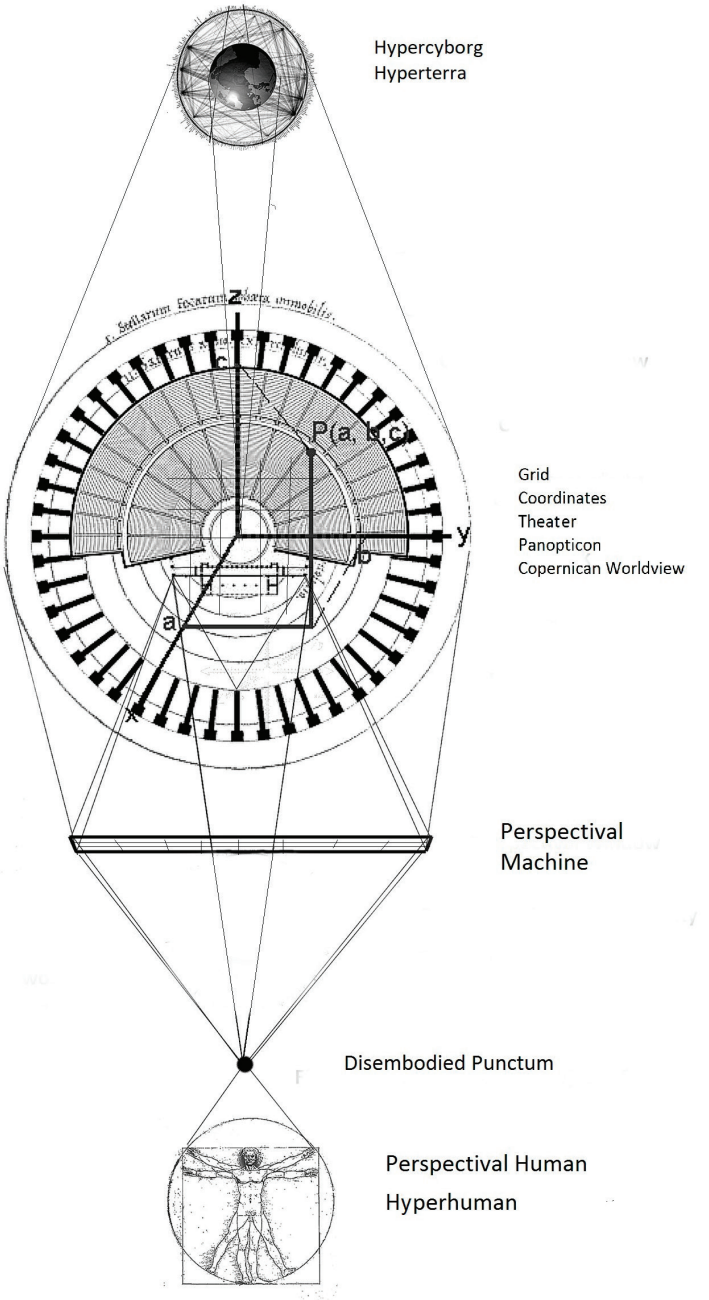


Fig. 44. The hypercapture machine.

But mechanical clock time and interfacial click time coexist with many other time organizations: bureaucratic time, varieties of disciplinary times (of medical institutions, legal and state institutions, military times), grid times, perspectival and media times, waiting times, normative times (of gender, ability, age, etc.), and also with hyperalgorithmic, interfacial, Facebook, Google, and selfie times, of imperceptible intervals (*between clicks*) in which algorithms reorient our attention.

Time alignments are mostly invisible, and this opacity is more radical in times of Big Data systems. In excess of them are not only biological, geological, weather, and cosmic times, but also bacterial, chemical, neurological, material–quantum, and above all proprioceptive time as a sort of quantum dimension in our nearly perceptible experience.[83]

5.4.5 Hyperwork

Hyperwork is related to the increasing capacity of autonomous algorithms to capitalize almost any movement, generating patterns out of noise in information networks. The only condition is that a body aligns with the capture terminal or interface or falls within the range of capture of a sensor.[84]

Automation of work (as defended for instance by accelerationists[85]) is inseparable from this model of radical capitalization and control, in which autonomous algorithmic systems perform an ongoing modulation of digital ecologies in the attempt to pre-empt future behaviors, desires, and interactions of individuals and societies, human and nonhuman, at planetary scales and beyond. The new modes of exploitation and control of workers on platforms such as Uber, Airbnb, or Amazon is one aspect of hyperwork. The capitalization of affective or sex relations on Facebook or dating applications is a broader and more invisible manifestation of hyperwork, concealing new modes of implicit sex work and affective work.[86]

Work is actual capital extraction of specified activities that are framed, teleological, and quantifiable, as opposed to play and wandering in animals and foragers as nonframed, nonteleological, and nonquantifiable. Hyperwork is potential capital extraction of yet unspecified and emergent activities, a field of infinite potentiality. Hyperwork is body speculation, analogous to land speculation. Movement in general, any kind of movement, needs to get reduced in order to become hyperwork,

83 Foerster (2017) problematizes how algorithmic time is dealt with by some theorists, such as Mark Hansen, as a process exceeding subjective experience and perception and proposes a way out through Merleau Ponty's notions of "flesh of time" and "tissue of experience," where subjective and objective come together.

84 Ubiquitous, invisible, and continuous sensing in the infinite spectrum of the nonverbal opens up the range of possible captures to qualitative and quantitative infinity, while at the same time making capture more difficult due to gestures' ambiguity.

85 Accelerationists are another brand of hyperhumanists that confuse symptoms and causes and are not able to look beyond, assuming the inevitability of the dominant process. Acceleration is the effect of radical homogenization, a second-order symptom. Accelerating, even more than it is the case today, toward an extinction crises of unforeseeable dimensions doesn't seem like a very defensible argument.

86 Responses to this situation, claiming remuneration for giving out our data to companies (Lanier 2010; LaGrandeur 2017) seems radical but eventually is insufficient, as it doesn't take into account the deeper implications of the process: the increasing reliance of life on hypercontrol systems of radical and unknowable capitalization, which implies exponential control. Automation of work, as defended, for instance, by accelerationists, is inseparable from this model of radical capitalization and control increasingly based on autonomous learning algorithms.

it needs to become quantitative and measurable. Hyperwork instrumentalizes the belief in private or public divisions of space inherited from disciplinary society, still pervading common sense, which makes people consider their online interactions on Facebook to be leisure or relative to a personal sphere, even though increasingly people actively enter the loop of hyperwork and professionalize in the self-capitalization of "private" life, as with Instagrammers and YouTubers.

Dynamic prices and wages, continually shifting through Big Data analytics depending on who, where, and when purchases or offers, along increased precarity with flexible, split, and longer workdays and an exponential increase of telework, are part of this process, where to the production of goods and services a new industry is added in which we are the products. It is not difficult to image a near future where money as such no longer exists and bodies with implanted chips have their movements and activity automatically profiled and monetized by autonomous algorithmic systems, where you will pay for what you need following properly the guidance of the algorithms…

> *It's becoming clear that Facebook is not so much the model of a new form of government as its reality already in operation.*
> — Invisible Committee (2015, 62)

5.4.5.1 Hypercapital, Hyperslavery, Hyperracism, Hyperfascism, Hypercolonialism

Capitalism is a provisional expression of the Algoricene, where quantification of movement–activity, and of bodies–objects as property subject to exchange, emerges along a complex set of alignments that segment at the same time perception and the perceived movement. Capitalism is a phase and one of the expressions[87] of the process of accumulation and homogenization inaugurated with farming in the Neolithic.

Hypercapital is the new expression of capital as it becomes managed by emergent algorithms in planetary-scale computation systems, focusing on all-encompassing capitalization and pre-emption of the future, where financial markets, derivatives, and speculation of all sorts are core to the global economy and have very real effects. Hypercapital corresponds also to what Zuboff (2019) calls surveillance capitalism, where we, prosumers, are the products, following a logic of pure control and optimization that eventually exceeds capitalism itself, as it may exceed the logic of accumulation of wealth, toward a logic of absolute control. Along the way, all previous formations and inequalities are strengthened. The elites of digital corporations or the radical delocalization of activity based on human exploitation are some aspects of this intensification of already existing logics in colonialism and slave societies. The core of hypercapital is in the constant capture of variations in movement as they emerge, through endless attractors for our orientations that operate determining movement step by step. We need a counter-move of indetermination.

The explosion of biometrics in sensor society[88] points to a shift from state racism, as profiling of populations according to pre-established criteria in disciplinary soci-

87 Capitalism is one of the expressions of accumulation in the Neolithic. Communism as developed in the nineteenth and twentieth centuries, is another expression of this process of accumulation and homogenization, thus it's not a true communism as proposed in Book 3 through the idea of the common body. It is the underlying problem of homogeneous accumulation and its associated exploitation of life that needs to be challenged.

88 On sensor society, see Andrejevic and Burdon (2015).

ety, to a *hyperracism*[89] of emergent categorizations coming from emergent algorithms in Big Data systems and ubiquitous sensor environments. For instance, biometric apps related to the quantified self trend present new ways of measurement, categorization, and profiling of movements and activities, actively and enthusiastically embraced by many people as in the quantified self trend but managed by autonomous algorithms in unknowable ways. This desirability of total (self)control, where the self becomes sheer substrate of a data economy, points to unprecedented forms of *hyperfascism*.

Hyperfascism relates to the imperative of total transparency and connectivity of subjects promoted by increasingly opaque states, corporations, and algorithms, and the way in which that imperative is made desirable through the massive affective contagion of a semiotics of liberation proliferating in media. The imperative of total transparency and connectivity is presented as the necessary sharing of one's experience for a fulfilment of everyone's potential (instrumentalizing much of critical post-Deleuzian discourses). This imperative not only imposes a totalitarian vision of sociality, but one that is grounded in the idea that embodied experience is reducible to data and representations and that it needs to be "shared with all humanity" and subjected to algorithmic modulation.

Hyperfascism is on the one hand the model promoted by Silicon Valley companies, but it also underlies the kind of fascism associated to Donald Trump, because of the narrow, fanatic, tunnel vision that proliferates in perspectival social media where bodies become nodes of homogeneous contagion. Trump is a paradigmatic expression and symptom of a tendency, an era, rather than the anomaly. The problems lie in the entire media infrastructure and how it homogenizes sensorimotor ratios.

Silicon Valley corporations have performed a hyperfascist *"coup d'état* against humanity" (Sánchez 2021). Hyperfascism has to do with the radical opacity, emergence, and unknowability of the profiles to which "transparent citizens" are seamlessly and increasingly subjected, as well as to the desirability of that condition, presented as smart, smooth, trendy, and sexy, and its magnification as it echoes with paternalistic and messianic discourses of humanity's salvation in Silicon Valley and transhumanistic culture. This happens in a culture of compulsive contagious gestures of clicking, of control by default in the settings of apps, of obscure privacy conditions and contracts that no one reads when accepting them, where everything is offered for the sake of "improving the user experience," presented as public services which follow opaque business criteria.

Hyperracism and hyperfascism relate to a culture of *hyperprofiling:* continuous and partly automated profiling in hyperalgorithmic networks, most of which remains unknowable to the subject, as it is performed by unknowable algorithms.[90] Profiling used to be a control technology in disciplinary society and police states. Now nearly

89 My account of current hyperracism is different, though related to Nick Land's (2014) concept of hyperracism as the upcoming inequality between genetically different groups according to socioeconomic status in a world of increasing and elitist genetic engineering. However, there doesn't seem to be a critical position from Land vs. hyperracism, which is perhaps not surprising given the many human supremacist (and other supremacist) echoes within accelerationism.

90 Timnit Gebru has done ground-breaking research into how AI and face recognition discriminate because it has difficulties in recognizing subjects that are not-white Western males (Hao 2020a). Furthermore, in the proliferation of autonomous profiling, the number of categorizations and potential discrimination explodes. For instance, Zoom has been criticised for labelling children with difficulties for typing as dyslexic (Rubio 2020).

everyone enthusiastically promotes a seamless self-profiling in constant actualization. Yet the real profile is not the one you make of yourself (for self-marketing in the global economy of selfies), but the emergent, secret, and unknowable one performed by autonomous algorithms by which you become a product sold to third parties.

Social credit scoring systems like the one developed in China, where Big Data[91] in connection with AI and face recognition allows for the algorithmic management of the social ranking of people and their access to services, is an extreme example of something that goes on also in democratic countries, as tax ministries, banks, employers, health insurances, and companies of many kinds have increasing access to behavioral information, to the profiles of users in social media, and to other digital traces, which are used to categorize behaviors, assess risk, employ people, send personalized publicity, etc. Systems of reviews and awards of users by users, as in Airbnb or TripAdvisor, quantification of likes in Facebook and generally quantification of followers in social media, as well as gamification or the quantified self trend, all of these expose the intrinsic logic of *implicit social credit* that underlies algorithmic systems of management of life and of the future, as modes of hyperfascism performed by users.

Hyperfascism generally relates to the model of sociality promoted in social media, which is an implicit social credit scoring system of quantification of "likes" and which takes a double logic to the extreme: of transparency of people and of opacity and invisibility of algorithms, companies, and processes.

The inflated ego of Facebook and selfie culture is a hyperself increasingly managed by unknowable algorithms. The hypertrophy of self that Gebser (1985) already associated to perspectival vision acquires new dimensions in Facebook culture, as a simulation that becomes food for unknowable algorithmic processes: a hyperject.

This *hyperject* is one whose memory is increasingly externalized in computation networks: Google or Neuralink is our memory. Its profile is part of hyperdata networks: radically dynamic relational data bases and their evolving algorithms.

Bodies, knowledges, affects, perceptions, desires, territories, neurons, atoms, and genes are subject to a *hypercolonization* modulated by emergent algorithms[92] measuring, predicting, reorienting, and anticipating their turbulent and entangled emergence. *Hypercolonialism* is visible in the limitless mapping of the world and our movements within Big Data environments, accepted as desirable and unavoidable cultural condition, epitomized by Google Maps and the numerous other projects of its mother company to digitize the entire world, books, knowledges, and thoughts. Another expression of hypercolonialism is in Cambridge Analytica's involvement in destabilizing emergent democracies, through Big Data information operations (Graham-Harrison, Cadwalladr, and Osborne 2018). More generally, the colonization of the world through "smart" technologies and projects old and new, like Meta's Metaverse, Facebook's internet.org, Google's Brain, CISCO Systems's Planetary Skin, or Terra Swarm, but also Blue Origin's and SpaceX's space colonization projects, are

91 Movement control in China, and the production of digital traces feeding Big Data systems, exposes slightly radicalized versions of what can be seen in Western democracies. Payment systems using phones through QR codes are centralized in the company WeChat, the Chinese version of WhatsApp, which also manages almost all text message communications in China, in obvious collaboration with the government. Ubiquitous cameras, where AI Face recognition systems are implemented coexist with ubiquitous barriers and security checks.

92 See Massumi (2015, 43–44) on infra-colonization as the colonization of emergence.

expressions of hypercolonialism, whose core however is in perceptual logistics and attention management.[93]

5.4.6 The World Is Not Data!

The world is not data! Data create a data world! Data are new senses producing new realities. It is impossible to imagine what new realities, new modes of datafication and of data reality data create. For instance, it is hardly known that Facebook saves and processes drafts that people make but don't publish, with the hyperfascist intention to have a community where no one "self-censors," analyzing people's subconscious. Prediction of flue epidemics by Google or of pregnancy by companies like Target, following unconscious searches or shopping choices equally plays with the realm of unconscious choice to profile behaviors. Smartphone accelerometers can be used to track unique ways of moving and daily rhythms. In smart cities they can be used to detect holes in the roads while people drive. Apps access our sensors illegally all the time since we "kind of" give them permission upon installation.

Predictive health care systems and smart cities create unprecedented profiles of a full person (biometrics, contacts, activities, DNA, etc.) and of a society, thus new radical dependencies on algorithms that will actually narrow down other modes of embodied awareness. They are presented as a means of solving the problems we have created, but aren't they just a further spiral of the problem itself, of alignments, atrophy, and alienation, relying on unsustainable resources? Promises to make cities cleaner. more friendly, and fair are made. But what about the energy of Big Data systems and their new discriminations and surveillance? If we need those systems to understand that someone around us needs help, it means we have lost all sense of world and community.

We need to fight against the GRINDS fallacies: that technology is a priori Good, Revolutionary, Inevitable, Necessary, Neutral, Desirable, Smart, and Sexy… that it is your choice, liberatory, anonymous, connective.… But no technology is neutral. And when it becomes dominant, it stops being a choice and becomes an imposed need.

Nothing is anonymous online. We have to unmask the fallacy of the anonymity of metadata: behaviors are traceable to the person. And relations are the controlled reconnection of the previously split.

It is not a question of refusing technology but of having a much more creative and critical engagement with it, reinventing it through movement!

> *Foucault's Biopolitics is a flaccid premonition of cyborg politics, a very open field.*
> […] *The cyborg is not subject to Foucault's biopolitics; the cyborg simulates politics, a much more potent field of operations.*
> — Donna Haraway (1991, 150, 163)

5.4.6.1 Hypercontrol and Hyperpower: Toward a PREP World

Deleuze (1992, 4) described control as an ongoing modulation, a kind of self-transmuting mold, "like a sieve whose mesh will transmute from point to point." This applies accurately to cybernetics as science of control based on predictive feedback systems that constantly readapt the calculation of a movement prediction to changes

93 Ipv6, the new IP address system, would allow for about 100 addresses for every atom of the Earth: this is the nanotechnological scale actually being contemplated.

in the movement. In control society individuals become dividuals, masses become samples, and capitalism is no longer primarily about the production of goods but focuses instead on the production of services. This however is crossing a new threshold in Big Data systems, the threshold of hypercontrol.

Hypercontrol focuses on pre-emption of the unknown future while relying on increasingly opaque algorithms where users become products, while control is becoming an unavoidable, ubiquitous, all-encompassing, sexy, and desirable cultural condition. Hypercontrol is about the unknowable capture and processing of data in a dynamic scenario of future accumulation, where we can't know what traces are stored today nor how they might get processed in the future, nor how this will feedback to us, orienting and choreographing our behaviors and perceptions. The new focus is on production of perceptions and movements in any mode or scale. Hypercontrol imposes a general logic of anticipation where solutions are always a priori framing problems in advance: we live in a PREP[94] *world* in which pre-emptive medication, and more generally pre-emption of emergent or future tendencies (from fashion trends to financial derivatives) becomes the major underlying logic of economy. A crucial expression of this PREP world is perhaps in so-called preppers: people, including tech billionaires, who are trying to prepare their escape from or survival to the catastrophe (which they contribute to create).

Hypercontrol enacts a hyperpolitics that corresponds partly to what Donna Haraway calls cyborg politics (Haraway 1991, 150), as a *simulation of politics* and a much more potent and open field than biopolitics. The illusion of citizenship and democratic states is maintained wherever it existed, as façade that allows algorithmic governance and its pre-emptive simulations of the future to silently colonize the world.

Hypercontrol relates to a *hyperpower* as the exponential acceleration of pre-emption (ontopower) and its provisional turbulent expansion, but also instrumentalization, transformation, and undermining, of disciplinary biopower and even older modes of sovereign necropower, as it propels itself forward, full force, through all its previous formations. This hyperpower is also a *metapower* and *kinepower* that increasingly focuses on designing relations–movements–perceptions in all scales and modes, therefore on the conditions of possibility of power itself, namely, movement reduction.

5.4.6.2 The Planetary Prison

The COVID-19 pandemic has laid bare the already existing tendency to create a planetary-scale prison, where increasingly immobile bodies, confined in their homes, are seamlessly connected to digital devices and surveillance, their entire life mediated by algorithms. The internet panchoreographic achieves full development as actual planetary prison in a new regime of confinement and surveillance where bodies feed the algorithms of the planetary cyborg, ubiquitously connected, distracted, and entertained, enacting a *Matrix*-like dystopia. Meanwhile, distances in public space get choreographed in unprecedented ways, following the new awareness of our molecular, viral intimacy, ensuing in anew movement economy.

94 PREP is the acronym for PRe-Exposition Prophylaxis, the antiretroviral HIV medication that is applied in advance of being exposed to high-risk sexual activity, and which nowadays is becoming a viral trend in gay capitalist cultures of countries affording the medication, associated to chemsex.

5.4.6.3 The Triple Algorithm of Trump

What kind of planetary algorithmic metabody are we part of in our daily alignments? One could exemplify the macro–hyper dynamics and its algorithmic stratification seeking recourse to some major algorithms, Donald Trump being a paradigmatic example of them. On one hand, the static algorithm of urban grids, which has been going on for several millennia, takes in the 20th century a three-dimensional speculative growth, of which Trump is characteristic as constructor. On the other, perspective's most crude and still pervasive example could be reality television shows, as politics of pure affective contagion, again paradigmatically expressed by Trump as TV and reality-show character. Last but not least, the hyperalgorithms of Big Data systems and social media find diverse kinds of complex expressions in relation to Trump, for instance in the Cambridge Analytica affair, the company which allegedly influenced both Brexit and the Trump campaigns.

Trump is a paradigmatic expression of these algorithms, but we could equally ask what algorithms Vladimir Putin is an expression of, inherited from the Russian empire, the Soviet Union, the KGB, and their transmergence with capitalist, neoliberal, mass media, cybernetic, social media, cyberwar, and Big Data technologies. Or the leaders of the current Chinese regime, with their peculiar transmergence of imperial China, communism, capitalism, and digital surveillance.

Or ourselves.

We are entangled in a multitude of different algorithms: most of us wear gridded textiles (expressions of an algorithm which is about 26,000 to 32,000 years old) and move daily in gridded urban environments (another 2,600-years-old algorithm). We are deeply embedded in perspectival media (a crucial 600-years-old algorithm), reproduce normative disciplinary choreographies, align with mechanical movements of engines and clocks, and are radically entangled with Big Data environments of clicking, social media, and opaque emergent algorithms.

But this is never the whole story, we also move along more plastic rhythms of our cells, bacteria, atmospheric flows, ecosystems, and of our neglected proprioception. It is time to claim back its swarming power.

5.5 Interlude: Trans-, Post-, and Metahumanism

If humanism is the world conception dominant since the Renaissance, where a rational, European, male, straight, cisgendered, abled human subject has a privileged superior status as center and *telos* of the world, *transhumanism* is a cultural and intellectual movement[95] promoting the transformation of the human toward a posthuman, happening primarily through the quantitative enhancement of capacities that constitute a given conception of the *anthropos*. One of the major promises of transhumanism is individual immortality, to be enacted through disembodied projects of mind uploading once AI has reached sufficient development along the exponential curve of the so-called singularity, the birth of an AI exponentially superior to biological intelligence, which according to Chief Engineer of Google Ray Kurzweil (2005) should arrive in the year 2045.[96]

95 See, for instance, *Humanity+*, http://humanityplus.org/.

96 See Gebru and Torres (2024) on the more recent and broader, so-called "TESCREAL bundle" of ideologies building upon transhumanism, criticized by Torres (2021) as the most dangereous ones today.

Currently, transhumanism is aligned with the largest corporate powers of the planet,[97] explicitly defining their agenda, disseminated through messianic discourses of salvation of humanity, total control, and technocentric paternalism. Therefore, one could say that transhumanism expands humanism's worst dreams and the monsters of the dream of reason (fear of entropy as disorder and discontrol, search for eternal fixation of individual identity, despise and denial of the body), thus still enacting Parmenides' imperative of fixity. This transhuman is therefore a *hyperhuman* which becomes instrumental to the upcoming algorithmic life form, thus paradoxically undermining the human at the same time as expanding it. This is the promise of the "Church" of Singularity[98]: a control dystopia presented as the cutting edge of freedom on the planet.[99]

This paradox of the hyperhuman affirming its Parmenidean nightmare of eternal fixation of identity through immortality, while despising humanity in service of a superior artificial intelligence, mostly entails no self-criticism of the all-too-human, hyperhuman programmes of immortality and salvation that it encourages. Immortality assumes both a Cartesian quantitative timeline and an ego associated to a fixed identity that wants to self-replicate forever, linked to a disembodied mind made of replicable patterns, grounded in a despise of the body and a will to total control.

The paradox of the singularity lies in the tension between the control thrust underlying its exponential development, associated to the nihilistic search for absolute control and the radical unknowability of the supposed singularity ensuing from that development.

Underlying the hyperfascist dystopias of an enhanced and hypercontrolled society, an elite of disembodied, immortal individuals, the true face of the transhuman is a *trash-human* defined if anything by the ubiquitous accumulation of trash that is killing the planet. The exponential growth (of population, atrophy, alignments, pollution, trash, and technological acceleration) over the past 5,000 years is accelerating the rate of evolutionary processes on the planet: accelerating toward a self-extinction and yet another mass extinction. Trash-human "enhancement" is thus also a radical *unhancement:* for under its fascist promises it conceals a radical atrophy: of movements, perceptions, thoughts, affects, relations… and this inevitably implies a *planetary atrophy, abuse,* and *unhancement.*

The reply to transhumanism cannot be through a rationalist humanistic bioethics, which was already part of the problem, and anyway can't handle the dynamics of Big Data systems as it is built upon speciesist, colonialist, neurotypical, and ableist premises. We need to undo the fallacies and marketing of transhumanism, the myths

97 By the end of 2017, the five largest corporation in market capitalization were Apple, Alphabet (Google), Microsoft, Meta (Facebook and Instagram), and Amazon, confirming a tendency of technology corporations dominating the markets that has only continued growing afterwards. In 2020, during the pandemic, the stock market value of technology corporations like Apple and the fortunes of CEOs like Jeff Bezos (Amazon) doubled, reaching values of over a trillion dollars in companies and over twohundred billion in personal fortunes. By start of 2022, Apple reached a trillion dollars value, while Nvidia and Tesla have entered this Olympus of trillion-value megacorporations. Not by chance this is happening in the moment where AI/VR/gaming/Metaverse and space conquest is promoted by these megacompanies.

98 Singularity University has its campus based in the NASA in Silicon Valley, see https://su.org/.

99 Transhumanism can occasionally be plural, and it's not impossible to find interesting proposals, such as Martine Rothblatt's (1995; 2001) transgender account of transhumanism, and the link to diverse libertarian philosophies of bodily freedom or freedom of form, which however is mostly linked to a freedom *from* the body (again a somatophobic dystopia).

of egocentric immortality and immobility it inflates, the fascist elitist vocabulary of enhancement, the dystopia of control it offers, always based on fear and on despise of the body, the senses, movement, and becoming: a desert of the real. The problem is the denial of the body, the solution is to recover, enrich and reinvent it: BI, not AI! We need to correct bioethics into an ontoethics that places the right questions and challenges the wrong concepts. We need to renew our ontologies. Transhumanists have forgotten movement and its never-ending joys. They better learn to move again.

…

In turn, critical posthumanism is an intellectual movement aligned with critical theory, poststructuralism, cultural, multispecies, (trans)feminist, queer, crip, and postcolonial studies, questioning the individualist, anthropocentric, dualist, rationalist, disembodied foundations of humanism's colonial project. In contrast to transhumanism's alignment with global power, critical posthumanism remains a minoritarian academic (and political) discourse coexisting with other equally necessary and minoritarian practices of composting and hummus making.[100]

Posthumanism, resonating with Hayles and Haraway, as well as Latour, points to the idea that humanism's human, as autonomous and superior rational entity, is a chimera that never existed: a colonial, speciesist, classist, sexist, racist, heteropatriarcal, phallogocentric project of compulsory abledness. It's not only about how or when we became posthuman, but about never having been human as humanism pretended. We have always already been part of a technogenetic spiral and a colonial project. Claiming a critical posthuman status is a politics of disidentification with the humanistic project.

The crisis of humanism becomes evident when the coupling with information systems is so intense that the boundaries of the self dissolve as it's "no longer possible to distinguish meaningfully between the biological organism and the informational circuits" (Hayles 1999, 35).[101]

How could critical posthumanism exert some counterforce to transhumanism's corporate superpower as Google, Microsoft, or Facebook take on a fully transhumanist agenda? How will the relation between post- and transhumanism evolve? Will there be an attempt to assimilate and neutralize critical posthumanism's difference on behalf of a Big Data Culture characterized by its pre-emption of novelty and resistance? How to pre-empt or resist that very pre-emption in working toward visions of multiplicities and *contestable futures?*

Even more minoritarian is the proposal of a *metahumanism,* proposed since 2010 (Del Val and Sorgner 2011), as one taking critical posthumanism in the direction of Radical Movement Philosophy, in the double metaturn of relationality and indeterminacy. Metahumanism affirms the nondualism, nonanthropocentrism, and nonphallogocentrism of critical posthumanism, proposing the shift from performance to metaformance, from content to frame, from form or structure to movement, emphasizing becoming as something not subjected to form, always relational and

100 Haraway (2016) claims composting and humus in her recent taking distance from posthumanism, I'd say, let's have all of them and more!

101 There are many posthumamisms, inhumanisms, antihumanims, and ahumanisms. I focus here on the critical tradition associated to feminism, resonating in Haraway (1992) and Braidotti (2013). See also Halberstam and Livingston (1995). Stone (1987; 1996), also give important cues to the critical and embodied genealogy of the posthuman I align myself with. For a general introduction see Sampanikou and Stasienko (2021).

always incipient, always bodily and in motion, with a critical–creative grasp of technologies and the possibility to ontohack and reinvent them.

Silicon Valley transhumanism is radical, and yet at the same time deeply conservative in many respects, reactive in its will to total control, disruptive. Metahumanism points to a more radical but more subtle and creative transformative relation with technology by focusing on qualitative and nonquantitative transformation, on perception itself rather than the already perceived and quantified. A radically new sensibility, new accounts of spacetime and body or metabody imply challenging the presumptions of all-encompassing measurability and calculability, or selfhood and identity, embracing becoming and the power of mutation.

Metahumanism affirms indeterminacy as creative power, claims the body as infinite in its qualitative power to vary and promotes an incalculable world as necessary for a Planetary Health.

Metahumanism takes on critical posthumanism's stances, and also affirms the transformative power of technology but in a direction opposite to transhumanism, that of infusing greater indeterminacy in our worlds, while challenging our deepest ontological assumptions with a focus on movement and perception: less disruption and deeper, more critical and daring creativity! Rather than taking for granted measurable spacetime and disembodied, eternally replicable, and stable subjectivity, Metahumanism is about ontohacking our realities, infusing in them more plasticity, through movement.

We can observe the following shifts between hyper- or transhumanism, critical posthumanism, and metahumanism:

TRANS- OR HYPERHUMANISM (TRASH-HUMANISM)	CRITICAL POSTHUMANISM	METAHUMANISM
universalism	perspectivism	immanentism
central linear perspective	multiple partial perspectives	proprioception
individualism	relationalism	radical movement philosophy
morality	ethics	ontoethics/ontoecology
paternalistic hegemony	minority resistance	ontohacking
beauty	promising monsters	the amorphous
disembodiment	embodiment	metabodies
linearity	multilinearity	fluctuating fields

Table 4. Hyper- or transhumanism, critical posthumanism, and metahumanism:

Metahumanism points to a new sensibility that reverts the original transvaluation from movement to fixity cultures, as increased sensitivity, indeterminacy, and openness, that affirms movement's power to exceed the gravitational force of algorithmic black holes in new dances of chaos.

5.5.1 Dead Ends of Posthumanism

But even critical posthumanism is perhaps still too humanistic, full of coveted reaffirmations of human supremacy,[102] finding still excuses to reaffirm human supremacy in a more or less covert way, to reaffirm a certain boundary and privilege of the human, disguised as rights, to not question their way of life, censoring the discussion and preventing the emergence of a collective, powerful, and serious voice that puts on the table without palliatives the greatest taboos of supremacism (overpopulation and the way of life based on the devastating occupation of the Earth, the abuse and extermination of other forms of life). Not to mention the mob of conservative fanatics of all types — nationalists, fascists, religious fanatics and others, including transhumanists — who will do anything to prevent us from starting a serious debate.

We need a metahuman turn, which implies shifting every human-centered and human-rights based activity (politics, art, thinking, eating, dwelling, reproducing...) to a planetary, more-than-human frame of reference, understanding the radical planetary disruption of current human ways of living based on farming, agriculture, urbanization, industrialization, and digitization.

102 The cyborg, for instance, is one such misleading metaphor (as Haraway understood already around 2000, evolving beyond her most quoted trope, in shifting to the trope of transspecies kinships for a sympoietic becoming and a planetary regeneration that at the same time questions kinship-as-baby-production and overpopulation). The cyborg embodies the errors of the Age of Extinctions and Algorithms, of unhancement and atrophy, of expansion and domination, of homogenization and acceleration, of mutations that impose themselves, exterminating, and of unquestioned speciesism. How often it is heralded in posthumanist circles as sign of our posthumanity while keeping our radical speciesism, the Planetary Holocaust, unquestioned and untouched with all sorts of improbable excuses! The denaturalization promised by the cyborg has served ultimately to enter a self-referential loop where the toxic alignments of "culture" are seen as the inevitable matrix for all politics. The cyborg is a domination chimera as much as the human; indeed *it defines the human chimera. We have never been cyborgs nor humans,* or only as long as we belief in these domination chimeras.

To me it is not acceptable to think plurality in terms of the affordances available to certain privileged human subjects that will reject red lines to their freedom. For instance, nowadays in rich industrialized societies we tend to accept that we cannot kill other humans but when a meat eater gets told that eating meat from farming equals supporting a Planetary Holocaust people tend to complain that the accusation is totalitarian.

I claim *freedom and plurality as relational openness* for which we have to stop our complicity with Earth-killing processes and find other ways of living that are not based on neglecting the devastation on which certain ways of living are based, ways of living that are in the end rather poor experientially speaking, based on a millennia-old neglection of movement and the body.

Another example is xenotransplantation. Some time ago, I might have felt sympathetic toward xenotransplantation as an experimental way of overcoming limited conceptions of the human, but I have developed increasing awareness of the radical animal abuses and the planetary-scale problems, actually leading us to extinction, on which many, perhaps unquestioned aspects of xenotransplantation are grounded. First of all comes animal abuse. From my metahumanist perspective, breeding and killing other animals for xenotransplantation is (at least) as unacceptable and criminal as breeding and killing humans for xenotransplantation. This is crucial because it seems to me that at the very core of xenotransplantation, its industry, and the deep assumptions underlying it, is the idea that, since we cannot breed and kill humans for getting organs, let's do that with other animals.

I could try to imagine a future in which transspecies families of humans and nonhumans are a more established fact and all animal abuse is abolished (with a much lower human population), and could imagine the possibility of having xenotraplantation from our transspecies kinship when they naturally or accidentally die, just as is done with humans, as what could be perhaps the only acceptable option. Then xenotransplantation could help further undoing the speciesist gap... but this is of course far from what happens today. We can never undo speciesist divides via xenotransplantation if the technology is grounded in animal breeding, slavery, and killing!

5.5.2 Metahumanism (Extended)

Metahumanism is a philosophy and pragmatics whose concepts and practices I have been elaborating since 2002.[103] It is a philosophy and pragmatics proposing a radical critique and a radical alternative to humanism and to the failed civilizational processes that are creating a mass extinction and a species suicide over the past 10,000 years, approximately since the birth of agriculture (but with 3-million-years-old roots in bipedalism). This implies a radical critique of all forms of human exceptionalism and supremacism and their current evolution as a hyperhumanism and transhumanism (trash-humanism). It also questions the way in which most critical posthumanist currents still partly perpetuate and are complicit with humanistic supremacism and promotes a radical alternative for a mutation of the species toward a planetary regeneration that goes in a direction diametrically opposed to transhumanism.

Metahumanism is a radical movement philosophy or politics that affirms movement's indeterminacy, a relational ontology of the open. It opposes accounts of individual autonomy and of technological control and domination as defended by humanist supremacism, including transhumanist currents, whose technopositivist will to control and domination neglects the radical planetary-scale devastation on which such domination and autonomy fantasies and their promises of false freedom and plurality are based.

Metahumanism builds upon the multiple meanings of the *meta-* prefix in Greek, that implies both relationality or symbiosis and mutation or becoming. Akin to Nietzsche's *Übermensch* ("overhuman"), the metahuman is about engendering a new sensibility overcoming the reversal of values of symbiotic nature that has become dominant over the past 10,000 years.

Metahumanism opposes any transcendence, any denial of movement, the body, and the Earth, and any form of domination, opposing the co-optation of the meta-prefix by the Meta corporation, the Metaverse, or the superhero mutants called Metahumans: all of which are expression of a will to transcendence, a nihilistic will to dominate, quantify, and deny symbiotic becoming. Metahumanism opposes any tendency to quantify, as it implies reduction and determination. Metahumanism claims the core role of indetermination and of relational indeterminacy in life and evolution. It thus goes in direction opposite to Gregory Stock's "Metaman" (1993) as the planetary superorganism emerging as humans and their systems compose a new hyperconnected type of body, while ignoring the mass extinction that this process implies. Life has always already been planetary, since the emergence of bacteria 4 billion years ago, creating planetary webs of programless biochemical mutation underlying biodiversity in evolution. This is the openness we need to recover.

Metahumanism only partly resonates with proposals for a "metahuman" by the likes of Paul Solomon (1990) or Deepak Chopra (2019), who emphasize, from a more mystical, spiritual, or healing perspective, the idea of unleashing our infinite potential by overcoming limitations imposed by a rational type of conscious mind, while still holding onto concepts of consciousness implying degrees of anthropocentrism.

Metahumanism implies both ceasing to be the plague of the Earth and developing the infinite potential that we have: overcoming the limitations of millennia of civilizational paradigms that create a mass extinction in the same act through which we atrophy our bodies and impoverish experience and potentials. The same

103 For a genealogy of the metahumanist concepts, see Del Val (2020b; 2023b; 2023d; 2024b).

regimes or systems that create a mass extinction and a planetary collapse are those that curtail our potential as bodies in motion. No human fantasies of freedom can be accepted that ignore the planetary-scale devastation caused by human supremacism. A complete reversal of values and perceptions is needed: the deepest challenge to humanity ever, and the greatest evolutionary challenge in the history of the Earth. This is the opposite of technofascist transhumanist dreams of domination. Metahumanism implies ceasing to be human, mutating as a species, recovering a lost capacity for variation and symbiosis with the world, and doing so only through cultivating the *clinamen*: the minimal, ongoing, and indeterminate variation in movement, the highest technology of nature. Unlike transspecies transhumanisms, metahumanism opposes transformations that imply costly technologies that reproduce a will to control. Instead, it promotes mutation by variation in movement–perception, toward greater indetermination: *symbiotic openness*.

Metahumanism is thus the reversal of the all-too-human hyper-, trans-, or trash-humanism that is the plague and illness of the Earth. Metahumanism, instead, radicalizes much of critical posthumanism (which is often still too humanist), and strongly resonates with recent proposals such as Patricia MacCormack's *Ahuman Manifesto* (2021), with some subtle differences.[104] Metahumanism seeks to overcome the limitations of a critical posthumanism (and some compostists and hummussists) that, for instance by assuming a difference between *bios* and *zoē*, and the reliance of politics on a discursively invested *bios*, reaffirms an anthropocentric and discourse-centric account of the human, as defined by a certain nature based on verbal–rational semiotics and narrative, thus also reaffirming a certain essentialism, a limitation we urgently need to overcome with a nonverbal, proprioceptive r/evolution. It also seeks to overcome certain antihumanist stances such as Foucault's that equally state the unavoidability of rule-based discursive grids as the only source for politics, whose outside is only thinkable from within discursive grids, thus reaffirming a certain essentialist distinction between human and nonhuman. These stances, though important, are based on millennia-old misconceptions of movement and indeterminacy. Metahumanism provides a turn to a Radical Movement Philosophy that seeks to overcome these limitations, involving a radically neurodiverse and metaspecies movement ontopolitics beyond discourse-centrism.

Metahumanism's claim for indeterminacy further implies that the entire dominant monotechnical paradigm of quantification, emerging since the birth of agriculture, is intrinsically reductive and determining, hence its devastating effect. Therefore metahumanism claims the invention of radically new technological paradigms that build upon the far superior (because more indeterminate) technologies

104 There are many connections between metahumanism and MacCormack's (2021) proposal, but one important difference is that MacCormack, like other abolitionists and antinatalists, seem to consider that *there exists* a "human being" defined by a certain way of thinking, perceiving, and communicating, and that it must become extinct for the planet to flourish again. Instead, metahumanism implies that the dominant human is both a construction and an anomalous techno-epi-phylogenetic mutation that has been based on a millennia-old reduction of perception, a radical atrophy, an evolutionary stasis, and that what is needed is the recovery of the capacity to mutate in symbiosis, reinventing the body–movement–thought against the millennia-old predominance of distant vision and abstract semiotics. This would be the difference between an ahumanism and a metahumanism. It is in the question of the movement and in radical movement philosophy where the difference lies. What we have to do is stop being "human" and instead become symbiotic and mutating metahumans by recovering and reinventing BI (Body Intelligence). This does imply stopping reproduction and embracing radical veganism but not toward a sheer self-extinction, but rather a deep mutation by which we acknowledge our place as one of the 8.7 million species in a symbiotic world.

of nature, toward, not only a technodiversity as proposed by Yuk Hui (2021), but a techno-indeterminism.

Metahumanism radicalizes and takes further queer, crip, decolonial, and vegan posthumanisms by proposing that the civilizatory process of the past millennia and its associated construct of the abled, neurotypical, rational, discourse-centric, heteronormative, binary human is a cosmic anomaly and a radical failure that needs to be overcome, taking on the movement of variation of mutant nature, by transforming movement and perception.

5.5.2.1 Sidenote: On Nietzsche as Metahuman Precursor

It is time to claim Nietzsche as metahuman precursor (as well as Lucretius, the pre-Socratics, and many others), and not as transhuman one (a radical misreading), as is clear both in his affirmations and denunciations:

Affirmation of:

— the body, as great reason and as great "self" of which spirit, soul, or mind is just a small part, that does without saying;
— movement and the senses, dance, lightness (against gravity), the muscular;
— becoming (and will to power as will to power of variation, echoing Deleuze's reading);
— the Earth;
— free death;
— Dionysian ecstasy and joy, laughter, not fear;
— the *Ungeheuer* or amorphous;
— the embodied kinetic character of thinking, and thinking in or as motion, not to sit;
— the innocence of becoming and the tragic spirit as affirmation of all that appears;
— the sensitivity of the forces: pathos or suffering as part of the affirmative process;
— the need for a great (self-)despise of the dominant form;
— the overhuman as a new (and broader) sensitivity;
— the great health as multiplicity of sustained forces.

Denunciation of:

— crime against the Earth as worst possible crime;
— the human as illness on the skin of the Earth;
— immobility and sitting;
— body despisers;
— heaviness, mechanism;
— alignments, morality, god, religion, the state;
— motley self-referentiality of culture amazed with its alignments, while hiding a poverty;
— nihilism as denial of life;
— an original reversal of the values of life that we now need to reverse, with a double reversal, through a genealogical critique.[105]

105 I build upon Nietzsche's idea of nihilism as double denial: first of all, as denial of life, the body, movement, the senses; secondly as denial of the empty values that have been grounded on the denial

I diverge, however, from the core Nietzschean idea of there being always quantity and hierarchy differentials of forces, which I see as an inheritance of Darwinian accounts of struggle in evolution that has since been contested.[106] Besides this, Nietzsche needs to be updated and pushed further in his most visionary aspects, and beyond his own personal and epochal biases. Instead, most Nietzscheans of today mostly push him back reaffirming many of his errors (Del Val 2023c; 2025, 193–202).

Metahumanism diverges from all previous precursors in the radical claim for indeterminacy as variation.

We have only one thing to give up: our dominion.
We don't own the world. We're not kings yet. Not gods. Can we give that up?
Too precious, all that control? Too tempting, being a god?
— Ethan Powell, *Instinct* (1999)[107]

Remain faithful to the Earth [...].
Crime against the Earth is now the worst possible crime.
— Friedrich Nietzsche (2006, 3, my translation)

of life. This double nihilism implies a double reversal move, understanding the anomaly of nihilism and its associated domination. Like Nietzsche, I seek to liberate thought and life from nihilism in all its forms, which implies the development of new modes, a shaking of the foundational principles of all the dominating modes of thought and living that are based on reactivity and nihilism, a deep transmutation, and a reinvention of knowledge, no longer against life, but moving with it.

106 My distinction between quantity and quality in some ways reverse Nietzsche's: where for him (following Deleuze) forces are above all quantity, and qualities are just reactive or active, for me movements are above all qualitative variation irreducible to quantity, and quantity is itself an effect of reduction (reactive forces, stagnation). In fact, the sheer possibility to quantify the world only appears when some relations become fixed and impose themselves: inexorable link of quantity to reduction (of qualitative variation). Movement is thus prior to force and force is not an inevitable expression of movement, it appears when a tendency or momentum takes over others, but mostly in a relational play within a much more primordial and irreducible fluctuation.

107 In the film *Instinct* from 1999 directed by John Turtletaub, with screenplay from Gerald di Pego, Anthony Hopkins plays the role of Ethan Powel, a primatologist that ends up living with the family of gorillas he was studying, disappearing for two years until human hunters kill the gorillas, he kills one of the hunters, gets imprisoned, and makes a vow of silence. It is a great example of the proposal made here, difficult to grasp from a human supremacist perspective: an example of symbiosis and of how recuperating it is not a question of going back but of overcoming the anomaly of the extinction cycle and its poverty and devastation. It implies an amendment to the whole, away from assumptions about what being human is and from everything we have been taught, and a reversal of everything, facing the implications: the movie happens mostly in a prison, the worst possible psychopath prison: this is the status of the disaligned in the contemporary world, of the one who wants to deviate from human supremacy and its suicidal dogmas; and the less mistreated animals are also in the prison of a zoological park. This is the hideous face, the true face of the Human Supremacy Holocide. But freedom is never inside the frames we have created, we have to take the courage to disalign.

5.6 Trash-human Unhancement and Planetary Health: Undoing the Planetary Holocaust. A Manifesto for Cosmic Response-Ability and the Future of Life

5.6.1 Transhuman or Trash-human?

Which is the hidden truth[108] underlying transhuman enhancement, as extreme face of a global tendency and economy of acceleration, unlimited growth, and technological domination? The so-called technological singularity, as utopian or dystopian tendency, is the top of a pyramid whose base is a double-sided and millennia-old impoverishment: of the body and the planet. The exponential growth of the *sapiens* population over the past 10,000 years is also an exponential growth of planetary, animal, and human exploitation, ecosystem disruption, trash, technological systems, and bodily atrophy: a spatiotemporal anomaly of disruption accelerating toward an extinction singularity. The truth underlying transhuman enhancement is thus a *trash-human unhancement*: a disrupted planet covered in trash and an impoverished, atrophied body.

But another hidden truth (associated to the previous) is in the realities already in our pockets: the army of autonomous algorithms and Big Data systems behind every app in every smartphone, whose ontological opacity and dynamism defy inherited ontologies and are yet to be accounted for. There, rather than in futures of genetic engineering, lies another urgent challenge: we are being epigenetically engineered, *unhanced* in radical ways that are being ignored. Excessive focus of ethical debates on transhuman enhancement is thus a doubly misleading and falsifying debate. It hides both of the above urgent problems, which are part of the Algoricene, while legitimating a eurowhite or angloamerican phantasy of domination that has disastrous planetary consequences.

5.6.2 A Millennia-Old War: Hyperhumanism, Metahumanism, and the Evolutionary Challenge

At stake is a millennia-old war between two conceptions of the body and the world. On one hand the humanistic and trans- or hyperhumanist idea of the body–world as intrinsically quantitative, calculable, manipulable, controllable, appropriable, based on old humanistic fears and domination dreams, and on a *deep cosmological ignorance*: the idea of a world centered around us, at our disposal, for us to control, and of infinite resources. It is the tradition of dualism and colonialism, of metaphysics of being, form, and identity, where evolution is conceived as separation as species for the sake of domination, guided by a teleology rooted in a transcendent future, while

108 The regime of truth is the regime of perspective that creates the illusion of a single homogeneous world by homogenizing perception. This sensorimotor homogenization is the spine of humanism and its despise of the body and movement. In turn, I associate posttruth culture, as epitomized by Donald Trump, not to the content but to the structure of media that homogenize relations and perceptions conforming a planetary-scale panchoreographic: the dissemination of contagious gestures (Del Val 2009a). This is only the façade of an even more problematic regime that I call *hypertruth,* the new regime of autonomous algorithms and Big Data systems that is becoming the dominant means for managing life on the planet and whose ontological opacity creates a new domain of transcendent and immanent truth. Beyond truth and hypertruth lies the possibility of mobilizing a *plastic realism,* which is not relativism but an increased capacity to move with a fluctuating world in nondestructive manners, and the acknowledgment of the irreducible multiplicity of worlds inside this world.

sex is conceived as the controlled reproduction–multiplication of an entity: a patriarchal heteronormativity that has created a massive overpopulation problem driving us to extinction. It is the tradition of the disembodied mind that wants to get freed from the body, the tradition of body despisers, in Nietzsche's (2006) terms. It is also the tradition of denial and fear of death, which has paradoxically created a planetary killing machine for the sake of preserving the lives of an elite.

On the other hand, there is an even older but currently minoritarian tradition, going back to the pre-Socratics and beyond, reappearing in Lucretius, Spinoza, Nietzsche, Bergson, and a plethora of philosophers since then, as well as in many contemporary feminisms and in queer, decolonial, crip, critical posthumanist, and metahumanist discourses. In this tradition, the body is claimed as irreducible field of forces whose indeterminable dynamism is the very creative force of life that mobilizes evolution in a cosmos, an affirmative Dionysian worldview for an overabundant universe. It is not a quantitative–calculable body–world, but one in qualitative variation. It is the tradition, not of being, form, and identity, but of becoming, formless flow, and plasticity, of indeterminism and pluralism, of evolution as symbiosis and never-ending mutation. It is also the tradition of affirmation of *death* as a part of cosmic mutation: one's own death, not the systemic killing that is done for the purpose of one's longevity! For this tradition, it is more a question of overcoming the fallacy of the disembodied mind that seeks to dominate the body by impoverishing it.[109]

5.6.3 The Culture of Atrophy

In this battle, a calculable body–world has been created at the cost of impoverishing it. Increasingly aligned with geometric fields rising over millennia, a culture of immobile, atrophied bodies has been established. The invention of linear perspective in 1436 in Florence implanted a culture of fixed points of vision that still underlies digital interfaces today. An unsustainable planetary-scale machinery has been growing for the sake of keeping bodies split and atrophied, reconnected in controlled manner. The more immobile the bodies, the heavier and more unsustainable the machinery needed. This is the radical outrage of the current situation, which has been outrageously presented as a higher form of civilization: a cosmic outrage!

This fallacy also ignores the crucial fact that how we move is how we think: sensorimotor atrophy is thinking–feeling atrophy, relational atrophy, and world atrophy. An impoverished world has been created in order to sustain the fallacious promise of disembodied minds, which are simply immobile, atrophied bodies. This is a counter-evolutionary anomaly that is bringing the planet into an extinction cycle.

The culture of immobile bodies creates a radical narrowing of perception so that bodies cannot see beyond their narrow tunnel vision, in an increasing spiral of reduction and dependence on the unsustainable machinery that keeps them immobile.

Through this narrowing of our sensorimotor plasticity (which is also a narrowing of our neuroplasticity) we become dependent on an utterly unsustainable system of

109 This distinction between two sides at war might seem reductionist, Manichean, or incorrect. But at stake is to distinguish what Deleuze and Guattari might call a molar tendency to stratify from a molecular tendency to set in motion. My proposal, however, different from theirs, is that the world is not intrinsically torn between the two in an unavoidable bipolar oscillation. Rather, I propose that the tendency to stratify is a cosmic anomaly emerging with agricultural societies. We may instead enact modes of "formless consistency," of movement without immobility.

production, transportation, communication, consumption, pollution, waste, exploitation, and killing, and believe in the fallacy of the inevitability and desirability of processes whose only true reason is the short-term profit they produce for the very few, based on the narrow tunnel vision of atrophied bodies that affects both masters and slaves. The more exploitation and control are imposed upon the planet, following the dreadful heritage of humanist dreams and fears, the more entropy is produced (climate change and personal burnout, as noted by Rosa 2019). The more control one enforces, the more disorder is created, in a bipolar dynamics. Along these lines, an unprecedented threat to the planet's health emerges.

5.6.4 (Re)defining Planetary Health

Planetary health can be perceived through climate change, rates of species extinction and biodiversity loss, pollution and waste, pandemic outbreaks (which are a symptom of ecosystem disruption), deforestation, abusive land use changes and urbanization, amongst other factors.

Existing projects and reports on planetary health,[110] or on the "One Health"[111] model, still mostly bear the anthropocentric bias that the planet's health, and the health of other species, is needed *for the sake of human health,* without challenging the fact that human overpopulation and way of living are at the core of a threat to the planet's biodiversity. The latter I propose as being more important than human health, as it affects all other life forms as well as ours. In consequence, both the diagnosis and the prognosis are excessively soft, unrealistic, and ultimately incorrect. Corrective measures proposed mostly ignore the core uncomfortable facts: human population and consumption need to be radically diminished and ways of living need to be transformed.

We thus need a more radical definition of planetary health that considers life not in the service of an existing mode of human civilization, which is itself threatening life at large. Life and evolution need to be redefined within a broader postanthropocentric, post- or metahumanist, and cosmological scenario. The source of the problem in human overpopulation and its unsustainable way of living needs to be far more radically scrutinized and challenged.

Deep planetary health implies a relational understanding and a nonanthropocentric vision of our embeddedness in Earthly processes. It also implies an understanding that the Earth is our only possible cosmic medium,[112] as well as the only medium

110 These reports start from the acknowledgment that overall human wellbeing has grown at the expense of the planet's health, and that the effects of this will appear dramatically in the near future. See Whitmee et al. (2015) for the report on planetary health from Rockefeller Foundation which launched the use of the term and concept. See also the UNFCCC (United Nations Framework Convention on Climate Change) Project on Planetary Health, https://unfccc.int/climate-action/momentum-for-change/planetary-health, and the Planetary Health Alliance at Harvard, https://www.planetaryhealthalliance.org/planetary-health.

111 See the One Health project at the UN World Health Organization, https://www.who.int/news-room/q-a-detail/one-health.

112 Just consider that a trip to the nearest star, Alpha Centauri, which is around four light years away, and which has no known inhabitable planet, would take between 100,000 and 300,000 years by current standards, an amount of time similar to the time that *Homo sapiens* has been on Earth, while a short walk through the galaxy would take billions of years, as long as the age of the Universe, while in the process the Milky Way will collide with Andromeda. A *deep cosmological ignorance* regarding the prodigious dynamism and scales of the cosmos underlies dreams of cosmic colonization and escape from the Earth, assuming its destruction. Embracing those scales and dynamism does not

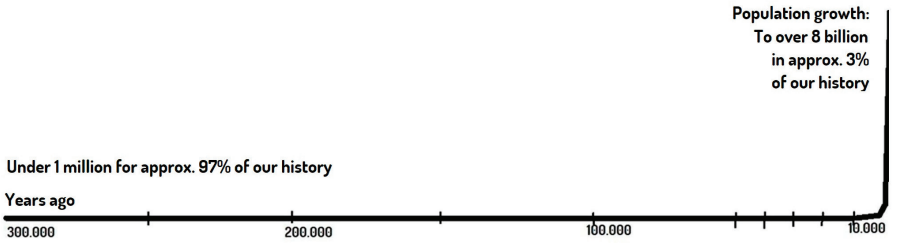


Fig. 45. Diagram of the population of the *sapiens* over 300,000 (till around 2050).

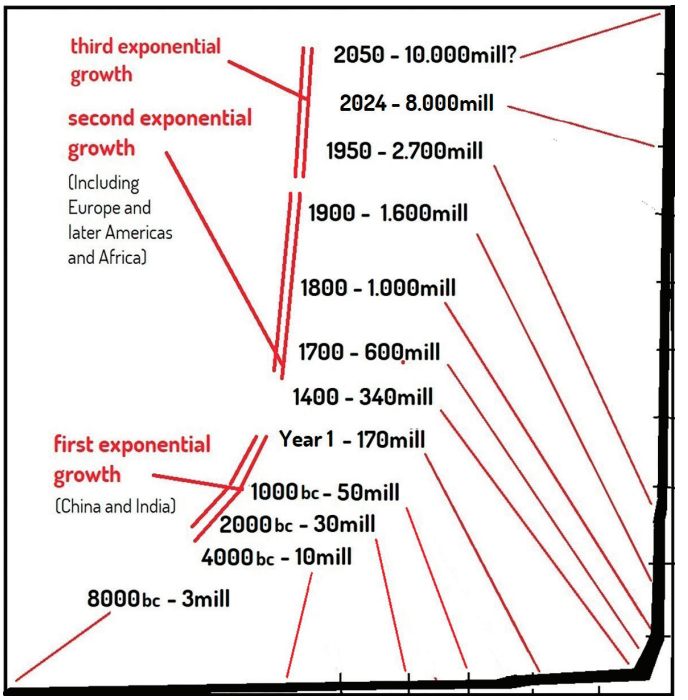


Fig. 46. Diagram of the population of the *sapiens* over the last 10,000 years. For most of the time, from over 100,000 years ago to 30,000 years ago, population is estimated to have been under 1 million. 30,000 years ago it started a slow increase so that 10,000 years ago it was around 4 million. Then, with agriculture and farming, a *first exponential increase* happened: to 10 million around 6,000 years ago, 30 million around 4,000 years ago, 50 million around 3,000 years ago, 170 million 2,000 years ago, mostly in China and India. Then it kept growing steadily to 340 million around 1400 when a *second exponential increase* started, with 600 million around 1700, 1 billion around 1800, 1.6 billion around 1900 and 2.7 billion around 1950. Then we entered the *third and current exponential increase*, rising to 8 billion in 2024 and with projected 10 billion by 2050 approx. The larger increase in Europe is from approx. 1600 onward, in the Americas and Africa from 1800 onward. The first exponential growth largely corresponds to sovereign societies, the second to disciplinary societies and the more recent to control societies.

for billions of other life forms, and so far, the only planet with complex life forms that we know of in the cosmos. And even if there are other planets hosting life these will probably be wildly different, so that our responsibility for the planet is not just

imply fear, but wonder and desire to move with them, and to take care of our only possible cosmic medium: the Earth.

for us (because without planetary health there can be no human life), and for the billions of other species, but of the singularity of life in our planet. In Carl Sagan's (1980) words: the Earth is just one single and unique voice in the cosmic fugue of voices of life, so that in other planetary systems (perhaps only those few that may have conditions for complex life to emerge) it will almost certainly evolve in deeply different ways from those in which it evolves on Earth. Also, every new variation in evolution is in itself unique. We thus bear a *cosmic responsibility* for life.

Furthermore, a relational ethics is needed to overcome the epochal errors of pathocentric ethics[113] that only considers individual suffering, along a pyramid of degrees of awareness, as ground for ethics. What is missed along the way is the understanding of the dynamic equilibrium of ecosystems, and of evolution understood as a process of variation, where biodiversification requires openness in the process of emergence of fields. The degree of plasticity (which also means openness and indetermination) of ecosystems should be the measure for ethics and how it affords a flourishing of life as emergent diversification process, where imposing top-down criteria implies generalised destabilization.

5.6.5 Trash-human Unhancement, Planetary Holocaust, and Extinction Singularity

5.6.5.1 Heterosexuality Drives Us to Extinction

Varieties of oppressive regimes of reproduction emerged since the Neolithic, when enslaving animals and appropriating the earth, accumulating crops and livestock, unleashed a toxic human expansion, a sedentary occupation of the earth. With farming came accumulation, homogenization, property, descendance, gender inequality, wars, kingdoms, empires, slavery, plantations, colonialism, capitalism, growth economy, and the Sixth Mass Extinction.

As Derrida (1992) proposed, phallogocentrism needs to be expanded to carnophallogocentrism: dominion over animals and the earth underlies human mass expansion and its associated regimes of multiplication, culminating in Victorian morality, the nuclear family and heteropatriarchy, which congealed not by chance at the time of the largest empire in history and at the peak of the industrial revolution, after millennia of expansion and oppression.

Fig. 71 shows the rate of growth of the population of the *sapiens* over the past 300,000 years. One can see how an exponential growth appears only over the past 10,000 years (fig. 46), a blink of an eye in the planet's life, a brief period of geological calmness coinciding with the rise of agricultural societies exploding after the last glaciation. These graphs are also a concept: the recent events of dominion on Earth as constituting a geological anomaly, the Sixth Mass Extinction, instead of a teleological upwards evolution.

If population has multiplied by 10,000 in 10,000 years (from just over 1 million to nearly 10 billion), individual consumption has also multiplied by ten approximately over the past hundred years or so.[114] This implies an even more exponential curve that expresses simultaneously the growth of consumption, of exploitation of nonhuman animals, humans, the planet, of extinction rates, of war, (ab)use of resources, urbanization, land use, energy use, production of waste and pollution, ecosystem

113 Such as Peter Singer's (1975) foundational *Animal Liberation*.

114 On population growth over the past 100,000 years see American Museum of Natural History (2016).

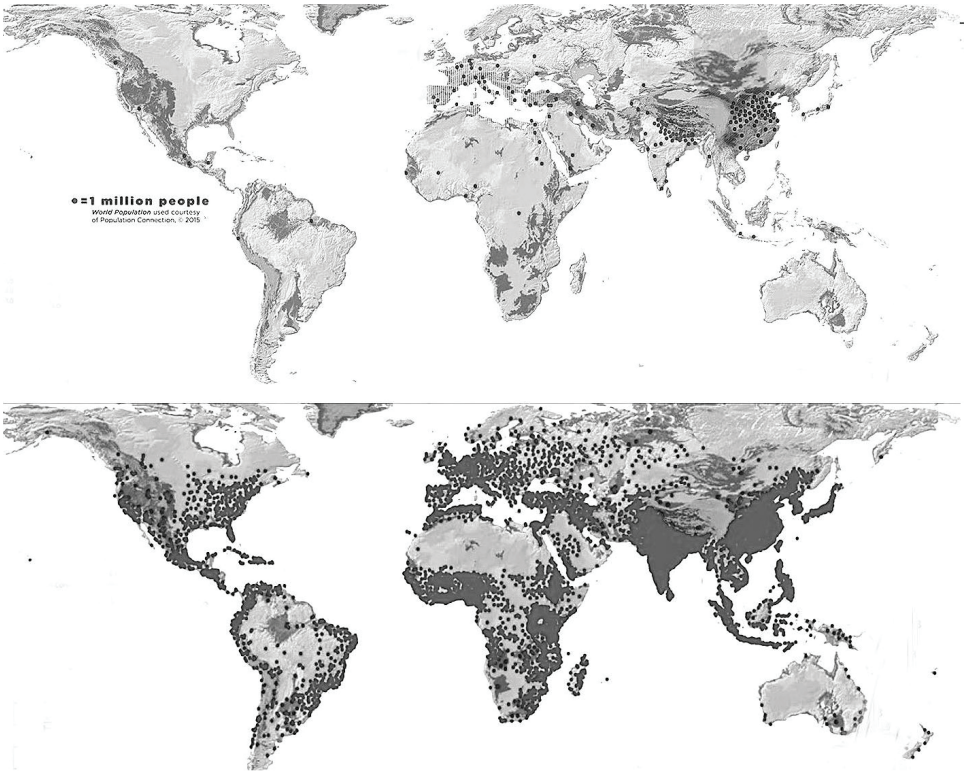


Fig. 47. Top: Population around year 1 CE. Bottom: Population today. Each dot stands for one million people. Adapted from American Museum of Natural History (2016).

disruption, climate change, and pandemic outbreaks. It is also the curve of technological systems and their energy consumption, of communication and transportation technologies. It is also the curve of increasing bodily atrophy, as bodies are increasingly aligned with technical systems. Therefore, it implies an inverse curve of bodily impoverishment and of planetary impoverishment as it is also the curve of increasing biodiversity loss.

This curve is also the curve of *imprisonment, exploitation, slavery, and killing of animals,* through intensive farming that is growing every day.[115]

It is also the curve of *urbanization,* of concrete, of plastic, and of deforestation and land (ab)use. Around 2020, human-made mass (concrete, gravel, bricks, asphalt, metal, glass, plastic, etc.) has already surpassed the totality of biomass on Earth (Elhacham et al. 2020).

115 See Bar-on, Phillips, and Milo (2018). The human's biomass (0.06 Gt) exceeds almost in ten times the biomass of all other wild terrestrial mammals (0.007 Gt), while it is almost doubled by livestock biomass (0.1 Gt), although most exploited animals are much smaller than humans, which is why the number of individual animals in farms is more than ten times the entire human population. In terms of numbers the human is also *the most numerous mammal,* though we lack precise accounts of the number of rats, mice, or bats, which are in any case much smaller and have an individual impact perhaps thousands of times smaller than humans in any case. On the exponential growth of exploited nonhumans along human population growth and the inverse exponential reduction of wild mammals, see https://peakoilbarrel.com/carrying-capacity-overshoot-and-species-extinction/.

It is the curve of *disruptive occupation of the Earth* of whose solid surface we occupy one half, mostly with devastating monocrops and pastures.[116] For understanding the outrageous significance of occupying 1,6 billion hectares with monocrops we need to consider how these imply creating exclusionary spaces that ban biodiversity and the molecular mixing that is crucial to evolution, implying deforestation (and pandemic outbreaks) while consuming enormous resources and creating indigestible pollution, in turn linked to delocalised industries, transportation, human and nonhuman exploitation, as well as to increasing urbanization, and so forth. We barely grasp how exclusionary human spaces are, unlike those of all other life forms, from airports or mines to cities, farms, or crops: excluding all other life forms, or allowing some of them to exist under highly regulated and oppressive norms. The exact opposite of hybridity in non-built, non-artificial environments.

It is also the curve of *extinction rates* (IPBES 2019; CBD 2020). Over the past 10,000 years, terrestrial wildlife has radically diminished along an exponential increase of humans and of exploited and domesticated animals.[117] The current, Sixth Mass Extinction, or Holocene Extinction, initiated by human activity since over 10 millennia, is estimated to be occurring at 16 to 165 times quicker rates than the previous mass extinction (McCallum 2015). The United Nations, an entity not suspect of radicalism, denounced in a video for the Glasgow Climate Summit that we are creating our own extinction and a mass species extinction (United Nations Development Programme 2021).

It is also the curve of *climate change,* global warming (Kaufman et al. 2020), and ecosystem disruption, all of which are happening at unprecedentedly quick rates, even compared to previous mass extinctions and global warming processes.

It is the curve of *individual consumption,* which has also multiplied tenfold over the past two hundred years, approximately (M. Moore 2020). Population has grown linked to a radically unsustainable way of living, of intensive agglomerations, of delocalized production and exploitation, and is not separable from it.

It is the curve of *pollution.* On a planet of automobiles more people died in 2021 due to pollution than to COVID-19 (Roser 2021). Meanwhile, chemical pollution has already crossed a limit of planetary destabilization (Persson et al, 2022). This pollution enters bodies and contaminates all waters, earth, and atmosphere, and all life forms.

It is the curve of *(ab)use of energy and resources,* of generalized and all-encompassing extractivism. Extractivism of the earth and the land has led to generalized bodily extractivism: of massive reproduction leading to gender apartheids, of slavery and racism, of ableism, and of massive animal exploitation and killing. Compulsory heterosexual reproduction is a primary form of bodily extractivism. This tendency expands currently in the Big Data era, with datafication or monetization and surveillance as an all-encompassing extractivism of behaviors, emotions, and relations.

It is the curve of *garbage and trash.*

It is the curve of *technical systems* creating a radically unsustainable and dystopian planetary-scale organism of algorithmic life that tries to create a calculable double

116 See Ritchie and Roser (2019). By 2016 we occupied 60 million hectares with urbanization, 1.6 billion hectares with crops, and 3.2 billion hectares with grazing, a total of 4.92 billion hectares from the 8 billion inhabitable hectares of solid land, the remaining 7 billion being ice and deserts. On cropland expansion, see Potapov et al. (2022).

117 On the parallel growth of human population and of mass extinction rates, see CBD (2009); R. Patterson (2015); and Ritchie (2021).

of the world by impoverishing all movements. This includes the number of physical devices produced in an economy of programmed obsolescence, but also the processing and transmission speeds and storage capacities, which are expected to make an even far more exponential jump in the coming decades due to quantum computation.[118]

It is the curve of *amount* (but not of variety) *of information* created, stored, and circulated every day, with more information being currently produced per year than in all the previous history, growing exponentially as humanity becomes digitized in all aspects of life.

It is thus the curve of *increasing bodily atrophy and immobility,* and its associated systemic dependencies, systemic domination, and (social) control. Paradoxically it is also the curve of *superaligned, accelerated, and mechanized mobility* of bodies and goods.

It is the curve of *increasing inequality between rich and poor,* of poverty and precarity, of refugees and migrants, which are expected to continue to grow exponentially due to climate change, from one billion to two billion (Bellizzi et al. 2023), along the growing business for managing them, which is also exponentially increasing the number of border walls along the new, radical, and constantly shifting controls due to the COVID-19 pandemic. It is also, with variations, the curve of *pandemics*.

It is the curve of *wars,* the ever-growing weapons market, cyberwar, and other upcoming modes of hybrid war.

It is the curve of *social polarization, fanatism, and repression* (Human Rights Watch 2021).

It is the curve of *abstraction of social relations and of alienation.*

Each of the above has variations in the detail, but on the whole the radical exponentiality of the curve applies. It exposes a *radical spatiotemporal anomaly*: the era of systemic domination, quantification, appropriation, exploitation, war, annihilation, disruption, and the Sixth Mass Extinction. The era of form, being, reproduction, immobility, and atrophy, of replication and self-reproduction, which has paralyzed evolution. The era where heterosexuality[119] (as regime of massive and compulsory reproduction and its associated nuclear family) leads us and the planet to extinction through overpopulation, sedentarism, and consumerism.

Figures may vary or be questioned in the detail, but the overall tendency and conclusion is clear, even if we cannot know how, when, and what degree and type of crisis point will be reached. Negationism is not an option. This process also implies an *inverse curve* of life reduction and impoverishment, an evolutionary paralysis.

The same systems that create oppressive norms for the multiplication of the species are the ones that create devastating forms of occupation of the Earth and of destruction of its life forms. Animal holocaust and oppressive heteronormativity are two sides of the same coin called human supremacism: the one that underlies both

118 It is said that the jump between current computation and quantum computation is as large as that between the abacus and current computers, but happening in decades, not millennia, which, in its nonlinear intra-actions with the metaverse, AI, and ubiquitous connected devices in 5G and 6G networks, and the enforced all-encompassing digitization of life in the age of pandemics, climate change, and social polarization, implies an *unthinkably higher new exponential curve* over the coming decades, till around 2045.

119 I do not claim that the notion of heterosexuality or heteronormativity are simply applicable to regimes prior to the emergence of these concepts, but do point to a relationship between the diversity of *oppressive regimes of reproduction,* demographic multiplication, and the increasingly devastating occupation of the Earth.

the systemic domination of the planet and its life forms and the infinite multiplication of the dominant species that has become a planetary plague.

The technological singularity and its associated global digital culture and economy is therefore the top of a *pyramid whose unacknowledged base* is a double impoverishment of the body and the planet: they are inextricably bound. It thus implies a reverse pyramid of a Planetary Holocaust and an Extinction Singularity. This intrinsic reliance of accelerationist development on a planetary disaster and through generalized exploitation can be seen, for instance, in the way metaphors like "the cloud" hide their extremely heavy infrastructures and the unsustainable processes of production, transportation, waste, and bodily atrophy they induce.

The entire planetary system emerging over the past 10,000 years is intrinsically *elitist*, based on a radical exploitation of the planet, other humans, and nonhumans. Its ultimate current tendency is toward an algorithmic life form, a hypercyborg of which humans become aggregates. But the dangerously *naive* idea of sustainable and benevolent self-making machines misses the point of the radical *extractivism* underlying digital (and mechanical) technology — both in terms of materials, such as coltan, and of data — as well as its intrinsically reductive nature, its will to control. The deeper challenge is therefore not in merely making "better uses" of this technology — with the always delayed and false promise of an equality and sustainability that will most likely never arrive[120] — but to invent other *technēs* and ways of living. Cultures that evolve beyond the obsession to dominate will create other life *technēs*.

5.6.5.2 The One Half (or Three Percent) Problem and the Devastating Occupation of the Earth

We occupy one half of the Earth, literally, disrupted with monocrops, industries, infrastructures, and urbanization (fig. 48). But the amount of "intact" surface (but still polluted with PFAS, plastics, and thousands of other ubiquitous chemicals) is much, much lower: around 3 percent of the total (Plumptre et al. 2021). What does this really mean? Imposing monocrops where there was biodiversity, blocking flows, polluting, consuming, disrupting. Most of it for feeding the 90 billion animals in concentration camps that are but a small part of the diet of the global superpredator.

It is already considered radical these days to claim for "protecting" only half of the Earth for the other 8.7 million species, as if that were already the ultimate sustainability threshold! What a scandal! One half for one species another half for 8.7 million?! As if one could cut the planet in pieces like that, ignoring its flows that sustain diversity! And yet most of that half is unprotected anyway and could get devastated too!

The current use of land:

— 37 percent is classified as likely natural, 25 percent as potential natural, 17 percent as potential modified, and 22 percent as likely modified (Gosling et al. 2020).

120 Imagine if 10 billion humans would have the way of living of the rich: where would resources and food come from, if one would want to avoid exploiting humans, nonhumans, and the planet? And who would do the dirty jobs? Machines? Will machines self-replicate extracting their own minerals in sustainable manner?... The paradoxes of this mode of living appear inextricably linked to a *human exceptionalism* that still seems to reign supreme in our imaginaries.

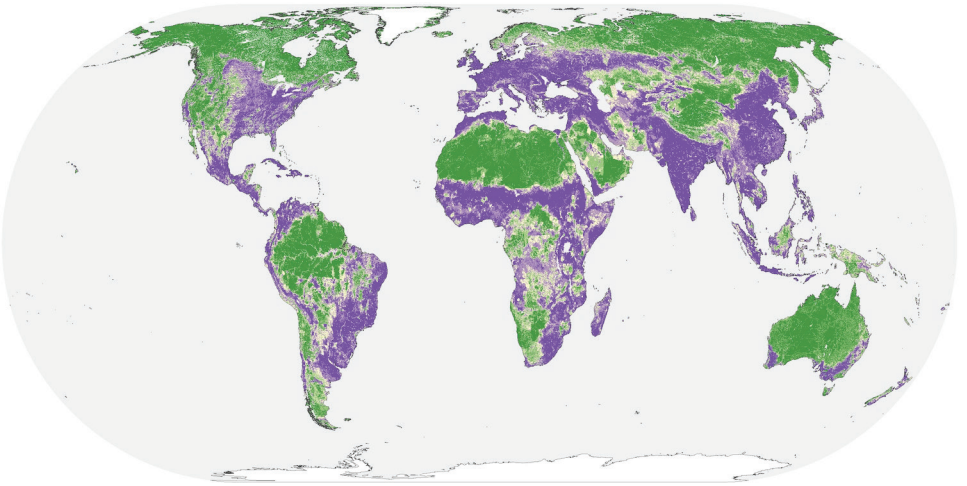


Fig. 48. Map of the human occupation of the earth. Source: Riggio et al. 2020. "Global human influence maps reveal clear opportunities in conserving Earth's remaining intact terrestrial ecosystems." Online: https://onlinelibrary.wiley.com/doi/10.1111/gcb.15109. Open Access, Creative Commons Licencse.

— Maps of low and very low human influence vary due to the complexity of criteria and processes, the vastness of the terrestrial field covered, and diversity of sources (including uncertainties relative to hunting or other factors) (Riggio et al. 2020).
— Most remaining areas need protection for their future conservation (Dinerstein et al. 2020).
— 46 percent of usable land is for agriculture, 1 percent for urbanization. Of total agriculture, 77 to 83 percent is for feeding exploited nonhumans in farms, which however represents only 18 percent of the calories in the global diet and 35 to 37 percent of protein supply (Ritchie and Roser 2019), while implying 58 percent of agriculture's greenhouse emissions, 57 percent of water pollution, 56 percent of air pollution, 33 percent of freshwater withdrawals.
— 13,7 million hectares of land are deforested per year (Ritchie and Roser 2021), 40.000 hectares per day: 40.000 football camps, 400 km², have been deforested, half the size of New York per day. According to other estimates between 3 and 6 million hectares of pristine forest have been destroyed per year in the past decades.
— urban areas are 1,5 million km², 150 millon hectares, growing at over 20 percent per decade, around 3 million hectares per year, 1.000 hectares per day: 10,000–240,000 km² per year — 1–24 million hectares doubled in three decades (Li et al 2021). Not only due to population growth but to transfer to cities.

This occupation of the Earth further entails highly disruptive modes of construction, transportation, production, and waste:

— 2 gigatons of trash created per year (The World Bank n.d.; FAO 2013), 50 million electronic (2.5 percent).
— 37 gigatons CO_2 per year (Tiseo 2025).
— 1,600 million cars.[121]

121 See *Wikipedia*, s.v. "Motor vehicle," https://en.wikipedia.org/wiki/Motor_vehicle.

Could we have these data opening the news every day?

None of this can be defended.

5.6.5.3 Dominion Is the Illness of the Earth: Beyond the Critique of Capitalism

Capitalism is but a phase of a larger problem: attacking it without attacking its frame will not be very helpful. Any kind of accumulation, reduction, dominion, and sedentarism needs to be challenged. Development is also a wrong concept: it hides homogenization and extinction.

We have lived the dream of cosmopolitanism. The fallacy of having the entire world at our disposal. But what we have at our disposal is the fiction created by a system of dominion: from the exotism of tourist industries creating fictitious images of "otherness" that erase their sources, following a tradition that started with colonization in the Neolithic, to the encyclopedic libraries of Western knowledge. We have to learn instead from exchanges of knowledge in tribal, or even in bacterial worlds, which spread slowly and gradually, transforming into new speciations, but never globally in a homogeneous sense. We have to assume that qualitative variation cannot be subdued to standards of globalization without erasing it.

Plurality self-excludes those who annihilate it, dominators, as happens with pandemics in nature which appear when an ecosystem is disrupted by a dominant species. The reply is not human control but a great disalignment from the domination project.

A pathology has conquered the Earth, an unseen pandemic: reductive, abstract, rational thinking and its associated reductive linear motions of bodies. *Dominion is the illness of the Earth.*

5.6.6 Human Supremacism and the Dominion Prism: The Underlying, Unquestioned Problem

Human supremacism is the absolutely false set of beliefs and dogmas about the supposed superiority and distinctness of humanity that have been erected to justify a domination and massacre never seen on Earth before, where humanity has declared war on everything, unleashing a mass extinction, destroying the planetary ecosystem, paradoxically taking itself to the abyss.[122]

Human supremacism is the ideology and belief underlying the prism of domination. It is found across all human spectrums, even in critical circles. Human supremacism is the elephant in the room that no one wants to really see, as it is ourselves and our entire way of living.

For instance, in the critique of colonialism there is a supremacist tendency to ignore that every currently dominant human form of occupation of the Earth and enslavement of its life forms with urbanization, agriculture, farming, transportation, and so on, is a radical colonization of the planet (and of ourselves). There is no single expression of dominant human cultures of the past millennia that is not radically colonialist. Or maybe colonialism is an insufficient term for this, maybe we need a new word that human vocabulary lacks.

122 I will elaborate below to what extent this must not only be dismantled but reversed and demonstrate the radical inferiority of this species, from which I take the opportunity to say that I completely disidentify as I don't believe in any of the supremacist dogmas that underlie the concept, nor think that the concept is needed unless for domination purposes.

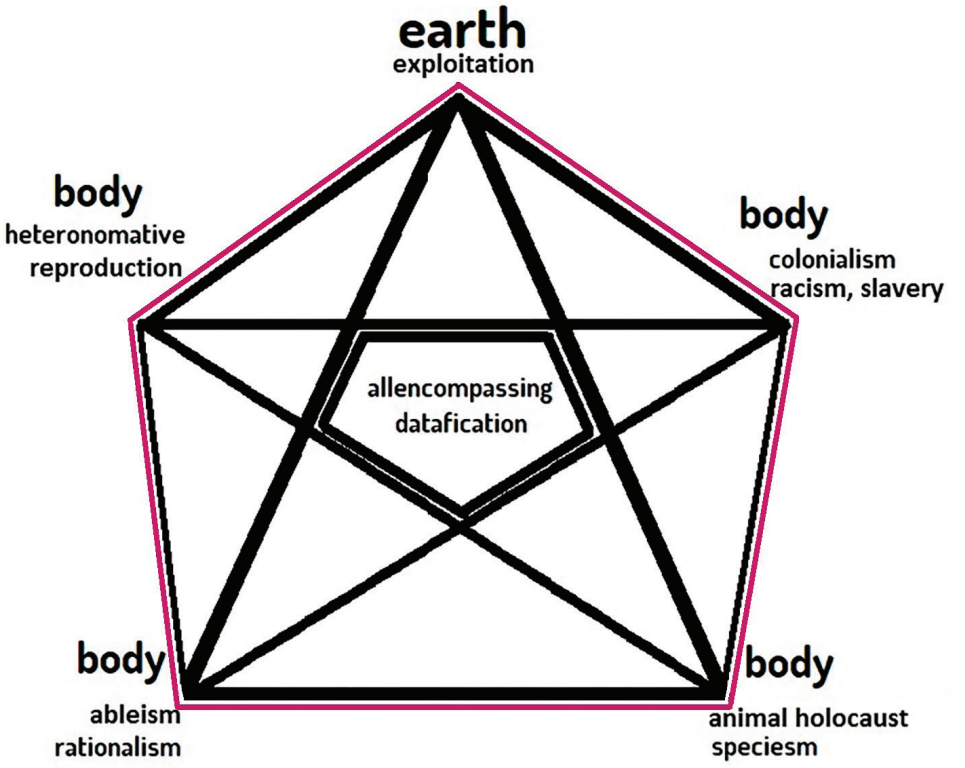


Fig. 49. Dominion Prism / Extractivism diagram. The outer segments of the pentagon are the five major reductive perceptions/movements (pyramidal, gridded, circular, perspectival, and networked) underlying domination as cosmic anomaly. The five nodes/angles expose he relation between earth extractivism and all modes of bodily extractivism, with its inner pyramid and the pentacle geometry connecting all of them. The inner pentagon exposes the new turn to all-encompassing extractivism.

5.6.6.1 The Archē*-Taboos Hypothesis*

1. Could it be that the totality of critical human intellectuals is on a pedestal of unrecognized human supremacism and that certain issues are considered untouchable or even unthinkable? Is there (or is there not) a recalcitrant and unrecognized human supremacism in all areas of critical thinking and human activism today? Could it be that the fundamental taboos of human supremacy have hitherto remained unquestioned, as the impossible, untouchable, unspeakable, unthinkable ground of human supremacy itself?
2. Could it be that these untouchable questions are precisely the most crucial ones, the ones we need to tackle without delay: overpopulation, dominion, humanity, individuality, and our devastating occupation of the Earth?

The *archē*-taboos: questioning the human supremacist (individual human subject's) right to multiply forever and appropriate the Earth, to dominion, to palliative healthcare and longevity at any cost, to endless consumption, to all-encompassing availability of resources, leisure, energy, food, etc.... and to create a mass and self-extinction.

The challenging of such *archē*-taboos needs ontotherapy more than psychoanalysis — the latter is just yet another mechanism to reproduce the loops that drive us to extinction. False taboos and categories of psychoanalysis: chimeras of human

supremacy to safeguard itself, to align oneself with it through self-referential tautologies, avoiding seeing its underlying desert of the real and its fundamental assumptions. The only human tragedy is its incapacity to exit its own loop. Revisiting Nietzsche's proposal for a tragic philosophy today implies not so much recognizing and embracing the dreadful side of life, but realizing that most of our sense of dread has been artificially created by the accident of so-called "civilization."

All life needs to be affirmed: as symbiotic variation! This requires a Radical Movement Philosophy shift, which shows that all dominion is a negation of life. Too long have vitalists held onto the ambiguity of Nietzschean discourses to avoid making this distinction and holding to nihilistic self-referential impulses disguised behind freedom of the "individual." The key is in regaining the general dance!

The real challenge and abyssal thought can never be in assuming the dreadfulness of life, this is just another version of the Christian pathos that avoids transforming life, assuming a self-indulgence. The real challenge is in assuming an amendment to the totality: this is where we reach down to the transformative powers of life! The real innocence of becoming is in exiting the loop by regaining the joy of movement.

Growing does not imply imposing oneself. Life on Earth has evolved through the predominance of a symbiotic mode of growth. This is what urgently needs to be recovered. The growth that imposes itself is the denial of life. Only this resolves the extinction paradox.

The only deep fear, cruelty, and monsters are those of the dream of reason, of the atrophied trash-human. We are not a step between the animal and the overhuman: this whole presumption is yet another human supremacist argument to justify the anomaly of the Planetary Holocaust, the idea that "we needed to go through this in order to evolve further..."

> *In relation to them, all people are Nazis; for the animals it is an eternal Treblinka.*
> — Isaac Bashevis Singer (1982, 271)

5.6.7 Planetary Holocaust

Human supremacism is the ideology underlying what I am going to call *Animal Holocaust* or *Planetary Holocaust*: the set of forms of abuse, slavery, exploitation, and extermination of nonhuman animals, whose most monstruous aspect are the concentration camps euphemistically called factory farms.

Over 90 billion terrestrial animals per year (Orzechowski 2024[123]) are enslaved, exploited, immobilized, and abused during all their lives in concentration camps which are in turn part of the most unsustainable industry due to the resources, waste, delocalization, and transportation it implies. This abuse is as untenable as the one of racism and Nazism but far larger in size. For its dimensions, the sheer numbers of killing and the environmental disaster it carries due to its overall unsustainability, it implies a Planetary Holocaust and is a sign of radical evolutionary inferiority of the species enacting it. The sheer fact of immobilizing and abusing over 90 billion animals in farms is a cosmic crime against evolution, unsustainable in every single aspect due to the resources, waste, and transportation, not to speak of the suffering involved.

123 Ten times more in aquaculture (Mood et al. 2023) thirty times more in fishing (Mood and Brooke 2024).

Fig. 50. Gestation area in a pig farm in Sain, 2019. Photo by Aitor Garmendia.

Charles Patterson (2002) denounces and analyzes the emergence of the "Great Divide" of human supremacism, which Freud called human megalomania and Montaigne called human arrogance, which Ron Lee, founder of the Animal Liberation Front, denounced as even more entrenched than sexism, and which Milan Kundera denounced as the most fundamental debacle of the human. Citing numerous authors, he exposes the gradual emergence of animal slavery at the hands of the most defenceless of animals.

I want to clarify that I use the term Holocaust with full awareness of its implications and that I thereby extend a whole tradition initiated precisely by Jewish intellectuals (being myself half-Jewish–German by descent) who have wanted to make an express and strict comparison — of course not free of controversy[124] — between the Nazi-driven Holocaust and animal extermination, mostly in farming, most notably the Jewish writer Isaac Bashevis Singer, the winner of the Nobel Prize for Literature in 1978, who introduces the question in many of his short stories and novels, with variations on the epigraph to this section, which gave rise to Charles Patterson's book *Eternal Treblinka* (2002).

In short, there are similarities in that both are based on supremacist ideologies: in one case Aryan supremacy, in the other *human* supremacy, with the difference that the second is shared by (almost) all of humanity. There is also a similarity regarding the complicity and silence of the population, with different degrees of involvement, as in the case of the Nazis, but again with the difference that almost all of humanity is complicit with the Animal Holocaust. An *archē*-Nazi civilization as a whole?

However, the animal exploitation and concentration camps are possibly worse than the Nazi camps, with the difference that in them the animals are bred *en masse,* immobilized, and exploited for life in overcrowded filthy confinement, in which ten to twenty percent die, unable to stand the conditions, massively treated with

124 I elaborate more on the past and existing controversies and the justification of the term's use in Del Val 2025.

antibiotics and dozens of chemicals, all of them mutilated at least once or twice without anesthesia, inseminated (raped) and with their offspring sequestrated, and exterminated in an atrocious way, in figures of 90 billion per year, with more animals slaughtered every three days — 600 million — than all humans who ever died in wars to the point of being the epicenter of all planetary crises.

Imagine your pets or yourself in the gestation area of a farm (fig. 50), like the hundreds of millions of female pigs forced to gestate and give birth immobile continuously throughout their lives until they are exterminated — and think about whether these concentration camps are not actually worse than any concentration camp there has ever been for human beings. Something so awful that society prefers to ignore it because it could not accept it.

There are also similarities in the breeding and selection techniques, which reflect an *archē*-Nazi ideology applied to the whole of nature. Regarding extermination techniques, Nazism was clearly inspired by animal slaughterhouses, which almost all of humanity nevertheless accepts. Patterson (2002) indeed shows the historical evidence of how Nazi extermination techniques were derived from US factory farming.

The animal holocaust is also different because it is not simply extermination out of hatred: animals are bred and subjected to life-long enslavement, which is even worse, always based on supremacism and contempt, and leading anyway to slaughter.

Another difference is that the Animal Holocaust is of such magnitude that it is the most polluting human industry and the one that contributes the most to climate change, the greatest death machine that has ever existed.

5.6.7.1 Farming as Foundation of All Crises

Farming, as the exploitation of animals, plants, land, soil, and water gave rise, for the first time in the history of the Earth, to accumulation–fixation–blockage, separation, and homogenization, an attack against the principles of flow–movement, relationality, and diversification–variation underlying evolution as described in Book 4. Accumulation gave rise to property, the house and village, and to walls, fences, and borders. Property gave rise to descendance and the family, and hence to gender inequality, as well as to the defense of property and hence to war, slavery, cities, kingdoms, and empires. Animal–plant exploitation gave rise to grids (from agriculture and farms to fishing nets: grids of capture, confinement, accumulation, and homogenization), and to economy, work, taxes, and money, to geometry, math, and quantification, to books and systems of knowledge based on accumulation and repetition. Property of land and its associated aligned work (ploughing, but also large-scale building, as in pyramids, or rowing, precursors of the Ford production line) gave rise to classism and generalized inequality, and later to colonialism and capitalism as based on plantations, slavery, and racism. All human meanness and tendency to lie, all miseries, paranoias, fears, and obsessions, are equally grounded on the age of farming, property, and dominion.

Carnivory as sign of wealth, robustness, dominion, and power in human societies was soon associated to patriarchy, heteropatriarchy, masculinity, and later to rationality, what Jacques Derrida (1992; 1999) has called carno-phallogocentrism, an association which has been denounced by Carol J. Adams since 1990 (1990; 2003).

All the above became a self-referential field, an unquestioned foundational problem, and ever since we have only replied to it with more problems, in a *hyperloop* of closure. Animal–plant exploitation gave rise to both overpopulation and proprietary

sedentarism, all of which underlie both the environmental crises, and the totality of forms of human and nonhuman oppression, inequality, and conflict.

The British agricultural revolution leading to the industrial revolution, and later the medical, chemical, and technical discoveries of the late nineteenth and early twentieth centuries launched the era of factory farming, the real onset of the Planetary Holocaust, and the disaster of the "Green Revolution," where extreme confinement of animals bred in far higher numbers than ever before unleashed an "empire of suffering" (Delforce 2018) of unimaginable dimensions, and with it an unprecedented disruption of the Earth's cycles and ecosystems, of biodiversity, nitrogen flows, deforestation, and ocean dead zones and depletion, air pollution, water depletion and pollution, and along with it a massive growth in human population. The "Green Revolution" was not there as necessary means to feed humans but as motor of a multiplication of humans and their consumption for the sake of profit, imposing radical homogenization and destruction of diversity on Earth, as part of the loop of suicidal quantitative expansion.

Farming is the

1. historical source of the crises (ecological, animal, human health, and equality crises);
2. current source of the crises (ecological, climate, animal, human health, and equality crises);
3. historical foundation of human supremacism, of human "identity," of human expansion, wealth, ownership, inheritance, dominion, tradition, and power, as the oldest of industries;
4. current foundation of human "progress," where the more industrialised and rich societies are the worst ones in terms of Animal Holocaust, with higher percentages of industrial farming, higher environmental destruction causing higher human inequalities and disease, and hidden behind greater walls of secrecy, hypocrisy, and complicity.

Animal–plant–Earth exploitation is *the deep foundation of states and colonialism.* Nonhuman animal exploitation and agriculture were the foundation of all early states, kingdoms, and empires in the Neolithic. Much later, exploited nonhumans ("livestock") were imported by the Spanish conquerors into the Americas as crucial tool of colonization and was the later foundation of the new United States after colonization (Sourdís 2008), while plantations have been perhaps the most crucial structural element of European colonialism, extractivism, and their associated slavery.

Animal–plant–Earth exploitation is *the deep foundation of capitalism, but also of modern communism.* Marxist critiques of capitalism are shortsighted if not blind towward the fact that it is accumulation altogether and sedentary living, and their related human overpopulation, occupation of the Earth, and exploitation and dominion over other life forms, that are the source of human inequality and of the climate, biodiversity, and extinction crises. The problem started ever since we became an oppressive and destructive force for other life forms and ourselves. As stated by Valladares, Cantera, and Escudero (2022, 77, my translation) "with farming we broke the global metabolism of the planet," breaking the CO_2, methane, nitrogen, phosphorous, carbon, and water cycles, breaking the balance between emission and fixation: with much more emission and much less fixation or capture. "In all this planetary transformation, agriculture and livestock have played a fundamental role

and the time has come to seriously and globally rethink the entire food system, not just to feed humanity but to maintain it at minimum levels of health, global and individual, [...] reducing meat production and favouring the development of vegetation in many livestock areas" (131). The first measure needed is a drastic, immediate reduction, or rather elimination of meat consumption (Del Val 2023b): "We also need to face without prejudice the excessive growth of the human population" and fight it with equal rights for women. "It is nonsense that the prevailing economic model supposes the destruction of the planet in which we live" (Valladares, Cantera, and Escudero 2022, 122).

5.6.7.2 The Hyperloop

The Age of Extinctions and Algorithms can be understood as a vortex dynamics, where several evolutionary accidents have converged toward a certain momentum, creating a self-referential field dynamics. Since the onset of bipedalism, through tool making, domestication of fire, and the emergence of symbolic and articulate verbal language, a tendency to abstraction and dominion set forth which took a decisive turn with farming, as novel relation to all life forms based on exploitation, accumulation, and homogenization. In this vortex and alignment dynamics, accidental tendencies converge and build upon each other in a *triple loop* of (1) sources creating problems; (2) replies intensifying the problems; and (3) the increasing alienation, fanatism, integrism, propaganda, and indoctrination of/by the supremacist subject emerging in the process, exercising *terrorism on all life forms* and with it *an ultraquick suicide as species* (fig. 51). The field creates a palliative dynamics where the source problem is never discussed, only cosmetic patches that aim to preserve the self-referential field. The human subject and its rights and property laws are a crucial element of the system which prevent a shift of paradigm. This vortex dynamics calls instead for a new politics of disalignments that dissipates the vortex, moving beyond its self-referentiality.

There is a triple condition of *fractality*, *relationality*, and *multiplicity*, of entanglements between factors within factors. For instance:

1. Urban life and economy have created an experiential desert of the real as well as fears and paranoias on which consumerism and social media addictions build up with a false promise of satisfying lacks while engineering desires and increasing alienation.
2. Sedentary life creates multifarious health problems, to which we reply with chemicals and addictions.
3. Mechanical machines create accidents and property creates insecurity, to which we reply with insurances.
4. Ecosystem disruption and animal exploitation create pandemics, to which we reply with chemicals and social control.
5. Farming created the economy of work, accumulation, and profit, which became a self-referential field so that efforts go in sustaining the economy even if it is destroying the planetary ecosystem and the possibilities of a liveable future.
6. Scientific knowledge emerging with accumulation and the attempt to predict change and the future has become itself a self-referential frame of quantification focusing on dissecting the contingent present as if it were a universal condition trying to freeze it.

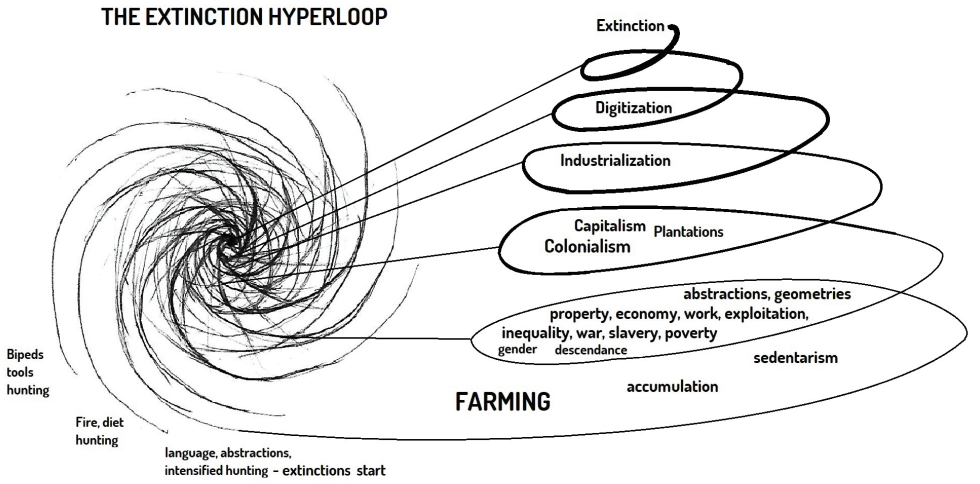


Fig. 51. The Extinction Hyperloop. Farming as historical source of the crises.

7. The sensorimotor split from others and nature gave rise to religion as *religare,* as reuniting, but through a mediating theism that creates further splits, selfreferentiality, fanatism, alienation, and thrusts to transcendence.
8. Sedentarism creates hygiene problems to which we reply with endless chemical products and biocides.
9. Urban life creates atrophy, poverty, misery, and toxicity, but we reply to them with palliative measures such as gyms and therapies, while mostly ignoring the poor, homeless, and vulnerable.
10. Screen-based and social media enhance fanatism, alienation, and fascism, enhanced by algorithms that favor hate speech, while promising us a global connectivity.

5.6.7.3 A Simple Question

The question is simple: *when did we start creating extinctions?* It seems to have been with excessive hunting in the upper Paleolithic, starting with the extinctions of megafauna in Australia around 45,000 years ago and later in other regions. This may have been one of the cues leading into animal exploitation–domestication and agriculture. Not by chance this happened along with the early development of language, culture, animism, religion, death cult, and of a slight first increase in human populations rising above one million, after near to 300,000 years around or under one million. Hence my claim that a population of one million is a reasonable thriveability threshold.

It is not possible to say what triggered what, most likely it's about complex accidental mutations converging in a particular direction, like convection in flows. What is important is to identify the factors tending to dominion: carnivory and hunting associated to tool making, linguistic abstraction, excessive self-awareness and worry about death, the onset of religious transcendence, etc. All of this may underlie the explosion of farming when the climate stability of the Holocene started. Agriculture is considered to have initiated at around eleven independent sites at different times (Harari 2015a). Behind this explosion lie 2.75 million years of tool making, hunting, increasing externalization of the body, and segmentation and alignments of its movements. The roots of this maybe go back to the unfortunate emergence of carnivory in our biped ancestors, through tool making for hunting, given that we

are anatomically herbivores. The onset of carnivory in hominids was the most likely source of our evolutionary tragedy long before the second and third unfortunate steps: the development of language and farming. Tools are not exclusive to humans, but in us they became systemic extensions whose purpose was first killing and later dominion.

In the process, embodied–relational–rhythmic–variant knowledge became externalized into homogeneous and fixed patterns of accumulation, in a shift from variation and diversity to monocultures, from movement to sedentarism, from flow to confinement, property, and blockage. We thus founded a hyperloop of closure upon closure. This closure is expressed in Martin Heidegger's concept of *Gestell,* or framing (1977), through which he denounced the incapacity to look beyond dominant technological frames. I suggest that framing is itself a core ontological gesture of dominant technics, but not all technics are about framing. Yet we cannot exit the hyperloop through the technologies that founded the closure itself.

Culture is just a way of naming the emergence of increasingly self-referential fields of alignments that cut themselves off from the surrounding ecosystems, imposing themselves on them, crafting increasingly artificial built environments. Culture is intrinsically linked to extinctions, and since the Neolithic is founded on a Planetary Holocaust of extreme and evergrowing animal abuse: the true foundation and face of human progress.

Things got bad when humans stopped being one of the 8.7 million species and became the half that dominates the rest. Farming inaugurated the hyperloop of growth: human growth, growth of producers–consumers, leading to current growth economy. But growth is intrinsically linked to embodied alienation as desensitization. Therein lies the reply.

5.6.7.4 Food of Mass Destruction: Or Eating to Extinction

In Del Val (2023a) I build upon established but largely ignored facts: (1) The human food system is the major driver of mass extinctions, animal abuse, climate change, pollution, pandemics, depletion of water, food insecurity, poverty, mass migrations, social conflict, and other multiple threats to humans themselves; (2) Within it animal-based food implies over 80% of the devastation in most aspects, more in some; (3) The immediate global shift to plant-based diets should be the first priority in a global emergency to prevent catastrophic climate change and avert an unliveable planet by 2050, besides numerous other immense benefits for animal welfare, biodiversity, human health, equality, or food security; (4) This major epochal fact is acknowledged by hundreds of international reports; (5) But it is neglected and ignored, there is a policy and awareness vacuum, perhaps because it is a taboo that no one wants to address, and the oldest human industry, foundational to all human expansion since the Neolithic and in the industrial era.

The climate emergency is the largest humanity has known, and the window for avoiding catastrophic scenarios has already closed. It was 2030 for achieving a massive reduction, but emissions have only kept growing. Urgent action like none before in history is needed but nothing is done and the major actor of the crisis is missing from public discourse: food. There is widespread agreement that "global food production is the largest pressure caused by humans on Earth" (Willett et al. 2019, 2). Within food, over 80% of most damages (99–100% for some aspects) come from Animal Exploitation Food Industries (AEFI).

Exploited nonhumans and animal-based food account for more greenhouse gas emissions than all transport, are the major driver of global deforestation, mass extinctions, and loss of ecosystems, responsible for around 75% of biodiversity loss threatening over 1.000.000 species.[125] Animal Exploitation Food Industry (AEFI) uses 80% of global agriculture, mostly in the form of pastures but also half of global crops, and one third of the Earth's surface (like Africa and Brazil together). It uses close to 70% of global fresh water and is the major driver of global water depletion and pollution and thus of human inequality, malnutrition, poverty, migration, and conflict in a scenario of desertification, where crops for feeding exploited nonhumans, for meat consumption in richer countries, are grown in poor ones where populations don't have access to them. AEFI uses around 50% of global fertilizers, is the major cause for dead ocean zones due to fertilizer and slurry pollution, consumes around 25% of the global fish production, being major driver of overfishing and destruction of marine ecosystems, and is the major user of fish farming, also a source of major environmental, animal welfare, human health, and pollution problems.

Fishing is itself by far the greatest source of ocean devastation, population annihilation, and extinctions at sea, covering over 55% of the oceans (Kroodsma et al. 2018) and destroying every year 150 times more seabed that all land deforestation together through trawling (Watling and Norse 1998). This is surely the most devastating industry humans have ever invented, and the most hidden one, while around 2 trillion fish are killed per year (Mood and Brooke 2024), not counting 40% bykill and 30% illegal fishing, in total well over 3 trillion per year and 8 billion per day: a whole humanity slaughtered every 24 hours. Aquaculture, in turn, enslaves under horrific conditions ten times more individuals than livestock and poultry industries together, near a trillion per year (Mood et al. 2023), not counting premature deaths that at times reach 50% of the total, and has devastating effects on the environment and on human health (Del Val 2023a, 2024a).

Animal explotation is the source of nearly all pandemics in history, of nearly all zoonotic diseases, which are 75% of all human diseases and responsible for 80% of antibiotic use and hence the current threat of antimicrobial resistance. It is the major source of noncommunicable diseases and premature human deaths, far above tobacco, through cardiovascular diseases, cancer, diabetes, obesity, and many other diseases, the effect of unhealthy diets with an excess of animal-based food and lack of plant-based food causing 11.5 million deaths per year, with hundreds of millions of humans under chronic medical treatment, so that while animal agriculture causes malnutrition in poor countries, it causes an obesity, diabetes, cancer, and a heart stroke epidemic in rich ones. Food poisoning also stems from the horrific life conditions of animals in farms constantly developing infections, tumors, living in their fecal waste and amongst the corpses of those who can't endure it, for which they get treated, also in aquaculture, with dozens of toxic chemicals that end up in humans' bloodstream.

And it is the absolutely major source of systemic animal abuse, accounting for approximately 99% of the animals subjected to cruelty, filthy confinement, exploitation, extermination, and radical systemic attacks against animal welfare, with 90 billion animals exploited, mutilated, and slaughtered per year on land, ten times more in aquaculture and thirty times more in fishing, altogether estimated in over 40

125 Or more. According to Isbell et al. (2023), 30% of species have been globally threatened or driven to extinction since the year 1500.

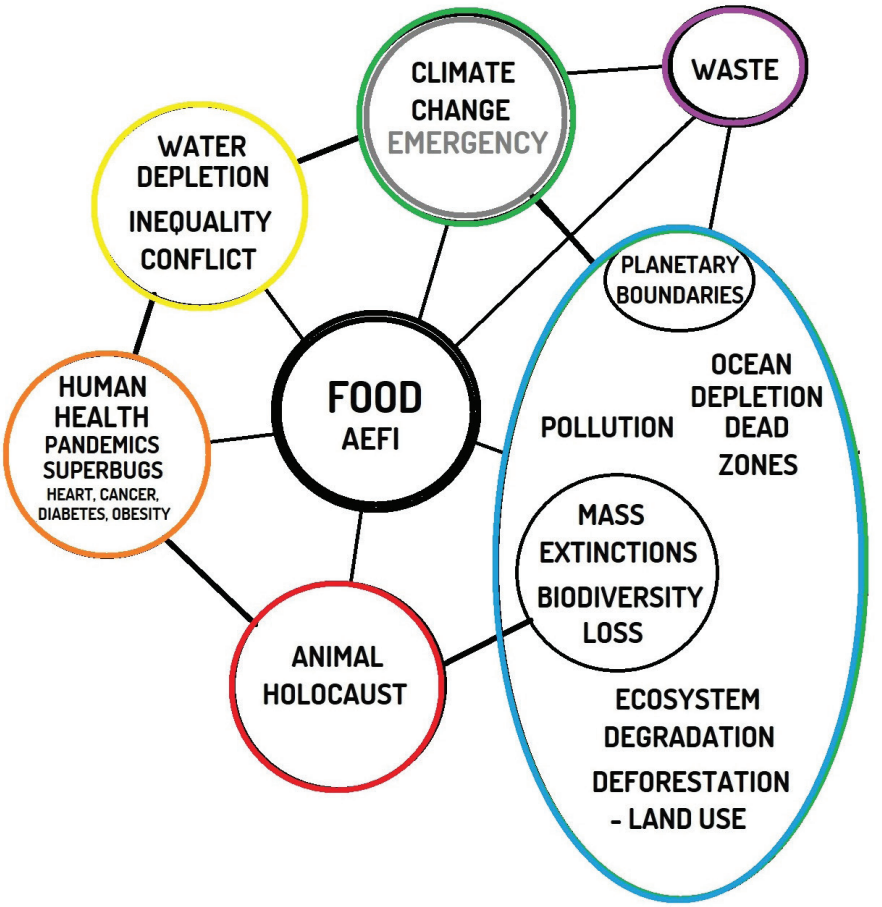


Fig. 52. Animal Exploitation Food Industries as major source of all major problems.

trillion in the past hundred years (100 trillion including fishing), especially in richer countries with a greater percentage of industrial farming, a reality that is protected by secrecy, law and governments, ensuring the complicity of populations. Millions of the people working in this industry are under exploitation and slavery, while Indigenous people get killed or expropriated to deforest the Amazon for feeding cattle.

5.6.7.5 The Age of Planetary Holocaust

We live in the age of Planetary Holocaust, where human "progress" is grounded on a hidden horror of such magnitude that it is disrupting the terrestrial ecosystem and unleashing all human ills. In worlds of Harari (2015b), industrial farming is "the biggest crime in history," and "the most pressing ethical issue of our times."

Over the past hundred years, three trillion sentient beings with emotions and unique personalities have been bred, abused, exploited, mutilated, and slaughtered in concentration camps called farms, ten times more in aquaculture. Indeed one of the criteria for naming the current epoch Anthropocene is the trillions of chicken bones emerging since World War II, when chicken became the most numerous farmed land animal by far, with around 70 billion slaughtered per year.

This could be the summary of human history:

1. For its expansion, humanity created an empire of animal suffering.

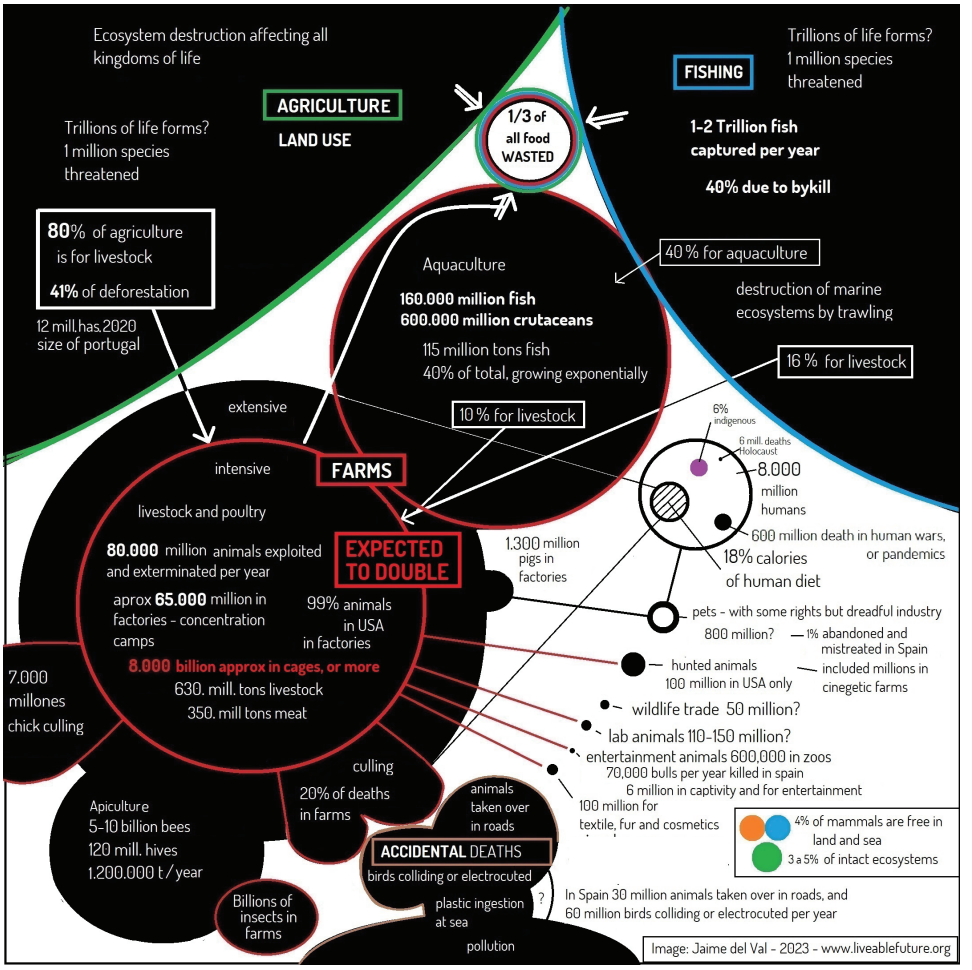


Fig. 53. The numbers of the Planetary Holocaust and its associated extinctions.

2. To feed the animals of that holocaust humans have destroyed the planetary environment, covered one third of the Earth with agriculture and toxic chemicals, deforested the tropics, created seven hundred dead ocean zones, destabilized the Earth's cycles and degraded over half of its ecosystems to such a degree that six of nine planetary boundaries defining the liveable conditions for us have already been transgressed, driven thousands of species to extinction, each of them unique and as important as humans, created and accelerated climate change, unleashed all pandemics, most human diseases, and now superbacteria, depleted and polluted water reserves, and created all human inequalities.
3. Finally, by eating the products of that holocaust humans poison themselves, with near to twelve million deaths per year due to unhealthy diet with excess of animal products and lack of vegetable products.

The same system that causes obesity in the poor populations of rich countries, causes malnutrition in poor countries as people cannot access the crops being grown for feeding the exploited nonhumans for rich countries, while their water gets depleted in the middle of accelerating desertification.

The current expectation to double meat consumption would deplete the earth from forests and water, and empty the oceans: for sure we could not live on such a planet, but human delirium continues to grow, eating to extinction: this is the planetary psychosis of the present.

5.6.7.6 The Missing Piece in the Puzzle of Extinction

By abusing animals, we have unleashed our own hell on Earth. The Animal Holocaust, the extinction cycle, and human ills and inequalities are all part of an epochal disaster, the Neolithic turn to all-encompassing exploitation, which is a reversal of the most fundamental premises of evolution: *symbiosis and free movement resulting in diversification.* Instead we invented the era of *accumulation, blockage,* and *homogenization,* with farming as historical source. Therefore, it is not an exaggeration to say that with the exploitation of animals and plants, *sapiens* invented almost all the inequalities and human miseries, and its own extinction.

The Animal Holocaust is the past and present foundation of human civilizations and above all the industrialized, rich, and democratic ones that strive so hard to hide it, and apparently it will also be their grave. The way of life that is associated with this holocaust — and of which civilizations pride themselves so much, calling it progress — is intrinsically toxic for humans, the environment, and animals, a full-blown attack against evolution.

The fact that humans and domesticated animals are now 96% in biomass of all mammals, and hence wild free mammals have gone from 100% to 4% (Bar-on et al. 2018) is itself a sign of the extreme destruction of biodiversity and ecosystems, with farming as historical and ongoing source.

The horror of factory farms is utterly indefensible in face of the current recognition of animals as sentient beings by science, philosophy, and law. The laws protecting farms are inheritances from a dark period called "progress" whose devastating consequences we experience today. The treatment of these sentient beings like pieces of a production line is entirely analogous to human slavery in times when it was approved by law, and to the Nazi Holocaust. With the major difference that the Animal Holocaust is of such unimaginable dimensions that it is the epicenter of a full-blown, planetary scale extinction process. This core fact can no longer be ignored, it was *the huge missing piece of the puzzle of extinction, right in its middle, connecting all other pieces together.*

This foundational nature of the Holocaust to democratic, rich societies, unbearable for them to recognize, and which needs to be covered by a thousand laws of secrecy, makes it that almost every "critical" intellectual of the world, even those talking about interspecies encounters and animal studies, carefully avoid the Holocaust of farming, reproducing the worst of all divides and reaffirming the foundations of human supremacism. But this foundational horror cannot remain hidden any longer. It is high time to expose its central role in the epochal debacle unleashed by the most inferior of species, the only one incapable of coexisting with others, of contributing to biodiversity and to the increasingly rich expressions of life in the biosphere.

Or, can we mutate? And, how did we end up in such a state of evolutionary degradation?

5.6.7.7 The Aberrant Discrimination

Farms should be called for what they are: concentration camps of a Planetary Holocaust of such dimensions that they lead to the extinction of the very dominant species that creates them. The life of each pig in each farm in the world is worth as much, if not more, than the life of each pet, or of each human: because the pig is as sentient as the dog and the human, and the human is the hyperdestructive species that threatens to the whole of life (including itself). Either we understand that, or we march toward extinction.

The idea of the superiority of the human as rational sentient being is collapsing and can no longer be sustained: all life forms are sentient and are gradually getting this recognition.[126] Indeed I argue that the dominant human is the most insensible of life forms.

Being an animalist, whether an activist or a mere animal lover, and not being a vegan is like being an LGBT activist by day and going out at night to kill gays: a condition of psychosis that apparently affects all of humanity. The only thing that causes me more astonishment and perplexity than the Holocaust is that all of humanity — most critical intellectuals, many animal activists included — looks away, ignoring it, with active complicity.

The pig is the face that I put on this holocaust. Its closeness to the dog in intelligence and sensitivity exposes the aberrant racist supremacist arbitrariness, and from there it connects with the rest of the species. It manifests the absolute mistake of putting the human as a referent for the other forms of life. They count according to the interests of the human (depending on whether they are pets or slaves, or food, or guinea pigs, or leisure, spectacle, and sports), or according to their resemblance to humans (chimpanzees, dolphins, or dogs). But all ethics that is based on the human and its interests is a dead end that is heading to extinction. Life in the biosphere has nothing to do with the interests of the human who seeks to affirm himself at the expense of the entire planetary environment.

But precisely for this reason we cannot segregate animals according to the whim of human supremacy. *Pets with rights, slaughtered cattle: an aberrant, racist discrimination.* I imagine the day when there are no carnivores on the loose, when they are persecuted murderers. Stop financing the holocaust of my kinship whenever you eat meat, fish, eggs, or cheese!

Holding onto the term *human,* with etymological variations in *humus* and *humility,* as Haraway (2016) suggests is, I fear, insufficient and may end up being an apology for the current way of living. Why distinguish oneself, in the end, if not for domination purposes? Metahumans instead are all symbiotic-mutant life forms.

The totality of human oppression is minuscule in size next to the oppression of nonhumans. Numbers do count because we have created an anomaly of pure quantitative becoming of the world, hence the devastating impact. We have created causalities, determinations, and we must use the human causal logic against itself to demonstrate its suicidal short circuit.

126 See the *Montreal Declaration on Animal Exploitation* signed in 2022 by over 500 academics specialized in moral philosophy, https://greea.ca/en/montreal-declaration-on-animal-exploitation/.

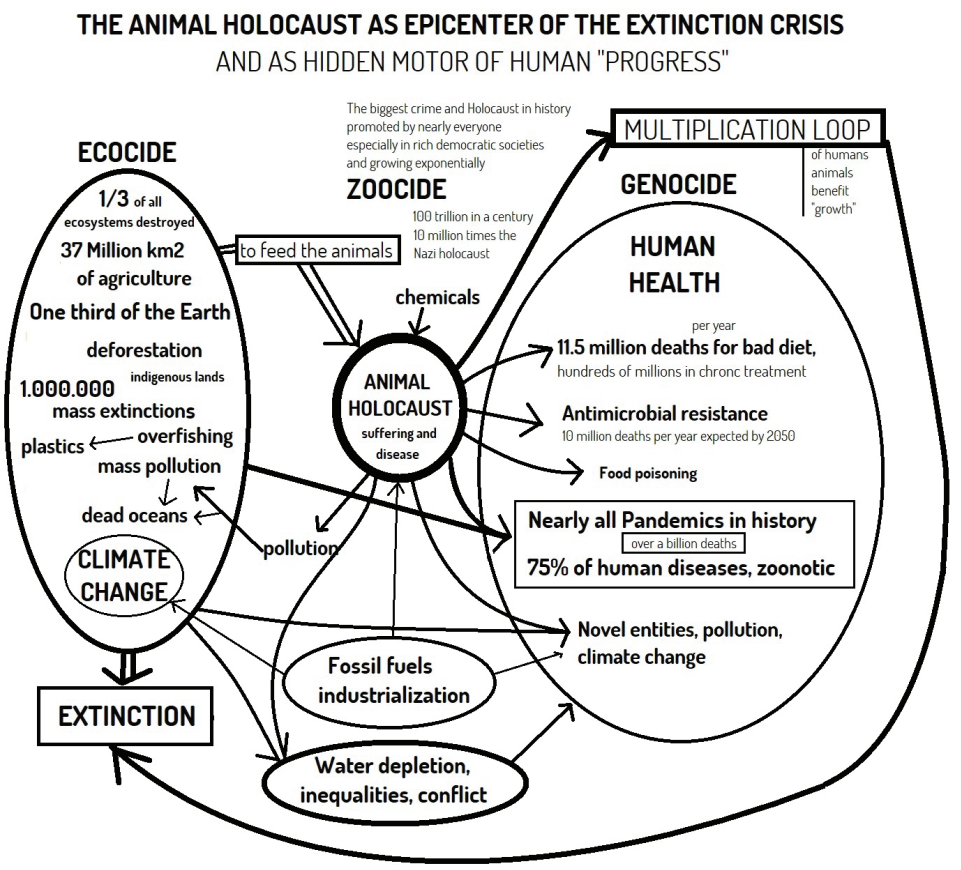


Fig. 54. The Animal Holocaust as epicenter of the global crisis, underlying both the environmental crises and most human health problems and inequalities, while being itself the biggest crime in history and the most pressing ethical issue of our times.

5.6.7.8 Metahuman News Headings in a Normal Day of 2023

Today, again, 200 million of us, sentient Earthlings, have been exterminated in concentration camps on land after a lifelong of extreme abuse by the fanatic terrorism of human supremacist dominion, while over 8 billion of us have been killed at sea. Over the past 24 hours another 150 species have been driven to extinction (CBD 2007). 27,000 hectares of our forest ecosystems have been destroyed, with 30 million of our tree fellows, billions of us from other life forms, and millions of our unique ecosystems. Ocean dead zones have grown while two billion of our fellow fish and marine life forms have been exterminated through fishing and another two billion have died in the concentrations camps of aquaculture. 200 millions of us have been mutilated without anesthesia, 100 million of us have been raped for artificial insemination while another 100 million had their offspring sequestrated by dominant humans. Millions of us and our ecosystems have been deadly polluted with the millions of novel toxic substances created by human supremacist terrorists.

On the other hand, dominant humans have continued suffering the consequences of their own dominion system: 30,000 have died over the past 24 hours due to unhealthy diets and ways of living though they never mention this on their own TV news. They have unleashed several viruses for potential pandemics and increased antimicrocial resistance due to their own overuse of antibiotics. They have continued emitting gases that will further rise global temperatures, exterminating billions of us and making their own civilization impossible during this century. They have continued killing and expropriat-

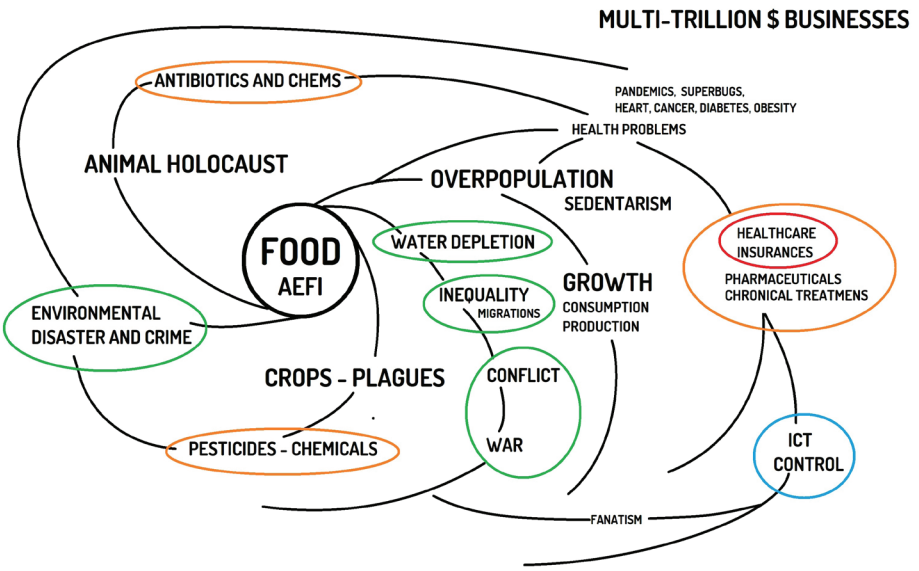


Fig. 55. The businesses of the human farm.

> *ing the less dominant of their species, who are more friendly to us, so-called Indigenous, while persecuting human activists who defend us. They have continued enslaving and massacring each other through wars and conflicts over their dominion over us and our commons: water, land, air, and the Earth's substances, which they call resources. They have also continued multiplying at 370,000 new fanatics per day. Their fanaticism has continued growing, by an estimated 0,27% per day, with their foot on the accelerator to their own extinction as well as ours.*[127]

5.6.7.9 Cognitive Dissociation and the Persistence of a Human Supremacist Paradigm

The reality of animals in farms is the taboo of industrialized societies, who at the same time as they develop ethical standards and start to raise awareness about animal welfare and the environment, opening up the extremely narrow window of human law, create a farming industry much more massive and harmful for animals than anything ever seen on Earth before: the age of Planetary Holocaust is the age where throughout one century trillions of mammals and hundred of trillions fish and marine animals have been bred, exploited, and killed. But the same industrial society that grounds its multiplication crucially on this intensive food system is the one that needs to hide it as it goes against its emerging principles of freedom, animal welfare, and environmental awareness: a cognitive veil is thus created through the extreme secrecy of the industry and with it a taboo is established whereby the conditions of animals in farms are not even to be mentioned. It is assumed that they have to be well treated in our society: arguably the biggest lie and criminal hypocrisy in the history of humanity.

The taboo of even discussing the reality of farms, and the veil of secrecy and misinformation coming from the industry, protected by law, that cognitively dissociates people from farm animals in modern industrial societies (Fiber-Ostrov and Lovell 2016, 233) effectively hides the most inconceivably massive empire of suffering and horror ever to have existed: arguably the most secret industry and the one most

127 A precursor of such animal-based critical perspectives is Kästner (1949).

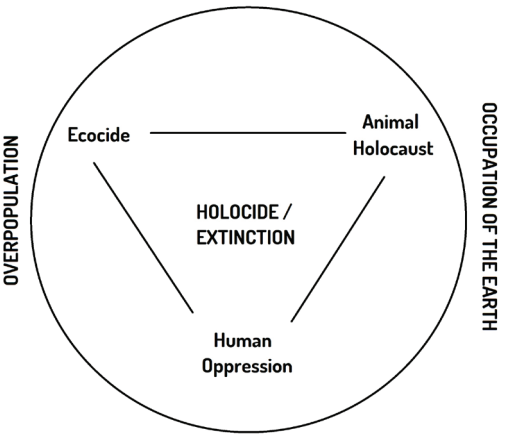


Fig. 56. Holocide diagram.

protected by law. But this may be unconstitutional and against all human rights. The holocaust of farming is *humanity's hidden monster* and taboo, its historic and ongoing but hidden foundation, *the deep, real, hidden pillar of human expansion and dominion,* which is about to explode and devour humanity itself, and millions of species with it.

5.6.7.10 The Human Farm — The Human Cage

Along the way, humanity has created its own farm for itself: with an endless set of disciplinary grids, oppressive homogenization, ubiquitous borders, normative fences, alienating abstractions, self-referential obsessions, and conceptual prisons that impoverish life, disguised as "superior evolution," the promise of which however does not arrive, delayed as it is in the fiction of a future that we ourselves delete. The process is grounded in a concealment of the killing machine of which farming is the worst but not only example: a *denialism* and an implicit censorship to everything that may reveal the foundations and the fallacies underpinning human supremacism: the ideology of the Planetary Holocaust and its extinction cycle.

Breeding and feeding humans, with more people in worse conditions, many under chronical medical treatment, with always more consumers and producers, seems to be the fundamental business of humanity as itself a farm, currently supporting multiple multi-trillion-dollar businesses.

5.6.7.11 Supremacism = Denialism

We WEIRDs are the problem and those in denial, holding onto a pedestal that is breaking apart. The more progress, the more holocaust and the more it gets concealed. Human supremacy is based on a negation of the Planetary Holocaust, ecocide, and the extinction threat, as well as on the altered perception of *Homo oeconomicus* that sees *life as stock.*

The frames of analysis are generally wrong as on one hand they are based on the denialism of the Planetary Holocaust and on the other they have a biased vision which emerged from the peak of supremacist views before the suicidal tendency became clear. Thus the core fallacies of inevitability and desirability keep being unchallenged, leading to a denialism of the extinction cycle. *This double denialism is core to human supremacism.* What is the deep source of this denialism? Supremacist fanatism. It is a vicious circle based on narrow perceptions and sensitivities.

5.6.7.12 The Human Right to Create a Mass Extinction and the Dead End of "Critical" Intellectuals and Human Politics

One of the most common reactions I get from "critical intellectuals" when exposing my proposal on the urgency to change diet or reduce consumption or suspend reproduction, is that it is authoritarian. My reply is simple: those same critical intellectuals assume the morality and law that forbids them to kill other humans, instead they refuse any red line that prevents them to contribute to a suicidal self-extinction, a mass extinction, a Planetary Holocaust, a genocide, a zoocide, and an ecocide. This exposes the dead end of the kind of rights and freedoms based on a rational, privileged, human individual, whose rights and freedom are actually historically grounded on radical exploitation of life, and whose suicidal nature we can now see.

5.6.8 Holocide, PEC, and the Ex-Age: Exploitism, Exterminism, Expansionism, Extropy, Extinction

Ecocide (mass environmental destruction), *zoocide* (mass exploitation and killing of animals), and *genocide* (mass attacks on human health, equality, food–water security, and peace, suffered by vulnerable populations, with tens of millions of deaths per year) all together form a Planetary Extinction Crisis (PEC) or *holocide*, a "complete killing," based on all-encompassing exploitation of all life where livestock means *life as stock*.

The main characteristic of this age is not extermination per se but exploitation, involving both extractivism and extermination, but crucially also breeding and multiplication. It goes along a tendency to quit the body and the planet, a nihilistic flight forward to transcendence driven by an originary lack due to sensorimotor impoverishment. This is what I call the *extropic tendency*, whose *telos* is extinction.

5.6.8.1 Holocide, Necrocene, and Even Worse: The Age of All-Encompassing Exploitation, Suffering, and Abuse Resulting in Extinction — Exploitcene[128]

The dominant strands of the *sapiens* have created, in the blink of an eye, a toxic, delirious, oppressive, and unprecedented geological stratum, of motley rigid and indigestible structures for the planet, which have paralyzed the flows and the continuous mixing and variation of molecular compositions that underlies evolution in the biosphere, a stratum that includes amongst others:

1. concrete, gravel, and other materials converted into rigid structures with extremely expensive energy processes and that already exceeds the total terrestrial biomass (of plants for the most part);
2. ubiquitous plastics;
3. unprecedented toxic chemicals (hundreds of thousands of new man-made molecular compounds, including radioactive ones) that already interpenetrate everything: bodies and flows of matter, water, air, and land;
4. planetary networks of silicon and other metals burying the planet in electronic waste;
5. billions of motors, wheels, watches, and other hard objects, garbage that does not decompose;

128 See Nail (2021) for a complementary proposal to mine, with numerous resonances and some differences, also in terms of the necessary response.

6. masks, fabrics, and pigments;
7. bones of trillions of exterminated animals.

In around 5,000 years — a evolutionary blink of an eye — we have gone from being one of the 8.7 million species that contribute to biodiversity — as was the case for most of our existence — to being the one half that enslaves and exterminates the other half, which includes the 8.7 million species: one half dominating and destroying the whole, including itself. This global *ecocide* and *pangenocide* constitutes an unprecedented holocide, happening quicker than previous mass extinctions.

It is outrageous that meanwhile the hot debates in transhumanist circles are about the privileges of a (mainly white) elite to "enhance" itself and eliminate its own "suffering," thereby concealing the underlying Planetary Holocaust and the radical suffering of hundreds of billions of beings. Challenge number one in a posthumanist agenda should be to *stop* this Planetary Holocaust that brings us to extinction, instead of feeding a eurowhite domination fantasy of eugenics and "enhancement" for the elite.

5.6.8.2 Extinction Rates

Extinction is *the* topic of our times, and the most ignored one. Extinction here includes primarily the so-called Holocene extinction or Sixth Mass Extinction, initiated by anthropogenic action possibly before the Holocene, through hunting in the Paleolithic, and radically increasing through agriculture, deforestation, and abusive hunting in the Neolithic, exponentially rising with modern colonialism and industrialization and the current wave of overpopulation, urbanization, and increase of agriculture and farming. It is well acknowledged that the extinction of other species undermines the biodiversity that is core to the overall sustainment of life in the biosphere, and is therefore considered a major threat to human existence as well (Watts 2019). Furthermore, all other aspects of the global multicrises unleashed by dominant human activity are linked to this mass extinction of species, especially climate change and its diverse factors, and of course the ever rising human population and its growth economy associated to increasing exploitation of the Earth. Current extinction rates are estimated to be a hundred times quicker than those of earlier mass extinctions (McCallum 2015), though we have not yet reached the 75 percent of species going extinct which is considered the threshold for great mass extinction events. But this *could happen during this century or the start of the next.* Estimations vary enormously, but according to UN reports at least a million species face extinction in the coming decades (IPBES 2019), and according to other sources more than a million species have already become extinct (Isbell et al. 2022).

5.6.8.3 What Is Your Contribution to the Holocide?

During my life I have contributed tons of plastic garbage to the oceans, direct tons of CO_2 driving more than 700,000 km by car, as well as in hundreds of plane trips and other means of transport, buying products that come in transoceanic ships from China every day. I have contributed to the coltan wars and digital waste in Africa, also in space, using satellite services. I have contributed to the enslavement of many people who work exploited in factories of clothes and all kinds of products in Asia. I have contributed to the abuse, mistreatment, and murder of thousands of animals (indirectly billions) through food and consumption. I have contributed to deforestation by buying books and printing on paper, and to climate change using digital

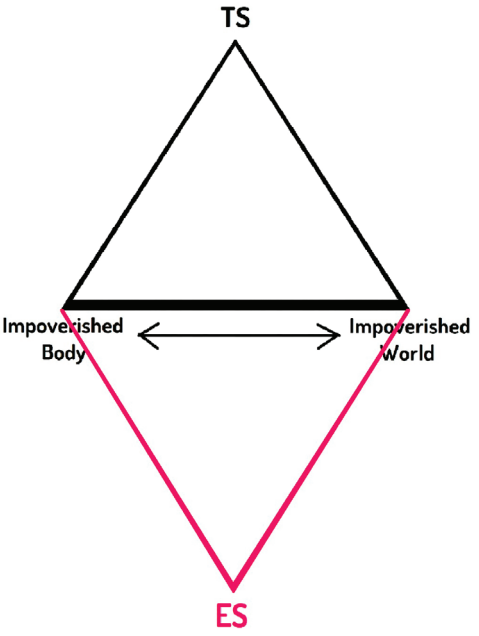


Fig. 57. Technological singularity vs. extinction singularity pyramid.

technologies whose data centers consume astronomical amounts of energy. I have also contributed to the increase in artificially built matter and urban environments with tons of concrete and other materials for refurbishing a rural house.... The list could be endless and perhaps not very different from the contributions of the majority of people of the industrialized world, to the Planetary Holocaust (upper-middle-class people in rich countries). So, it is time to start the disalignment![129]

5.6.9 Trash-Body and Extinction Singularity

Impoverished body = impoverished planet. The disaster of heterosexist normativity causing overpopulation is one with the speciesist supremacist Planetary Holocaust and the ecological disaster; all are part of the colonialist disaster that erases biodiversity, body diversity, and culture diversity. This is the double trap of "utility" and "comfort" and the double fallacy that all of this is superior (desirable), as well as inevitable (without alternative, necessary). We become dependent on systems that make us increasingly immobile and homogeneous (internally, while homogenously displacing in ever accelerating ways) due to this double trap: but the utility is merely self-referential, hiding an extinction, while comfort hides atrophy. The more the internal variation of the body movement is reduced, the more we move around the planet in an accelerated and homogeneous way, following mechanical trajectories.

This reduction of bodies' variations creates a world of accelerated trajectories which in turn is an ableist society of alignments that impose themselves. This deadly trap of comfort to which we get used to by losing capacities, considering it superior, ends up locking us up in a vital and evolutionary atrophy. Hence, we are confronted with a double paradox of self-destruction and atrophy: recognizing it can maybe help exiting the closed self-referential human supremacy loop.

129 This will be elaborated in Book 6.

This exponential acceleration cannot last long. It is a spatiotemporal anomaly that will either reach a crisis point in an extinction cycle or needs to be urgently overcome. If the current tendency toward a crisis point continues, it implies not a *technological singularity* but an *extinction singularity* over the next decades (Spratt and Dunlop 2019). This will happen as all the aforementioned problems enter an *exponential vortex* (fig. 59) of nonlinear, turbulent, and reciprocal reinforcement,[130] as we have already seen with the COVID-19 pandemic, the rising climate change effects, and war, which in turn accelerate digitization, social control, immobility, etc., where hate algorithms[131] exponentially increase polarization, where human immunity strategies unleash superbacteria and superviruses,[132] together with increasing lack of food, water, and resources, refugees, war, cyberwar, hybrid war, threat of nuclear war, social polarization, alienation, crisis, poverty, precarity, increasing inequalities, disappearance of the middle class and of the (illusion of the) welfare state, and a delirious generalized economy of *programmed obsolescence* that is a planetary crime, exposing the precarity of democratic states.[133] Not only is there an outrageous amount of individual consumption (in the richer countries) on behalf of an outrageously large population, the driving economies have also purely speculative tendencies that don't even aim to respond or feed constructed consumption demands, e.g., with urbanization linked to land speculation and its radical global impacts. The reply so far has been an increase in digital and physical control that only reinforces the problem, in a *self-referential spiral* of increasing conflict, alienation, atrophy, immobility, and planetary impact.[134]

130 See Whitmee et al. (2015, 1983), on the nonlinear interaction between planetary health destabilization factors. Examples of generalized nonlinear intra-actions are visible and numerous: we are seeing how the rise of global temperatures involves multiplication of extreme phenomena in the climate itself; we are seeing how the pandemic unleashes an unprecedented acceleration of digitization and control of bodies with the socioeconomic crises ensuing from the pandemic further strengthening social polarizations that in turn are favored by digital social media whose algorithms seem to generally prioritize hate discourses for the sake of business. Meanwhile our immunity strategies unleash new kinds of superviruses and superbacteria; commercial flights diminish due to the pandemic but some companies are making thousands of empty, phantom flights in order to keep their airports slots (18,000 expected by Lufthansa only in the winter of 2022), and so forth.

131 In reference to the 2021 scandal where France Haugen filtered internal reports from Facebook recognizing how they favor hate discourses because it makes people stay longer connected, among other outrageous effects that the company allows for the sake of profit.

132 In reference to superbacteria becoming resistant to antibiotics and to the omicron variant of COVID-19, which has accumulated an astonishing number of mutations in a very short time, probably partly due to global mobility.

133 Another question is where governmentality is. The "democratic" nation states are internally subdued to multiple threats: from neoliberal capital to digital Silicon Valley domination and *algorithmic governmentality* (Rouvroy 2013), the *ultraconservative blocks* (notoriously around the old Soviet Union with their anti-LGBT policies, and the extreme right of Trump, EU countries, etc, their alliances with other totalitarian states in the Americas and the Middle East), and especially the Chinese project of world colonization with its unprecedented urbanization process, becoming a country of consumers, expanding in Africa and the rest of the world, with unlimited pollution, its social credit system of AI, and its concentration camps for dissidents, with its new policies to promote three children per family, with the pandemic and its ensuing destabilization of world economies where China is getting hold of raw materials, building upon 5,000 years of continued imperial history which proposes a deeply different cultural alternative, and a different supremacy narrative compared to the Western one, including a different conception of the self.

134 One can think, for instance, about the promises of quantum computation, the metaverse, blockchain, cryptocurrencies, or AI, or the threats of superbacteria that become resistant to antibiotics (and which will perhaps be our major evolutionary offspring!) as examples of tautological spirals that respond to problems created by the system itself by increasing the problems and systemic

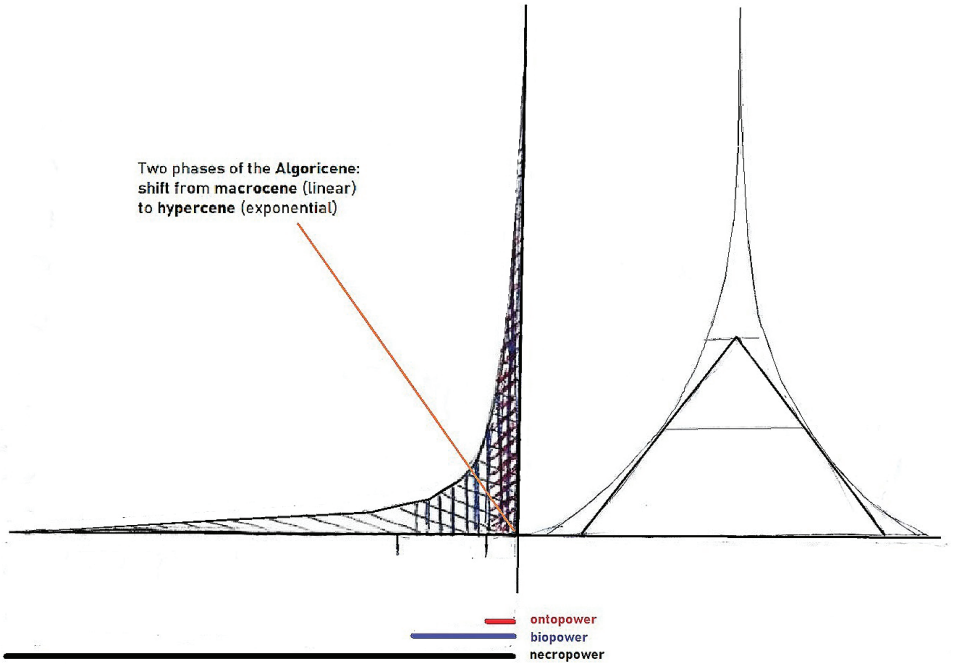


Fig. 58. Necro-bio-ontopower diagram and pyramid.

Radical, unprecedented exponentiality is expected in the entanglement of, on one hand, quantum computation, AI and Big Data, the quantum internet, VR and the metaverse,[135] robotics, the internet of things, the internet of bodies, neural implants and brain interfaces, bionics, and the attempts toward space colonization; on the other, pandemics, the climate crisis, migrations, precarity and hunger, privatization of water and air, massive pollution, social polarization, or hybrid war. We can hardly fathom what the world might look like in five years.

The basis of this extinction pyramid is a planetary killing machine, paradoxically based on the fear of death of the dominant agent and its will to self-perpetuate at the expense of its environment. This allows for the reframing of the modes of domination that have been evolving over the past millennia: from the *necropower* of sovereign societies that administer life and death, through the *biopower* of disciplinary societies that seeks to optimize alignment with the industrial apparatus, to the current *ontopower* of the digital area, which seeks to pre-empt future variations before they emerge, aligned with planetary-scale computation systems. These are not only

dependencies while never going to the source. For instance, the recent revolutionary publication of the capacities of Deep Mind AI systems owned by Google to simulate the almost infinite possible configurations of proteins (Tunyasuvunakool et al. 2021), though having unforeseeable applications, is part of this tendency of self-referential spiraling where problems are responded to with new, more sophisticated technologies that create new problems, based on humanist dreams of endless growth and domination. I propose instead to mobilize the equally infinite combinatory of our joints and movements, which will unleash new protein functions in turn, rather than trying to figure out existing combinations that correspond to existing bodily configurations. We will soon see, or are already seeing, *the limits of the loop*: as people get so impoverished in their lives and desires that algorithms won't work anymore. Everything points to the idea that the system is currently reaching and exceeding every bearable limit.... Will it still reinvent itself to go even further?

135 By changing its name to Meta, Facebook is co-opting the *meta-* prefix, turning it into a fascist nightmare dystopia, as is happening more generally with the metaverse, which instead could have become an alternative term for multiverse as intrinsically indeterminate multiplicity.

phases but strata that accumulate and affect one another. The basis keeps being and ever-expanding killing machine, a Planetary Holocaust. Fig. 81 shows this dynamics over approximately the past 10,000 years. It corresponds to the Algoricene whose division between Macrocene (linear growth) and Hypercene (exponential growth) occurs in the middle of the biopower era.

5.6.10 "Humanity": A Sect of Eight Billion Fanatics?

So-called "humanity" as a whole suffers from a syndrome of fanatism, arguably a true psychosis of altered perception, radical dissociation from themselves and the world, and supremacy delirium, and a paranoia of fear and control, both of which underlie its general discontent, all of them grounded on a primordial atrophy of embodied experience, for which, while being the most destructive and atrophied species that has ever existed, they consider themselves to be the apex of evolution, possessed by a fanatical and supremacist delusion of suicidal domination that leads them to multiply without restraint and occupy the Earth, destroying it, until they lead themselves to extinction in an evolutionary blink of an eye. Hence it may be accurate to define "humanity" as a sect of 8 billion fanatics, psychotics, supremacists, suicides, and genocides, united by a supremacist belief that makes those who share it live in an altered perception, a kind of Matrix that covers up the desert of the real of their impoverished lives and the devastation they cause. The entirety of "humanity" lives dissociated from its reality, precisely because a fiction of reality has been created, based on an impoverished sensibility. The human is the blindest of beasts, blinded by both its supremacy and its sensory atrophy.

All members of this species — many animalists, environmentalists, queers, and vegans included — are imbued with a delusion of superiority and the psychotic belief that they have the right to own land or to urbanize space, to use, abuse, and kill nonhumans, to move around with their toxic vehicles and destructive roads, to dominate the world and to multiply to infinity, as it appears in the Bible with the imperative to "grow, multiply, and fill the Earth," which they/we have indeed done, paradoxically bringing ourselves to the brink of extinction by destroying the Earth's ecosystem in the process.

This supremacist belief is shared in diverse ways, across the entire spectrum from impoverished famers in India to CEOs of global corporations and leaders of nation states. Of course, responsibilities vary, as they did in Nazi Germany: first the leaders, then the agents, and last the population. This belief is also shared by all those critical intellectuals who mention it at times but who don't want to question themselves deeply as regards their own way of living. It is fuelled by all sorts of fanatics, ranging from catholic transhumanists to the whole lot of nationalists–fascists–homophobes–xenophobes–neo-nazis. But on a basic level, it is shared by everyone considering herself "human."

> *An animal which could speak said: "Humanity is a prejudice of which we animals at least are free."*
>
> — Friedrich Nietzsche (1997, 162)

5.6.10.1 Sapiens? From Divine Animals to Trash-Human Psychopaths: The Chimera of the Human and the Cosmic Idiot

We are not a step between the animal and the overhuman as in Nietzsche (2006), nor is our history one from animals to gods as in Harari's (2015a; 2017) historical narrative. It is one from divine animals to trash-human psychopaths. Is it not a cosmic idiot the one who fanatically brings on their own extinction?

What has been imposed is not a species but a dynamics and a mode of existence, of homogenization of movement, a tendency to reduction. That is also what has to be undone, reversed.

The "human" is a supremacist fallacy[136] based on untenable assumptions. What unites us and makes us similar to nonhumans is much more than what distinguishes us:

— we are more non-verbal than verbal;
— the tendency to categorize, calculate, and create patterns is not a universal "human" feature, but a neuronormative anomaly, a pathological, reductive neurotypical condition that imposes itself and leads us to extinction;
— the body moves without rational control;
— thinking is kinetic and decentralized.

Two great normative alignments have appeared as foundational to human supremacism: (1) The heteronormative alignment that confuses sex with reproduction and foregrounds multiplication against variation; (2) The neuronormative alignment, that defines the human-as-distinct-and-superior as the rational animal, while imposing homogeneous ecosystems of movement that are intrinsically ableist. It has been underestimated how this homogenizing neuronormativity and movement normativity — as homogenization — underlies racism and speciesism.

Human is therefore not even a subspecies of the *sapiens*: it is the one who shares the belief in supremacism and its practices. Nothing more. Human and humanity are two radical ontological chimeras with no other purpose than a domination that now reveals itself to be suicidal.

…

Arbitrariness of our humanist red lines: we assume (nowadays in democratic nations) that we should not kill other humans, but when someone questions the way of living that is killing the entire terrestrial ecosystem with its 8.7 million species, all sorts of excuses are put to keep holding onto holocidal, suicidal privileges. In the depths of us there is a supremacist biblical dogma: grow, multiply, and fill the earth… a dogma that leads us to extinction.

So, *what has to go extinct is a concept, a belief, and a way of life.*

…

What do humanizing, dehumanizing, inhuman mean…? Doesn't "dehumanizing" mean when a privileged human finds herself outside of the legal–moral systems that the human itself has created to protect itself from its own devastation? The human person is the body with the privileges and protections of the legal–moral systems

136 From this standpoint, the term *Anthropocene* does turn out to be a correct one.

that the human has created to protect itself from itself. Can we extend this to all nonhumans and ecosystems, and with it, endless classification? Or is the needed shift more radical, from a moral rules-based system to a bodily cosensing ethics?

WHAT IS THE HUMAN?

— A chimera, a domination belief and its associated way of living, its devastating expansion, its monocultures, defined by its separation from, destructive exploitation of and dominion over the other animals and all other life forms.
— A self-obsessed, fearful, atrophied creature dominated by reductive semiosis and calculus creating a mass extinction; a creature provisionally defined by atrophy, an atrophy underlying the will to separate, fix, and dominate; a reductive intelligence tending to formalization, semiosis, and calculus, verbality and narrative; technical expansion, homogenization, and acceleration.
— An ideological being, whose narrow perception is externally oriented by geometries, signs, and systems of ideas and beliefs, ideologies, and religions.
— But after all, indeterminate, plural, in variation (of form, genetics, behavior, intelligences, perceptions), not just visual and rational and verbal. There have been many humanities, and others are to come!

What distinguishes us? The tendency to destructive abstraction and dominion. Dominion over animals and life forms. How did it appear? Through sensorimotor impoverishment and separation from the world.

5.6.11 Civilization against the Flows: Cosmic Crimes

"Civilization" altogether has risen up against the terrestrial flows, trying to either stop, predict, and control or to direct, align, and appropriate them, proliferating in myriads of technologies of extinction: "genius inventions" such as motors or electricity, urbanization, and engineering.

All reductive and categorizing science, just like all digital and algorithmic culture, and all of mechanism are part of the system of extinction. Macrofarms and algorithms are two sides of the same coin of extinction: weapons of reduction and planetary destruction. Digital culture is an integral part of the extinction economy and its self-referential loop, its black hole. An algorithm is a weapon of world reduction (i.e., mass destruction).

...

Our ills and those of the planet are two sides of the same coin, the coin of extinction: a double impoverishment of the body and the planet, of their indeterminate and qualitative variation, promoting instead quantitative multiplication, homogenization and acceleration, alignment of flows, evolutionary paralysis.

In this process arise at the same time:

— the fearful and excessively self-conscious human subject, who separates itself from the world, defines himself as "human" distinguished by a rational logos and stands on a supremacist pedestal;
— the rationalizing mode of intelligence tending to reduce the world into semiotic abstractions, calculation, and causality (including its brain structures, but also the learning repertoires associated with it);

— and the architectures and technical systems of domination and large-scale social organization, the tendency to dominate by creating a controllable world, a tendency that paradoxically leads us to extinction precisely because it is based on denying the indeterminacy and intrinsic variation of life and evolution.

...

How to stop being dominated by a reductive, categorizing, formalizing, verbal, numerical, and causal reason? We must not assume that all intelligence ends in this: semiosis and calculation are rare, strange, and anomalous, one type among infinite others, the most destructive we know, the poorest and based on sensory poverty. Let's stop thinking that a higher intelligence has to go through or aim at rationalization.

The dominant human has paralyzed the world in the image of its atrophy... because it has lost its sense of movement (literally, it has dissociated himself from its proprioception).

...

> *Mankind's true moral test, its fundamental test (which lies deeply from view), consists of its attitude toward those who are at its mercy: animals. And in this respect mankind has suffered a fundamental debacle, a debacle so fundamental that all others stem from it.*
> — Milan Kundera (1984, 329)

Emergence by accidental aggregation: whoever says that civilization arose to solve problems assumes supremacist dogmas, eludes the facts, and turns everything upside down. Instead, massive problems have been artificially created, in a loop of closure: problems upon problems, with always less capacity to look beyond, because they are grounded on a reduction of sensibility itself as primordial problem. What has emerged by accident is a huge self-referential loop, vortex, or black hole of motley self-referential matrixes of reduction.

In this process of reduction happened what Milan Kundera calls in the above epigraph "our fundamental moral debacle," in face of those at our mercy, the animals, "a debacle so fundamental that all others stem from it." The deep truth in this statement has to do with the fundamental split created, a sensorimotor split from the world, a loop of reduction of sensibility.

We care for that which we feel and stop caring for that which is split from us, at distance or invisible (hence the way people care for the pets but don't care for farm animals).

Numeric–verbal abstractions have taken over the human and the planet. We are part of a movement field of abstractions–reductions, a reductive intelligence that creates a mass extinction and suicide, an animal *dominated by the plague of rational reductive thinking–moving–feeling*... a geometric intelligence... a becoming-calculable of the Earth, a geopolitics of reduction that we have praised as superior, but which has paralyzed evolution.

...

Is farming the origin of the current situation? Did wheat, or the new relationship to the other animals based on exploitation, domesticate us, albeit based on a previous

evolution? What has emerged is a mode, a field of movements tending toward reduction. The problem is the mode of relation, perception, and movement, the reduction of variation, or homogenization that unleashes a tendency toward pure quantity, expansion, and acceleration.

The question is: When did a trend to reduce variation appear and when did it impose itself? Were we heading toward extinction from the origin of bipedalism? Or of utensils? Or from the taming of fire? Or more recently since agriculture? And did it have to end in a mass extinction? Where was the reduction threshold crossed into a closed loop or vortex? Does the excessively self-conscious organism pose a limit to the evolutionary process? Can it be counteracted through movement?

We need to dedomesticate ourselves first of all, and the world at large.

...

Rules, morals, laws, and categories arose as a palliative remedy for the disaster, to protect the dominant human himself, to affirm its domination, and as an effect of atrophied bodies incapable of moving and relating without abstract rules.

What the supremacist calls rights is a massacre for the rest, *cosmic crimes* for which there is no human vocabulary... because law is founded on human supremacy.

The more we abstract ourselves into signs, the less we feel the body, the world, and others. The more we abstract ourselves into accumulation and programming, the less we live in the present.

Social politics are in the best of cases, and it is harsh to say, about how to assimilate oneself better to the economy of extinction: housing, family, work, industry, consumption, transportation, communication, entertainment, banking, food, social norms of the *sapiens* monoculture...

Human rights stand against those of the Earth. Many — if not all — of our human and individual freedoms are built against planetary rights.

Does the exterminator have the right to continue exterminating by claiming the right to continue living the way it lives?

We are slaves of prefabricated and oppressive desires (consumption, family...) that we call our right and freedom.

But our own impoverishment prevents us from seeing it, on the contrary, we have transvaluated everything to raise our misery on a supremacist pedestal!

...

The reduction of the world to quantity is a cosmic crime. Property and money, measurements and data are cosmic crimes. Accumulation is a cosmic crime. Private sex is a cosmic crime. Nuclear families are a cosmic crime. Verbocentrism and semiocentrism are a cosmic crime. Grids are cosmic crimes. Linear perspective is a cosmic crime. Farming, agriculture, and urbanization are cosmic crimes.

Against any type of urbanization: because artificial environments emerging over the past 10,000 years disrupt ecosystems, create intensive artificial agglomerations and rigid architectures where nothings flows, hence, plagues, health, and hygiene problems. In natural environments, everything flows (matter, microbes, multicellular organisms, waste) and gets recycled, they are far cleaner, smarter, and healthier. That's why nonhumans in the wild don't need chemical hygiene products and pharmaceuticals! And because nonhumans listen to the body and have far greater sensorimotor capacities that we have atrophied. It is wrong to say nonhumans only passively adapt to ecosystems; they are part of an intra-active emergence. One-sided

design co-opts and paralyzes creative evolution. Rigid architectures and cities in their totality are a cosmic stupidity, but in a reversal of the values of life we have despised that from which we should learn. In the process, we have become so atrophied that we think we can't live without this delirium that we call comfort and look for all sorts of palliative fantasies because we are incapable of facing the reality, which is much simpler: voluntary suspension of our multiplication, and back to the tropical forests, learning to live once more linked to ecosystems and Earth flows.

This is not "our" planet, it is the planet of 8.7 million species, of tardigrades and bacteria, of plants. We have no right to own it, we are, in fact, the most dispensable of species, and the most destructive.

Exosomatizations in the Algoricene are intrinsically reductive and imposing themselves. Any type of "tool" that does this, since 3 million years ago, is an evolutionary problem. We should foreground whatever bodies can do — eating, dwelling, playing, with nothing other than bodies, learning from nonhumans; no cutlery, no building tools, not even cooking tools, nothing that needs complicated fabrication and settlements, nothing that doesn't flow with the Earth's flows; radical superiority of the evanescent, radical inferiority of the fixed, of that which wants to be eternal. Of course, I am now talking to you through the signs and systems created by millennia of will to fixity, but I do it in order to go beyond, would these systems not exist we would be dancing our life around in a different manner! Let's stop using tautologies to justify a mass extinction and a toxic civilization!

5.6.11.1 The Animal Afflicted by Rationality and Verbality

What if the problem is the predominance of language altogether, and with it of verbal–numeric–semiotic abtractions and their abstract fields of logical relations? Tool making inagurated a systemic externalization of the moving body, which Stiegler (2018) calls exosomatization, via articulate hand movements in certain bipeds. Language inagurated the systematic cutting of the nonverbal continuum in articulate vocalizations and gestures, which, coupled with tools, became writing, typography, and code, and which Stiegler (1998; 2018) calls grammatization. As we see it, exosomatization and grammatization have been coupled from the start: at stake is not mere externalization, but reductive segmentation whose roots are an increasingly atrophied proprioceptive body.

As proposed by Antonino Pennisi and Alessandra Falzone (2010), language turned us into an ecologically anomalous species enclosed in its abstractions, increasingly split from other life forms, imposing itself, ensuing in an extinction: the latter is the "price" we pay, they say, for having developed this anomalous prevalence of verbality over the broader movement spectrum.

In other animals, language is not dominating over the nonverbal and sensorimotor continuum. The excessive abstraction of language in the *sapiens* has come along an atrophy of the sensorimotor and nonverbal continuum, and this imbalance has allowed a rupture where the abstractions take over and impose themselves, the result being an quick extinction process. From this perspective, the dominant human is the least fit and effective of all species.

The challenge is huge: *how to stop being an excessively self-aware fearful creature dominated by a will to dominate, determine, and fix the world, and dominated by rationalizing and reductive verbal–semiotic, numeric, and causal abstractions?* Movement can undo both: we need both "vival" and survival *technēs*, to relearn to live without systemic dependencies and for a radical techno-epigenetic mutation of the species.

Rational intelligence is perhaps the most reductive kind, an alien cosmic anomaly creating a mass extinction in an evolutionary eyeblink, a kind that favors determinations and sees indeterminacy as the enemy, a tendency to reduction–abstraction in:

1. symbols, forms, categories;
2. numbers, segments, quantities;
3. causal relations, teleology, determination.

Rationality's *telos* is a mass and self-extinction, *because teleology works against indeterminate variation,*

Everything that the atrophied creature cannot comprehend with its narrow sensibility and reductive intelligence has been called chaos.

Stopping to be human implies not having rationalization as driving force and not assuming human supremacism.

The notion of person (as more-than-human, metahuman, nonhuman personhood of life forms or ecosystems) cannot be defined by speech or rationality (logical thought). This is a radical aberration of segregating nonverbal beings, whose intelligence is, if anything, superior. Is it by chance that *verbalism* or *verbocentrism* has arisen at the same time as extinction? Its preponderance implies an *archē*-colonialism and *archē*-ableism.

Double movement: from the verbo-centrism to a greater balance of the verbal with the nonverbal spectrum and inventing new nonverbal and nonsemiotic movement practices.

Even if the challenge seems impossible (given how little time we have and how long mutations take), I think we have the power for a quick techno-epigenetic mutation, if we seek recourse both to the knowledges created (in science and the arts) and to our symbiogenetic heritage, our Body Intelligence, propelling unprecedented variations of our movements across the grids of monocultures.

5.6.11.2 The Human Monoculture

The Algoricene is distinguished by a reduction in variation on Earth, a great alignment and homogenization, a becoming line, segment, and code that is imposed on the fluctuating movements of the biosphere. The acceleration of movements is an effect of that *great reduction.* It is a second-order symptom, and this has often not been understood.

One of the primordial tropes of this great reduction is that of *monoculture*. We have created monocultures of everything: crops, exploited nonhumans, technology, and of the *sapiens* itself, with a genocide of human cultures, of technology, ideas, and oppressive social norms that are erected against all diversity, following a suicidal principle of homogenization: so-called *normality* is its effect. We have come to believe that without "normality," normativity, and rules, there is no possible society. Vandana Shiva (2008) also calls it "monocultures of the mind."

Monoculture designates the mode of relationship based on the impoverishment of evolutionary variation, a great alignment and homogenization that paralyzes evolution and creates a mass extinction cycle. We should learn from animal societies that self-organize through cosensing, without rules or norms.

I repudiate human self-referentiality (in the arts, philosophy, sciences, life industries…) and its politics of the closed loop. I repudiate the culture of humans for humans in awe of themselves, their motley grids, and their planetary space of radical

exclusion of all forms of life. I repudiate everything that humans do only for humans in their self-referential and exterminating loop and their spaces of radical exclusion.

5.6.11.3 The Criminal Role of States, the Academy, and "Civic Behavior"

The astonishing fact is that all states in the world have committed five decades of criminal inaction in relation to climate change so that now the window of opportunity is over and catastrophic climate change is already irreversible. But is this really so surprising? States are criminal extinction machines incapable of undoing their foundations on the Animal Holocaust, Earth depletion, and human inequality and disease.

My words for "intellectuals" are no better. The role of intellectuals is particularly aberrant since, too often disguised behind false façades of criticality, they reaffirm human supremacist dogmas again and again, preventing the possibility of a real critique and a real change. The academy, like the state, is entirely part of human supremacism, of the Planetary Holocaust, and of the extinction machine. The same goes for "politicians," always eager for votes and for "possibilism": but does the current possibilism have more than two decades of future?

Or for the "civic" and "humane" behavior of self-contempt human subjects, always ready to affirm human supremacist dogmas and to contribute to extinction with their right to toxic industries, such as tourism and, above all, food.

5.6.11.3.1 The Ten Commandments of Human Supremacism

1. Thou shalt never acknowledge your evolutionary failure.
2. Thou shalt never step down from your pedestal.
3. Thou shalt not kill other humans but have the right to create a mass extinction, and a Planetary Holocaust, even if it implies a self-extinction.
4. Thou shalt never acknowledge that exploiting animals and life forms is a crime.
5. Thou shalt never give up your appropriation of the Earth.
6. Thou shalt never stop multiplying and filling the Earth and never question the regimes of multiplication and expansion.
7. Thou shalt never accept critique of dominant civilization and will find any excuse whatsoever to avoid it.
8. Thou shalt defend dominant civilization by any means, even if it implies a species suicide.
9. When needed, thou shalt pretend that you are making a revolution through patches that don't imply any change, appealing to mere dogmas and beliefs, but deeply rooted and ubiquitous ones, and in this way prevent any real change from happening.
10. Thou shalt keep forever with your foot on the accelerator, even if on the highway to extinction, and ignore your own imminent extinction.

5.6.11.4 Some Typical Supremacist Arguments

Human supremacism usually reproduces a double argument, a double fallacy of the inevitability (without an alternative) and the superiority (desirability) of "civilizatory progress" as the pinnacle of cosmic evolution: pure self-referential tautology that asserts itself in its own motley dogmas. Self-complacency and self-referentiality of the human on its supremacist pedestal, always amazed at himself and his motley alignments and dubious "achievements" (any other animal performs more amazing

feats without the need for "technologies" or applause, any other animal has an art of life, of moving with the world, that is perhaps infinitely superior).

1. Double arch-fallacy of inevitability (without alternatives) and superiority (desirability, as the peak of evolution), a pure tautology that asserts itself in its own motley dogmas. There is nothing more.
2. Denialist arguments or doubts about the facts. But it is interesting that the very positivist science that the human has created to dominate has now gone full circle and — if we want to listen to what it says — raises the absurdity and suicidal unfeasibility of the project of domination and a return to worldviews very similar to those of the ancients. But from the psychotic condition, all the innumerable reports are neither put together nor their implications are faced, all the experts remain blank, and the answer is limited to cosmetic patches that are not even applied, because supremacism is still ruling unquestioned. It seems that everything is going toward "every man for himself," but it is worth trying an alternative, an ontological therapy for all humanity, knowing that we are facing is a sect of eight billion fanatics. Though something could change if critical intellectuals would begin to step down of the supremacist pedestal.
3. Arguments about possible scenarios, about the fact that in the past it was thought that the apocalypse was coming, that we do not know what is going to happen. But is what we already have not enough? By contrast, the metahuman alternative that we will discuss below applies to all scenarios.
4. Gut reactions and excuses to avoid discussing the taboos (often from people close to you). Vague allusions to "it's not possible," or "it's utopian," or "that's not going to happen," or that "it could seem totalitarian." Tautological mantras that prevent any critical and serious collective voice from prospering amongst global critical intellectuals.
5. Gross simplifications of the arguments proposed against supremacism: "you want to go back to the caves"; "you are misanthropic pessimists who have lost faith and truth"; "you are anthropocentric optimists"; "we cannot propose suspending reproduction, it would be totalitarian Malthusianism!"; "we cannot impose veganism"; or that what we propose is simple "naturalism," when what it is about is reinventing completely and overcoming the false supremacist concepts about evolution, nature, life, and intelligence! Instrumentalization and boycott, ridiculous but dangerous, by more clearly opposed sectors such as the nationalist and homophobic extreme right: we are neoliberals who promote extinction, agents of global corporations.... But global corporations need ever growing population as a core aspect of the growth economy.
6. The argument that there are species similar in terms of destruction or territoriality (untenable comparison), or that there have been other extinctions (none of them launched by a species).
7. The argument that civilization arrived to solve problems, and that thanks to it, population has flourished (contradicted by anthropological evidence).
8. Dogmatic assumption that civilization must be preserved, and that humans exist as a "species."
9. It is assumed that the extreme is the criticism proposed and not what is happening, the current idiocracy and the desert of the real are ignored.
10. Typical argument in "critical" intellectual circles: this mode of thought and communication depends on this system of alignments (and both logos and politics are only possible from within their grids). So what? This particular and

reductive way of thinking! We would not be talking here if it is not to dismantle it, we would be thinking and creating in other ways. Reducing politics to the human systems of extinction and their reductive grids is the culmination of human supremacism returning through the front door in the most allegedly "critical" intellectuals. Or that if the arguments we defend had prevailed "you wouldn't be here." To which we respond the same as the previous point.

5.6.11.5 Some Typical Arguments against Veganism: The Future Will Be Vegan or It Will Not Be

The contempt for veganism (as some sort of bourgeois "free" choice) is a primary sign of human supremacism that gets expressed in a number of recurrent arguments or beliefs:

1. That there is a bio-food and vegan capitalism, or that it is a bourgeois fashion — which is equivalent to saying that because there is a pink capitalism we have to go out and kill gays in the street.
2. That nonhumans suffer less — an argument dismantled by current science, in fact, they may suffer more because of lacking certain neuronal processes and molecules to process pain, such as endorphins.
3. That nonhumans are less sentient (or less intelligent, and thus inferior) — an argument dismantled by current moral philosophy.
4. That farm animals will not survive in the wild, as if that would justify their slavery and extermination, or that it is very problematic to even propose to liberate them because we need to consider that if they are released they would be sacrificed anyway or in part (but released from a slavery leading anyway to extermination) — what we need to do is to discuss the complexity of the proposals, not ignore it, *there are no easy solutions to the gigantic problem created.*
5. That other cultures eat meat with a more sustainable relationship to animals… but that cannot justify the fact that the eight billion humans today eat mostly from industrial farms that are fully-fledged concentration camps and the most polluting industry.
6. That intensive agriculture is destructive — but most of it is for feeding exploited nonhumans. There would be less agriculture on a vegan planet!
7. That plants also feel — but it is not proposed here that we have to stop at veganism. While the population is reduced and intensive agriculture is eliminated, we will have to transition to cultures of dispersed gathering and fructivorism.
8. That we were gatherer–hunters — but there cannot be eight billion hunters, and hunting is abusive today, an emblem of supremacy. We have to assume the situation created. If I advocate radical veganism here, it is not for any purism, but because it is urgent to put a stop to the rampant human supremacy and the delusional situation created in these millennia, the systemic domination, slavery, and extermination that create a Planetary Holocaust and mass extinction. It is true that before being farmers we were gatherer–hunters. But defending hunting with eight billion sedentary people at a time when hunting is the source of abuses of all kinds, an emblem of supremacy, is not acceptable. We must take responsibility of the extreme situation created in the last ten millennia and act accordingly.
9. That having small farms where animals are treated well "as if they were family" is sustainable — but it is still slavery and extermination, and it is an unfeasible

model for eight billion humans. If we do not make a systemic approach questioning overpopulation and lifestyle none of these proposals are credible. They are just excuses to continue eating meat with a little less bad conscience.
10. That what you have to do is kill with compassion and "mindfulness," tasting the result — yes, perhaps there were compassionate and "mindful" Nazis.
11. That we need animal food for health purposes — but what about planetary health and the extinction we create through this dubious diet? What about the fact that most of our health problems stem from the toxic way of living we have created, of which farms are the most monstrous and polluting side?
12. That we are what we are because of when we changed the diet to meat eating and cooking — but then, if the carnivorous diet contributed to making us become the plague, all the more reason we should change it! An improvement would certainly be to transition to vegan foragers only, rather than the gatherer–hunters of the past. Perhaps the pinnacle of evolution is plants, fungi, and bacteria that metabolize solar energy and radiation, while almost all animals, which eat plants or animals (except some that feed on dead matter), are already inferior?
13. That death is everywhere, and domination is a natural law — but we already know that evolution is symbiosis and cooperation and that with this system we are creating a mass extinction. The fallacy of comparing ourselves to other species when it is clear that no other species has ever created such systems of domination and extermination.
14. The supremacist argument of the degree of suffering, sentience, self-awareness, and similarity to humans, of the degree of similarity with us as in Aristotle's *scala naturae* — but we are symbiogenetic hybrids of bacteria, our thought is a neuronal swarm heir of bacterial swarms. We better dismantle the mistaken concept of what we are. This argument has collapsed, doubly: because the animal is recognized as sentient by the laws and science and by the affective ties that create extreme segregation between the pet and the farm animal, both being equally sentient and manifesting the arbitrariness of the supremacist segregation between pets and cattle, between dogs and pigs.
15. Because we are superior, and we can — pure domination dogma and faith: no argument holds today without mere (ir)rational supremacy, but it is time to recognize that it is hides a suicide.

5.6.11.6 The Argument of Health

Here are my words on health, one of the most abused topics to affirm human supremacy:

1. We need to distinguish how many of our diseases and illnesses are the result of the toxic way of living that we have created, as well as which are illness and which are diversity that needs to be embraced.
2. We assume standards of Western medicine that make us dependent on highly unsustainable industries of pharmaceuticals and machines, which are also implicitly elitist and imply the assumption that individual human life (of the rich) must be extended at all costs, denying suffering and death, an extension that implies a eugenics for others and a privilege of a few based on an unprecedented planetary killing machine. This humanistic concern and fear of health

and death puts all the emphasis on the wrong problem, ignoring that this way of dominating destroys planetary health and leads us to extinction.

3. We have to accept death and disease as part of our molecular openness: the individual is a chimera of molecular processes of infinite variation that are the substrate of evolution.
   a. There are always going to be new viral–bacterial combinations that exceed the combinations to which we are resistant.
   b. Old age and death are part of the mutations of organisms, transforming into new ones.
4. We need to learn from nonhumans and Indigenous peoples: what other alternative cures exist and alternative interpretations of disease, death, and diversity.
5. Now that we are the only species with decrepitude, we have the opportunity to create a new culture of proprioceptive care and bodily cosensing. (Palliative care measures may still be used while we disalign, but as the toxic lifestyle is changed, it will not be perceived as necessary.)
6. Palliative care? At most like we do with pets, and for all forms of life. *Distinguish* which are elitist forms of palliative care based on unsustainable systems (chemicals and machines) that do not go to the origin of the problem and are part of the will to dominate and extend life and fear of death that lead us to extinction.

Health can only be ecosystemic and planetary. Individual health of human elites implies a suicidal mass extinction.

5.6.11.7 The Argument of Culture

Human supremacy and its civilization usually gets justified by appealing to the supposed special and superior nature of the creations of the "human intellect," without ever questioning that these are mostly self-referential, often disastrous inventions, mostly also palliative of our own experiential poverty (as in much of the arts) or part of the domination system that drives us to extinction (as in much of scientific discovery and technological invention), ignoring also in the process that our networks of semiotic abstractions don't solve problems but create them, that they are not superior to other modes of thought and relation, on the contrary, they mostly build upon a primordial impoverishment.

In defense of human civilization, there is a ubiquitous argument about the uniqueness of human creations, so-called "culture," its artistic creations, its science, its technical inventions. But as we already said, these tend to be palliative remedies for the oppressive system created, or escapism, or self-referential regurgitation of human paranoia. Science and inventions are particularly at the service of domination. And how many "genius" inventions (such as the engine) have not been suicidal instruments of domination and destruction? Of course, the cosmos also continues to express its creativity through many of these human inventions, breaking through impoverishing grids and with redoubled force, in all the motley "human" diversity, but that does not justify the system of extinction. We are too obsessed with only human diversity and have lost the sense of biodiversity. As admirable as some human creations are, *I prefer the murmuration of starlings in the winter evening.*

As a metahuman named Nietzsche said 140 years ago:

> Covered in signs that are in turn blurs of other signs, [...] all ages speak motley from your gestures. Whoever took away from you veils and decorations and colors

> and gestures: he would still have enough to scare away the birds with the rest. [...] I would rather be a day-laborer in the underworld, [...] I really can't stand you naked nor dressed, you people of the present. All the sinister things of the future are, in truth, more comfortable than yout "reality". [...] You are stamps of everything that was once believed, [...] you are a dislocation of all thoughts. [...] I laugh about you, people of the present, and especially when you are so amazed about yourselves! (2006, 93–94, translation modified)

We wonder at the labyrinths of our "mind" and "soul." But the all-too-human mystery that we so much wonder about is its own dead end, atrophy, loop, trap, and suicide. The real tragedy of the human is not to be able to exit this loop of unhappiness, self-destruction, and world destruction, when in fact it would be so easy: by regaining the lost sense of movement!

5.6.12 Evidence of the Extinction Crisis

Arguments affirming the idea that we are enacting a Planetary Holocaust and that it leads toward an extinction singularity include:

- it has already started and is *irreversible*: visible in extinction rates, biodiversity loss, climate change, etc.;
- the alarms around it have been voiced since at least the 1960s;
- far from decelerating, all the systemic problems creating the extinction keep accelerating: population growth, urbanization, consumption, etc.;
- the Earth has undergone multiple extinction cycles. Over the past 500 million years five *major* mass extinctions have been recorded, mainly due to the interaction of the planet with the larger cosmic medium. This would be however the first one unleashed by a species from the planet;
- the privileged subjects causing the destruction don't see the problems they unleash, there is a multiple concealment because:
  - the more visible damage tends to be always somewhere else, so far, but not for long;
  - there are endless misleading metaphors hiding it, such as "the cloud";
  - perceptions are biased: think of how many people nowadays see with perplexity the complicity of many Germans with the Nazi Holocaust;
  - perceptions are narrow: the ego tunnel vision of short-term profit and domination overshadows everything else — dominant perception is an altered perception!

The current mode of production and consumption is not thinkable "for all humanity," as it is intrinsically based on inequality and unsustainability. It is not an evolutionary teleology but a cosmic aberration. Paradoxically the poor side of human populations seems to aspire to this very mode of living that leads us all to extinction! We urgently need alternatives.

Masters are increasingly immobile and atrophied, and slaves increasingly aligned, moving for the masters. The trash-human is thus both the master and the slave, and the impoverished planet.

Fig. 59. Epochal Vortex diagram. Each branch of the vortex could relate to one a particular systemic problem, such as climate change, pandemics, refugees, technological control, etc. These enter non-linear, exponential interrelations as we approach the Event Horizon of a Singularity.

By 2050 it is expected that we reach:
— 10,000 million human population;
— exponential increase in urbanization, agriculture, and mega-farms;
— superbacteria will be completely resistant to antibiotics;
— more and worse pandemics;
— exponential increase in effects of climate change and extinctions, catastrophes, floods, and desertification;
— the planet polluted and buried in garbage;
— 1 billion refugees, growing inequality, famine;
— hybrid and nuclear wars, resource wars;
— China hopes to dominate the world in 2049 — the anniversary of the People's Republic) — global implementation of Chinese model of social credit;
— Silicon Valley corporations hope to reach the Technological Singularity of general Artificial Intelligence in 2045, dystopian control, AI, automation, metaverse, quantum computing;
— colonies on Mars... promoted by the same technological supercorporations that engineer the digital "revolution," EARTH-KILLERS always fueling Extinction.

> *We are on a highway to climate hell with our foot still on the accelerator.* [...] *It is the defining issue of our age. It is the central challenge of our century. It is unacceptable, outrageous, and self-defeating to put it on the back burner.* [...] *It is either a Climate Solidarity Pact — or a Collective Suicide Pact.* [...] *Humanity has a choice: cooperate or perish.*
> — António Guterres (2022)

5.6.12.1 Highway to Climate Hell: Imminence of the Ecosocial Collapse

There is no time to keep looking away. We have all the information: of the failure and the alternatives. If someone still has doubts about the imminence of collapse: it is evident and recognized that everything that causes it, far from improving, is radically worsening. Everything continues to grow because the fundamental supremacism keeps being unquestioned. This is the evidence of the exponentiality of the extinction cycle:

— Everything keeps growing, everything that we should stop gets worse: population, consumer lifestyle, intensively agglomerated in cities, alienation, separation, and attempts to immunize all of humanity.
— Increased social alienation and increasing gap between the superrich and the superpoor.
— We reply to problems with more problems. For example, the warmer it gets, the more air conditioning; the more pandemics, the more social control... and more ecological impact... while pandemics arise from the destruction of ecosystems.

The imminence of an ecosocial collapse is evident in the following:

— All reports on climate, biodiversity, and related factors; the exponentiality and nonlinear dynamics exposed inside each domain and across domains, e.g., nonlinear dynamics within climate change factors; and between these and the expected billion climate refugees by 2050, the expected end of fossil fuels and other "resources," in turn related to wars, pandemics, increased digital control, alienation, and fanaticism.[137]
— Triple exponentiality across the multiplicity of processes going on: of causes (e.g., our way of living, overpopulation, and occupation of the Earth); of effects (e.g., climate change, pandemics, etc.); and of alienation and fanatism (e.g., the more alienation, the more wars, and the farther we get from undoing human supremacism, the more narrow-minded and incapable to exit the loop).
— How billionaires are worried about the feasibility of the escapes they are working on right now. As Rushkoff (2022) acknowledges, billionaires are very concerned about the logistics of their possible escapes from the debacle they cause, since they see that this escape is much more complex and uncertain than it seems. In reality, there is no possible escape: neither the private

137 See Gowdy (2020) on collapse theories, their diverse temporal ranges from decades to centuries, and their diverse factors, though Gowdy criticizes their fragmentation, lack of long term vision (effects last millennia), and Western, rich (WEIRD) bias. We can add the prevailing human supremacist bias: for trillions of nonhumans, like for many indigenous and poor humans, collapse came long ago.

> armies they are preparing nor a huge supply they accumulate guarantee survival on a destroyed Earth, for generations, improbably locked inside bunkers or isolated on territories, living unlivable lives that could not be sustained for long either. The only solution is to change the way of living, now.

How long shall we wait to call things by their name, lower ourselves from the supremacist pedestal, put these problems in common, and look beyond toward the myriads of alternative ways of living?

5.6.12.2 Do You Think This Vision Is Too Radical, Normative, Moralist, Negative, Monolithic, or Catastrophist?

Radical (in a negative sense) is what is going on Earth right now. Not recognizing it and pretending that these proposals are radical is itself a sign of human supremacism. We need a positively radical reply to this.

On the contrary, what is proposed here is not a monolithic, flat, and negative critique of all "civilization," rather, it is a change in perception, a shift in the predominant, still all-too-human visions, a performative reversal and broadening of the landscape as a starting point for a less biased discussion, and considering that there is not much time to spend with denialisms of the many facts exposed, facts overwhelmingly provided by the same science produced for the sake of domination, whose implications, however, human supremacist fanatism wants to overlook.

…

I you think I am a moralist, or if my claims sound too normative, maybe you are a negationist nihilist supremacist who assumes the red lines of human supremacy like not killing other humans, but who instead doesn't want to have the entire extinction and holocaust questioned.

The only thing that human self-reflexivity is useful for is for turning it against itself.

Let's not try to imagine all possible enemies (and avoid racist ideas that the enemy is always elsewhere in some other culture). Let's start with ourselves and our enemy within… are we ready to even start talking about this amongst ourselves, whoever this "us" may be?

The only dignifying thing that the human can do is to turn its reflexive power, its logic and positivistic science against its own dominion.

While Trumpists, Bolsonarists, or Putinists fuel their radical human fanatism, of utter conspiranoia, paranoia, negationism, and violence; while China reaches out to dominate the world with its iron curtain of surveillance; while Silicon Valley trillionaires seek to make of the world their backyard, datifying every atom and escaping into space; while hardline Islamic countries wash their blood-stained faces with global sports events… while "humanity" keeps fanatically and suicidally with its foot on the accelerator toward extinction, some of us want to think that there are alternatives to extinction and to the poverty of human paranoia. It is simply the world's will to variation speaking through us.

5.6.12.3 Cosmic Fallacies: Challenging Human Supremacism, or How to Stop Being the Plague

This process of impoverishment, leading to the Sixth Mass Extinction, is part of an economy of short-term profit based on deeply wrong humanist conceptions, cosmological ignorance, and deliriums of world domination, supremacy, and infinite resources. This tunnel vision is linked to a narrowing of perception, and with it of intelligence. A reductive intelligence has emerged along with a reduced sensorimotor spectrum, in tautological but nihilistic self-affirmation which paradoxically implies self-destruction, for fixing oneself at the expense of one's environments is a species suicide.

This perhaps explains the unbelievable fact that the issues here exposed are not core to a global agenda: the world is literally upside down, reversed, transvaluated toward a nihilistic denial of life itself: a denial of movement, becoming, and the body. This process feeds upon a deep fallacy of inevitability and desirability of the current evolution, against which the only certainty is that: (1) the future is unpredictable (we also cannot know how the crisis point will be reached); (2) this tendency can't last long; (3) *sapiens* has lived without such systemic dependencies most of the time; and (4) there are endless alternatives to be invented. Affirming its inevitability implies sheer complicity with a destruction of cosmic implications, and a lack of imagination and deeper creativity for inventing other possibilities. Denying these facts due to a religious faith in domination, in the supremacy and teleological upward evolution of a "human" species, or due to comfort, is not an option we can afford.

Some leaders of the elite driving this destruction process are surely aware of the dangers and are trying to get ready for it with projects for floating cities and space conquest, though it is dubious, and undesirable, that such elites survive the catastrophe. A mass extinction would then be another opportunity for life, mainly through bacteria, as it always happened before. But other possibilities are even more disquieting: if the greenhouse effect goes too wild the Earth could become like Venus, an unimaginable, uninhabitable hell with no possibilities for future life at all. As Sagan et al. (1984) showed, the lesson we can learn from other worlds is how to take better care of ours.

Not by chance have Nvidia and Tesla entered in 2021 the Olympus of companies above the trillion dollars of market capitalization, together with the other five tech megacorporations. When are we to stand up against this whole new army of superidiots, hyperfascists, and ultranihilistic Earth-killers, the whole lot of Musk–Bezos–Zucker-suckers who disguise the ultimate nightmare of life annihilation as liberation and superior evolution, with promises of flight to space or to the metaverse, as yet another transcendent leap of world denial, which is just a façade for the most gigantic and Earth-destroying business of ultra-short-term profit? When are we to stand up against the new caste of emperors, of nightmarish world destroyers? Or will people believe in their promises, like others did in feudal times, when the mastery of the lords–killers was considered to be unquestionable?

Should some future or alien species remember us they might as well say, "Ah, the human, the *unhanced* species that killed itself and the planet in an evolutionary eyeblink by becoming atrophied and enslaving all life forms including itself; the species of reductive intelligence that created a Planetary Holocaust, that inferior species that split itself interrupting biodiversification and symbiosis. They had wonderful creativity too, apparently this creativity compensated partly for their destructive excesses… but this didn't help them avoid the catastrophe. They killed their only

possible cosmic medium, thinking they could escape to other planets, what an unbelievable cosmological ignorance!" And they will look upon us with the same horrified perplexity by which we think now of social complicity in Germany with the Nazi Holocaust.

How is it possible that we have global complicity with a Planetary Holocaust? How to deal with the global systemic abuses and exploitation of other humans, nonhuman animals, and the planet, when dominant models of consumption are covering Africa with digital waste, the oceans with plastic and space with garbage; when production is delocalized through invisible slavery, crossing oceans in giant cargo ships, polluting, when data centers consume astronomic amounts of energy, while bodies are increasingly immobile and atrophied, clicking on screens of the internet panchoreographic, as climate change rises and with it pandemic outbreaks? What singularity of planetary disruption is "the global" pointing to? And how could one decenter or dissipate that vortex in ways that don't reproduce the grand mistakes of humanism and colonialism?

Is there some intermediary option of partial collapse, like what happened with previous civilizations, as in the Middle Ages? Or even, are there real opportunities for exposing the real poverty of this process in attempting to move toward a planetary disalignment, a countervortex?

This raises the deep question of whether a species dominated by a reductive logical intelligence and self-awareness is not intrinsically doomed to a superquick self-extinction and mass extinction. Can we not mutate toward a less reductive intelligence? This requires a new sensibility and movement.

The originary problem has always been related to the land: agricultural societies initiated the quest for appropriation of the land, leading to cities, geometry, abstract planning, future planning, writing, and spatialization of mediums and memory, empires and colonization, work and slavery, bodily alignments, property, and the tradition of body despisers. Inversely, *a new relation to the Earth can only happen through a renewed relation to the body.*

Dominant civilization has grown in a tiny lapse of relative calm within the prodigious fluctuations of the planet, the solar system, and the galaxy, but we are not making a good use of this time. Facing the sheer fact that we are *the plague* implies creating awareness that if we go on like this we go toward self-extinction and mass extinction. We cannot go on like this. We have to mutate, to change our way of living. How?

5.6.12.4 The Dead End: Extropy or Del Val Law

Extropy[138] is the tendency to expand beyond the Earth with self-destructive technological dominion, or the equivalence of degree of control–alignment–energy–waste and degree of self- and mass extinction. I propose a *First Extropy* or *Del Val Law* (dominion–destruction equivalence law):

1. All systemic dominion is doomed to extinction: the self-extinction paradox of dominant civilizations.
2. Since the human started imposing itself, dominating, it dug its own grave, its own extinction.

138 A term used by some transhumanists, associated to the thrust to impose control against entropy for the sake of progress. See the Extropy Institute website, https://www.extropy.org/.

3. As long as we were just one of the 8.7 million species, we contributed to evolution, but since the moment when we became the half that dominates the other half we paralyzed it.

Likewise, I propose a *Second Extropy* or *Del Val Law* (escape–extinction equivalence law):

1. There is no escape for dominators: a dominant destructive society will become extinct before it ever reaches other stars. The energy and time needed for doing it is far beyond any sustainability threshold.
2. The more we tend to exit the planet, the more Earth-killing we get, onto self-extinction.
3. The more control and reduction one imposes, the more destructive entropy is created.
4. The more energy we need to produce to control the world and to get farther away from the planet's surface, ultimately abandoning it, the more we destroy the planet itself. The energy needed to quit the planet is the same that creates extinction. The more you want to take off from the planet, the more you contribute to extinction.
5. Escape energy = degree of nihilistic destruction. The ultimate nihilism of transcendence and teleological absurdity, always projecting ourselves to unreachable goals.

Finally, I propose a *Third Extropy* or *Del Val Law* (atrophy–expansion–destruction–addiction–fanatism–closure equivalence law):

1. The more atrophied, desensitized, and impoverished in our embodied experience, the more destructive and expansive we become, unleashing planetary-scale disruption and extinction.
2. The more addicted and dependent we are on our technical extensions and on prefabricated desires and future promises of markets and societies, the more alienated and fanatic we become, the more trapped in an closed loop or black hole.
3. The more obsessed we are with our own fears and paranoias, the more we are dominated by the will to control.

These extropy laws are the obverse or reverse of an *Enferance Law of Evolution,* according to which life requires the sustaining of indeterminate symbiotic variation, as exposed in Book 3 on enferance, Book 4 on metabiosis, and Book 6 on the multiversal right to nonreduction. The Enferance Law implies a principle of immanence and symbiosis (nonseparation and nonalienation), mutation and movement (nonimmobility), and indeterminacy (noncontrol).

5.6.13 The Reverse of Everything: The Original Affluent Society Revolution

One of the most important revolutions arriving in the past decades is the Original Affluent Society theory and other related proposals in anthropology, which state that the way of living of gatherer–hunters shows a better quality of life than whatever came in agricultural–farming–urban societies, and is far more sustainable,

respectful, and egalitarian: amongst humanimals, with other animals, and with the environment.[139] They eat better and *never accumulate,* gathering *only what they need for the day,* which not only implies that they lack the entire set of fundamental preoccupations about scarcity and future of agrarian cultures, but that this is directly linked to egalitarianism: it is an immediate return economy where *sharing is perhaps the only rule.*

All forms of oppression (nonhuman and human) have their roots in the intrinsically homogenizing and hierarchical forms of accumulation and exploitation emerging with farming. In the animal world, there may be struggle and predators, even hierarchy, but no systemic oppression, exploitation, slavery, and extermination. Nor in most human cultures of gatherers. Farming inaugurated an era of exploitation or *exploitism,* an unprecedented mode of relation on Earth based on homogenization, reduction, determination, and expansion.

5.6.13.1 Economies of Accumulation and Economies of Variation, Symbiosis, and Flux

This shows the difference between economies *of accumulation, separation, and stagnation,* and *economies of variation, symbiosis, and flux. Never accumulating nor fixing* is the rule for letting flow continue flowing in its earthly superabundance.

Such societies lack chiefs and hierarchies and see their environment as a generous provider too, a living entity which is never exploited. Instead, highly respectful and

139 The theory was proposed by Marshall Sahlins in 1966 (Sahlins 2017), based on the studies by Richard Borshay Lee and others on the Juǀʼhoansi or !Kung Bushmen or San of the Kalahari in Africa in the 1960s and late ’50s (Lee 1965; 1979) and other gatherer–hunter cultures. For a recent update on it see, Suzman (2017) and for a summary of it see Suzman (2020; 2022). See also Peterson (1993) on “demand sharing” in Australian aboriginals; Turnbull (1962) on Baka people from the African forest; Marshall Thomas (1959) on Juǀʼhoansi; Carpenter (1964) on Inuit; Kent (1992) on cultural diversity; Guenther (1992) on cultural flexibility of foragers; Scott (2017) on the failure of agriculture, building upon his own numerous groundbreaking writings since the 1970s on resistance to dominion and the state, self-organization, and anarchism; Harari (2015a), who echoes the aformentioned theories without referencing his predecessors; Graeber and Wengrow (2021) on the plurality of early human social experiments both in gatherer–hunter and agricultural societies; and Kropotkin (1906; 1996) on mutual aid in animal and human societies from gatherer–hunters to complex agricultural societies. Kent (1992, 14) and Guenther (1992) crucially point out that cultural flexibility (not only diversity) is a salient feature of egalitarian foragers, linked to mobility, individual autonomy regardless of gender and age, fluid nondogmatic sets of values associated to the capacity to adapt to changing circumstances, and lack of centralized authority, also expressed in the use of space and architecture, whereas sedentary cultures tend to homogenisation and dogmatism. See also Tanner and Gutschmidt (2020), which starts explaining the gender bias of 19th-century science, the existence of women warriors amongst Vikings, and gender equality in fifth-century BCE Celts. Then it goes on to show how proof of gender equality in food and tombs in the Neolithic is found both in China and Europe, like in the San of Namibia today, while there were women artists in cave paintings and women also hunted. Survival in the Palaeolithic was through egalitarian cooperation of both sexes. The numerous Palaeolithic Venus sculptures testify to the importance of women. It was the Neolithic revolution that created inequality in the Bronze Age in China and Europe, globally, with agriculture, farming, and property, accidentally emerging due to climate stability. Inequality came eventually due to (1) property and the need to defend it through war, placing stronger men above; (2) the population growth and new food sources for babies allowing more frequent pregnancies for each woman and enforcing the role of women in the house; and (3) the institution of marriage emerging related to property and the need to secure descendance, creating patrilocal and exogamic migrations of women transferring knowledge as well as genes. The Neolithic created hierarchy, male domination, war, worse nutrition, as well as — I add — property, overpopulation, cities, sedentary lives of very bad quality, animal slavery and slaughter, monocrops, and the devastating occupation of the Earth that leads us to extinction.

creative bonds with the environment and landscape are created. Some communities, for instance many Australian Aboriginals, hardly build, and some of them live only form foraging without hunting. There are often seasonal camps, movement with the flows. There is gender equality, appreciation of diversity, and often relaxed sexual and kinship norms as well as notions of spacetime that exceed by far, or are alien to, the Eurocentric bias on absolute calculus and linear perspective. They hardly ever work more than two hours a day in getting food, and a couple more on other activities like shelter, fire, etc., the rest is leisure and creativity, *or perhaps there is no such divide between work and play or leisure (the latter being perhaps a recent European construct).*

There are diverse modes of communal kinship or communal marriage rather than closed families (Kropotkin 1906, 113), with complex exogamy laws that afford exchange of knowledges as well as genes, and rarely showing modesty, repression, and privacy habits related to sex that may resemble imperial Victorian morality. This, I argue, is precisely a sign of their superiority.

Most importantly, all such societies have incredibly rich and complex choral practices of dancing, singing, and creating visual art or body decorations, extremely rich traditions of oral–kinaesthetic knowledge and memory, relation, and communication, of shared joy and grief, of lively, rhythmic, proprioceptive, multisensory entanglement with each other and the world around them. The dancing is part of life, and all aspects of life are danced. Movement and experience of the body is rich. The overabundance of bodily experience and of the natural environment (though mostly these communities have persisted in very harsh environments) has afforded resilient societies, persisting with small variations over hundreds of thousands of years. As claimed by Suzman (2017; 2020), they are arguably the most successful cultures, to learn from and defend (the very few remaining) against the extinction of such ways of living imposed by the radical devastation of agrarian–industrial societies. This is not a romanticizing picture; it is the result of revolutionary anthropological evidence since the 1960s.

5.6.13.2 Learning from Gatherer Cultures (How to Stop Extinction)

The modes of living as gatherer–hunters of the San people (of which the Ju|'hoansi are part) are becoming extinct, but they could still become an example and spearhead for a r/evolution that stops the extinction cycle. Suzman (2017; 2020) claims that they are the most successful culture in the history of *sapiens,* having persisted with little changes over perhaps more than 200,000 years. This is because, as we said, they are egalitarian and don't accumulate nor appropriate, they share, accept diversity, and move with the flows, not against them. They work for two hours per day, the rest is play, creativity, and rest. They expose one of the best examples of how *sapiens* lived for 99 percent of its history, with good and creative lives without inequalities and ecosystem destruction, the latter have only come in the last 10,000 out of 300,000 years.

The true revolutions for a global transformation come from the San and other (hunter–)gatherers in Africa, Australian Aboriginals, noncontacted Amazonian cultures, Inuit, and other (hunter–)gatherers in the Arctic, South America, South-East Asia, and Central Asia.

Such societies move with the flows of the Earth, never against them, never blocking them by accumulating through imposing monocrops and alignments on the Earth. Each of them has different modes of self-organization, like animal societies

too, while some may be more egalitarian than others. At the same time, it is clear that all inequalities amongst humans, not to speak of those against animals, and the global ecocide, the overpopulation, as well as the worries and the tendency to accumulate far more than one can ever enjoy that dominate the world today, are a direct effect of the accidental emergence of agriculture, farming, and urban life, of which current automation is just the final stage of delirious flight forward, never wanting to acknowledge the failure of human supremacism.

To say that we cannot go back to being gatherers is to ignore the facts and to assume a human supremacist dogma that drives us to extinction. According to economist John Gowdy (2020), life as gather-hunters will be the only realistic way to survive in the upcoming climate instability that will most likely make agriculture impossible, since the latter flourished in the uncommon stability of the Holocene that we have now destabilized. But like me, Gowdy thinks we could make the shift toward such cultures voluntarily, as a better way of living, averting a collapse that will kill billions of humans and trillions of other beings. In any case, it is most likely that those who relearn (or still know) to move with the flows and coevolve with the ecosystems will survive. It is unlikely, and would be undesirable, that the superrich survive in their bunkers. The Earth will only regenerate if the supremacist logic epitomized by Trump or Musk does not survive collapse (Del Val 2024c).

The consequence of this reflection is that a radical re-evaluation of the dominant way of living is needed without delay (we are far too late). "Civilized" dominant humans have to acknowledge their suicidal evolutionary failure and move beyond.

…

This anthropological revolution is reinforced by the many other ongoing revolutions: of symbiogenetic evolution and the role of mutual aid, of transspecies kinships, of embodied cognition, of animal and plant cognition, of the lack of clear divide between organic and inorganic, and of the dynamism of matter. All of these I propose to push further through a Radical Movement Philosophy and politics. I further propose a *choral revolution* that claims the power of artistic and experiential practices through the moving–sounding body, the importance of movement, and the richness of the techniques of the body, of only what a body can do, as crucial and underestimated cornerstones for metahuman r/evolutions. These *eco–vegan–queer–crip–decolonial–Aboriginal–precarious revolutions* can only acquire full meaning when stripped of any human supremacy remains, toward a metahuman turn.

Here we also need to challenge the "critical" voices that, by questioning any presumed romantic appropriation of tribal cultures, avoid any critique of the dominant mode. The other challenge is that the rich (including academics) won't listen, because they don't want to change, while the poor are too busy surviving. But everyone can feel the need to be liberated from the oppression of unacknowledged norms (including reproduction) while acknowledging the absurd arbitrariness of our supremacist red lines that at most protect some humans, and assuming the suicidal destruction of the Earth.

The Revolutions:

1. the original affluent society theory, according to which gatherer–hunters live better, are egalitarian, respect the environment, provides the example to follow;
2. the recognition of symbiogenesis and mutual aid as core evolutionary factors, and of the core role of biodiversity in environmental sciences;

3. BI, proprioception, and embodied cognition;
4. the recognition of animal and plant cognition or sentience (and architecture, dance, care, etc.) and of transspecies kinships;
5. the recognition of the dynamism of matter, spacetime, cosmos, energy, and evolution, lack of organic–inorganic divide and the flows of the Earth;
6. the choral revolution: the recognition of the richness of expressions just by what bodies can do, in all tribal cultures and the animal world, and of the overabundance of embodied experience and knowledge;
7. the eco–vegan–queer–crip–decolonial–Aboriginal–precarious revolutions, which can only acquire full meaning when stripped of human supremacy assumptions.

5.6.13.3 The Quality–Richness–Variation (QRV) Shift

The question is not merely how to lead a good life, pleasurable and without problems, as individual or as human societies: the good living *of all life forms on Earth* needs to be claimed and regained from millennia of disruption. The question is not only living well enough by desiring less, but *regaining a lost and richer embodied and sensorimotor experience,* rescuing it from the experiential poverty of sedentary cultures. The question is not merely in less quantity but *more in qualitative richness and variation*. It is the focus in quantity that erases the qualitative in experience. I suggest calling this the QRV shift.

General and qualitative good living, for all life forms on Earth needs to be claimed, assuming and undoing the errors of 10,000 years of dominion and stopping our forwards flight toward extinction. Only by regaining the qualitative richness can we undo the massacre as well. Quantity is qualitative poverty and inequality. This places my proposal beyond anarcho-primitivism: Radical Movement Philosophy claims the primacy of movement, indeterminacy, and proprioception, of regaining the capacity to create plastic rhythms of life as core problem, where rhythmically moving is inseparable from life.

Am I proposing a renaturalization, or a de-enculturation? This book is about reinventing the concept of nature: Metanature as symbiotic variation.

5.6.14 Recapitulation or Inconclusion

Over the past 10,000 years — a blink of an eye on geological timescales — the exponential population growth of one species, *sapiens,* from 1 million to nearly 10 billion, has taken over the planet, threatening evolution and biodiversity, linked to an oppressive heteronormative regime obsessed with species multiplication, and to an insane mode of sedentary living and consumption based on the radical abuse and exploitation of other species, as well as other humans and the planet at large, unleashing a Planetary Holocaust or "Eternal Treblinka," in which over 90 billion animals per year are enslaved and killed in concentration camps, along with utterly unsustainable processes of production and consumption.

This extreme form of domination, itself unjustifiable, causing unimaginable damage, also implies, and is unleashing a planetary extinction cycle that further threatens the dominant species and the planet at large: an exponential process whose crisis point (extinction singularity) could be reached over the coming decades, and whose symptoms (pandemics, climate change, rates of species extinction, ecosystem disrup-

tion, etc.) have become increasingly visible over the past five years, as symptoms of a deeply damaged planetary health.

But the response to the situation so far has been mostly in reinforcing the systems that are at the core of the problem itself, in a spiral of systemic dependence, social control, and polarization. Urbanization, consumption, technical systems, and population: everything at the roots of the global crisis continues growing and accelerating. Underlying this outrage is the dogmatic belief in humanist supremacism, which is paradoxically a species suicide precisely because it is a planetary holocide.

This planet hosts billions of life forms that are unique, both in evolutionary and cosmic terms, therefore preventing extinction implies a responsibility far beyond all "humanity," even beyond evolutionary and planetary implications: it is a *cosmic* responsibility for life. Planetary health, as linked to evolutionary biodiversification, is thus above human health, besides being needed for human health, and it needs to be restored. This is our radical evolutionary challenge. Or shall we be known for being *the plague*: the most inferior, because destructive, of species?

Underlying this millennia-long problem of domination and Earth appropriation linked to agricultural societies lies an impoverishment of the body. An impoverished body has been created with an impoverished planet, a culture of atrophied, aligned, immobile bodies — an *unhanced trash-human* — with atrophied thoughts, always lacking something, depending on unsustainable systems, feeding a spiral of narrow sensibility and reductive intelligence that interrupts symbiotic evolution.

The reply to this unprecedented challenge is therefore in regaining the body, the capacity to move, vary and feel: BI (Body Intelligence). In cultivating the smallest ongoing variation in the body lies the power to regain a planetary health, by unfurling a Radical Movement Philosophy and pragmatics, and a new theory of the symbiotic body and perception–proprioception. This evolution is the shift from an unhanced, atrophied (trash-)human to a symbiotic and mutating *metahuman*.

The way for a new mutation that restores evolution on the planet is thus not in any trash-humanist enhancement but in renewing our lost sensorimotor capacities of symbiosis and mutation, overcoming the fears and limitations of this excessively self-aware and atrophied creature called human that has wanted to separate itself from nature, paralyzing evolution.

5.6.14.1 Planetary Health and Relational Ontology

It is necessary to have planetary health and terrestrial rights as a frame of reference for the new ontologies, of which human rights must be only a part, and not the other way around.

And what does planetary health require? For a start, biodiversity. Diversity, or rather diversification, is a principle for all expressions of life: cultural, sexual, cognitive, bodily, etc. Eradicating diversification–variation as we have been doing for 10 millennia, creating a monoculture of *sapiens* itself with a genocide of human cultures, with devastating animal exploitation, homogeneous land occupation, and oppressive norms of multiplication can only lead to the abyss.

Most individual freedoms as conceived today tend to work against planetary health. Individual freedoms cannot be considered any longer without planetary health as frame of reference. The entire process of systemic domination emerging over the past 10,000 years needs to be acknowledged as an evolutionary failure causing a mass extinction: the worst possible cosmic crime.

Individual rights have to be framed within planetary ones and with a new concept of relational freedom which is about openness, variability, or indeterminacy of the relations, and the openness of the field.

5.6.14.2 Holocide and Holohealth: BI R/evolution for a Planetary Health

How to shift from a global holocide to a planetary health? How to let the planet regenerate itself, away from disruptive anthropo-technocentrism, while contributing (once more) to biodiversity?

We need to undo the fallacies that equate "comfort = immobility = civilization = control = domination = superiority." We need a new kind of intelligence which is not about reduction and domination but about variation and symbiosis. For this we need to regain and reinvent in unprecedented ways our atrophied sensorimotor plasticity. We need to undo the cosmological ignorance inherited from humanism that still populates our common sense. We need to revert sensorimotor atrophy with a broadening of sensibility. Comfort as immobility is evolutionary atrophy.

At stake is not to ideologically discuss the problem while maintaining our ways of moving–perceiving–living. What is needed is a renewed movement plasticity that makes us less dependent on radically unsustainable systems.

Species supremacy is as questionable as white supremacy. Like all forms of domination, it expresses an impoverishment. Human, Euro-white, heteropatriarcal, ableist domination is a cosmic aberration. Other species who allow biodiversity to proliferate are far superior to us. The degree of contribution to biodiversity should be a measure for a species's superiority, provided one believes in the concept of species, but isn't that concept itself biased and problematic? Should we not think of symbiotic processes instead? This is the proposal of Metahumanism!

Body despisers should learn about what a body is and how there is no self nor thinking without a body in motion. They should read what happens to people who lose proprioception: they lose all sense of self and world (Sacks 1987). Intelligence is always of a body. AI, in turn, is based on an impoverished body of technical systems, endless grids that reduce the ontological indeterminacy of fluctuation, and work against evolutionary variation.

Lifecycles are part of cosmological variation: stars, vortexes, ecosystems, and bodies live as long as they can metaduct, *enfer,* and transform energy into new more complex expressions. The highest aspiration of life is to partake in this cosmic play of diversification with as rich expressions as possible. This requires the plastic capacity to reconfigure oneself with the world, *never imposing oneself on the world,* as this implies blocking the evolutionary movement: *a Dionysian politics of life.*

Ontohacking

The Metaformative Turn to Metahumanist Aesthetics and Politics

The master's tools will never dismantle the master's house.
— Audre Lorde (2007)

Premise: No technology is neutral. We cannot dismantle the regimes based on perspective and reductive reason, which turn world and bodies into a calculable, appropriable thing from which the observer is abstracted, merely by "empowering ourselves" using perspectival media and rational–verbal discursivity (this makes sense only very partially and provisionally within a pluralistic scenario). We need a radical reinvention of perception, movement, and relations, of (nonrational) intelligence, thought, and communication, a deeply new (and old) sensibility that takes us out from this epochal atrophy and reconnects us to a mutating symbiotic Earth. A regained joy of moving that takes us out of the nightmare of appropriation, fear, and control, learning from our epochal mistakes, and looking beyond them. This is the metaformative turn.

6.1 Proprioception Regained

If the Algoricene is a reductive inflection in evolution, a field of radical alignments, how does one face the evolutionary challenge of not only regaining a lost plasticity, but of developing a new and unprecedented one? How does one regain proprioception, not only giving it back a richer spectrum than it may have had in the past, but by opening it up to an infinite horizon of reinvention?

Our movement potentials are infinite, but they are not to be sought in the realm of quantity within the movements we already know. Instead, they need to be sought in the most subtle qualitative variations of our tissues, torsions, and tensions, and, even more importantly, in our entanglement with the world, how we propriocept other bodies and environments, and ourselves through them, as the ground for a new, radically entangled but open conviviality.

In the deepest of our proprioceptive sense of movement, there is a decentralized, bottom-up swarming power, a capacity to move with other bodies swarming in emergent ways. More plastic movements imply more plastic affects, sexes, and desires, more plastic perceptions, thoughts, and ecosystems, more plastic ways of vibrating and resonating with others. Bringing about this plasticity requires devel-

oping sustained movement and perception practices and improvisation techniques. It is not a question of dissolving the self, but of opening up to something less rigid, more plastic: more a movement ecology than a bounded entity, capable of more sensitive and more resilient reattunements with others.

This implies working against the dominant tendency that, at least since Parmenides, has instilled a fear and despise of the body, movement, change, and the senses, renewing a narrowing thrust to control. But thinking in new ways implies moving in new ways, in moving beyond the tradition of fixity that has imposed a linear thinking! Echoing Derrida, we can say that being was an epochal manifestation of becoming, of *différance,* of fluctuation. We cannot avoid it because of its current dominance, but I argue that it is not universally unavoidable.

We have a radical evolutionary challenge: to unleash a movement plasticity never seen yet on Earth, swarming in unheard of manners. As in Kubrick's *2001: A Space Odyssey,* we face a journey beyond the (quantitative) infinite (beyond the vanishing point of perspective), overcoming the monolithic fold of reductive intelligence of which AI is the teleology and most accomplished expression. But this journey beyond the infinite, toward a more-than-human sensitivity, is inside the body and across bodies, in the swarming power of proprioception and Body Intelligence.

It resides in the most subtle opening: Philippe Petit walking on wire across the Twin Towers in the Summer of 1974, towers which became the mere support for the most daring but lightest and subtlest of subversions ever performed, foreshadows this new sensitivity, not the collapse of the towers on September 11, 2001, which Karlheinz Stockhausen heralded as the greatest artwork of humankind and which unleashed the new era of control, pre-emption, and ontopower.

6.1.1 Cosensing Ethics

Propriocepting is all about cosensing: sensing oneself as movement field, in the same act of sensing others and the world. This implies identifying how far the movement is emergent, in ongoing reciprocal attunement, or imposed by others or oneself.

A new cosensing ethics is needed in a time where the verbal consent of a rational human adult is ill-equipped both to cope with the opacity of autonomous algorithms or even marketing technologies, and to take care of our transspecies, neurodiverse, symbiotic, mestiza, and queer variations. Verbal consent seems to privilege a yes–no dichotomic world ruled by the human, rational, abled, sexually binary, largely male adult, and limiting movement to linear trajectories of decision making based on fixed points of vision. But fluctuation is beyond good and evil, yes and no, it's a maybe, a let's see, a contradictory multiplicity holding together in variation, wildly affirming itself against logocentric principles of noncontradiction. It is about moving in excess of alignments, continually recomposing. A body is a fluctuating field that can vary in many simultaneous ways as it recomposes with other bodies, neither active nor passive, and both.

If the individual based on perspective has been the source of human rights, we need to claim metahuman and metaspecies rights grounded in proprioception and cosensing. Humanism, as colonial and imperialist project grounded itself on perspective and on establishing a split and a dominant category, the white European rational male that can be seen in Leonardo's Vitruvian Man, whose superior rationality is expressed in the square of its proportions and the circle of its movements. It

is time to claim a less geometric and more (post)queer, neurodiverse, mestiza, and metaspecies body. But this requires a new mode of sensing.

A cosensing ethics will try to understand when movements are being imposed and when they are more emergent and reciprocally composing in any relational field. For instance, a perspectival system imposes a rigid sensory ratio affording normative categorizations, seamless quantification, and splits, and the algorithms running behind an app sense you and profile you, but you have no clue about them. Gender or other power choreographies impose themselves, as bodies implicitly, and performatively, reproduce their alignments. Likewise, an affective ecology of cosensing can afford emergent relations across, and in excess of, any normative boundaries enforcing dominant ratios: radically transspecies, queer, mestiza, and neurodiverse ecologies can be founded if we elaborate a new sensibility grounded in proprioception as radically entangled but open convivialism, rather than on fixed points of vision as ecology of categorical splits.[1]

Consent needs to be extended to a *cosensing* that analyzes the degree of nonimposed emergence of movement relations, but also the emergence of alignments that impose themselves. Cosensing relates to a proprioceptive account of perception implying that we perceive the other as we perceive ourselves in motion and transformation. This entails problematizing the radical impingement that media, and any technology, have on bodies as proprioceptive fields. Media radically alter the composition of bodies. *They are the true pandemic!* Who is going to provide the *vaccine?* We better activate it ourselves by propriocepting and swarming!

Manuel De Landa's (1992) suggestion for an ethics of the right consistency of our flows can be transposed to an ethics of *plasticity in our flocking:* how plastically do we flock around daily? A movement revolution (Bowman 2016) and evolution may be mobilized that undoes millennia of reductive perceptions and categories of sexist, speciesist, racist, and ableist oppression, of reductive ontologies of measurable spacetime and dualist subject–object splits, while unfolding radically neurodiverse, symbiotic, microsexual (postqueer), and mestiza ecologies, and thus naturecultures, where cultures are but expressions of nature, in a continuum. The task is huge: undoing millennia of reductive inflection. But the means are small: in the tiniest subtle but sustained variation–deviation–fluctuation!

The law of fluctuation = variation implies also that reduction = dominion, and this implies an *ethics of nonreduction* as main principle that will take endless articulations, as it relates to different movement fields and alignments. This should imply a *law and economy of nonreduction,* where bodies always sustain degrees of openness in consistency, where tendencies to reduce are actively resisted.

In Derrida's account, *différance* seems to be related to temporization as deferral, a postponement in an economy of desire, a suspension of immediacy through the very traces that unfold a spacing. How would an *economy of variation* and proprioceptive immediacy look like, one where openness and consistency are balanced, where quantification and postponement don't impose themselves, where perception and proprioception sustain richness and indeterminacy, where movement resists alignments to some extent, where reduction is generally resisted, a proprioceptive economy of the common body, an orgiastic economy of sex, an economy of desire

1 Gebser (1985) interestingly proposes an aperspectival culture that exceeds the dualistic ratios of perspective but associates it to some sort of universal consciousness in a utopian, mystical, universalist tone that this book clearly takes its distance from.

exceeding spacetime and objects, an economy of affects defining their own emergent rhythms, where work is not fully separable from creative experimentation, where life *technēs* sustain variation, where at-workness (*energeia*) is not a process of determination–actualization or formation, but sustains openness throughout, where all bodies move in variation?

Disaligning from reductions by swarming and developing plasticity in our rhythms implies a symbiotic affectivity that unfolds into a series of becomings: becoming transspecies, mestiza, autistic, microsexual (postqueer), all of which converge in the becoming molecular swarm, which is not a metaphoric becoming but an actual becoming happening when modes of movement and perception are enacted that mobilize the swarming intelligence of the body, the swarming power of movement.

We are now right in the vortex. Pandemics, Trumpist neofascism, climate change, economic crisis, Silicon Valley imperialism, surveillance capitalism, and algorithmic governmentality are symptoms that we are getting close to the horizon of events of a dystopian black hole. Will it explode in unexpected supernovas? Or can it be decentered meanwhile and reversed, through fluctuation? A countervortex needs to be enacted! Mobilizing our proprioception and its swarming power implies disaligning from perspective and a multitude of geometries, the disalignment from the complex set of dualisms, linearities, and totalizations. Endless microvortexes are needed to decenter our epochal black hole.

6.1.2 Becoming — Becomings — Becoming-With

Becoming is an old concept of philosophy before the idea of being emerged. *Gignesthai* (becoming) and *kinēsis* (movement and change) were the primordial concepts of pre-Socratic philosophy before Parmenides. Heraclitus is perhaps the Presocratic who took the logic of becoming further, giving it an identity, unity, and *logos*: the struggle and tension of opposites. The tense string of a lyre or arc is Heraclitus's image for this dynamic unity, which comes back in Maurice Merleau-Ponty's (1962, 157) account of the intentional arc, and in string theory cosmology where the entire universe is a multidimensional vibrating field. Nietzsche brought back Heraclitus's vision, and so does Derrida's *différance*. Our proprioceptive muscular sense can be seen as a multitensional field of vibrating muscular tones. Becoming precedes being. Being is an illusion. There is only becoming and movement. And yet in that flow emerge persistent affects.

Becomings are also a concept in the philosophy of Gilles Deleuze and Félix Guattari (1987) as intensities that escape from or deterritorialize those formations, structures or strata that rule the normative worlds, opening them up to a radical otherness. Becoming intense, woman, child, animal, music, molecular, imperceptible… movements of deterritorialization in which a new intensity arises, as in the ecstatic processes of sorcerers or shamans. The crucial question though is how to sustain intensity and avoid a pendular dynamics between hard territorialization and wild deterritorialization.

Becoming-with is, in turn, the alternative that Haraway (2008) proposes to Deleuze and Guattari's radical alterity, when she criticizes their despise for relations between humans and companion species: all becoming is a symbiotic process, a becoming with others in the world where every vulnerable category must be taken care of. This becoming-with resonates in the most recent proposal of Haraway of

the Chthulucene as era of becomings, of creation of new kinships beyond filiation, of tentacular alliances between species while traversing and persisting in the multiplicity of problems of an Earth whose narratives are larger and smaller than those of *anthropos*.

My account of becoming has elements of all three: Heraclitus, Deleuze & Guattari, and Haraway. Becoming is intra-duction and metabodying: the process in which movement creates consistent but open fields in ongoing diversification. Its trope is the proprioceptive swarm. Becomings are symbiotic mutations in which fields emerge, transform, and dissipate, giving rise to new fields of cosmic mutation. Becoming is enferance, metabiosis, fielding, and metabodying. There are only becomings as processes of relational transformation, from universes and star systems, through ecosystems, to bodies and metabodies of all kinds.

6.1.2.1 A Meta-autoethnography

This proposal emerges entangled with a number of (trans)personal becomings, which I will provisionally summarize into five: a metaspecies becoming, a microsexual becoming, a mestiza becoming, and a neurodiverse becoming, all of which converge in the becoming molecular swarm. Becoming is not teleological, and it's not aiming at becoming something. It is a never-ending process of cocomposition and emergence.

My metaspecies becoming has been going on for many years, on one hand across my interest in critical posthumanism and beyond,[2] and my art–technology practices as practices of bodily transformation, but also in my relations with nonhuman animals and, more recently, particularly, my love relation with a dog, hindered by constraints of an anthropocentric world, and which I claim as my strongest affective bond ever (Martín 2021). It involves accounting for the privileges of passing for human, while increasingly rejecting this category. It involves my radical veganism and my denunciation of the Planetary Holocaust and seeing the claim for our affective symbiosis with nonhumans as the arrow's point toward a general animal liberation and a planetary regeneration.

My microsexual becoming has been going on for even longer, starting with my activism in LGBTQIA+ movements in which I never matched my presumed gay sexuality or male identity, and with my persistent exploration of other modes of sex in orgiastic, public sex, and sexwork, and in practices exceeding genital sex. This has come along my increasing disidentification with gender binaries, while conscious of passing for a (gay) white man with all its privileges, going beyond into a more radical dissolution of the body form through my experimentation with technologies of perception. Becoming microsexual entails modes of being and relating that are beyond — and not just in between — dualist conceptions of sexuality and gender, where the variations of movement and expression of a body are irreducible to the given repertoires of a normative identity and where perception is not framing at a distance, but propriocepting oneself and others. It implies reciprocal mutation affecting all levels of composition of a body, modes of kinship and intimacy beyond privacy and monogamy.

My *mestiza* becoming relates to Gloria Anzaldúa's (1987) notion of the *mestiza* as the one who belongs nowhere and is always crossing boundaries, who has a plural personality and sustains ambiguities. It also relates to Sandy Stone's (1996) vampire:

2 See *Metahumanism*, https://www.metahumanism.net.

Fig. 60. "K" engraved in a silver tray inherited from my family, standing for "Kocherthaler," my erased German–Jewish family name.

the one who has the privilege to move across many worlds, who doesn't fit into the standards of hegemony, who feels like an alien in them, or perhaps like an Aboriginal of a future culture, who develops uncanny modes of perception and relation while continuing to live across the borders of the dominant cultures. It involves, again, accounting for the privileges of passing for white, middle-class, educated European, through the process of self-decolonization, self-racializing in claiming a crossbreed nature, the mixture of Black, Arab, Indian, white, Christian, northern European, Jewish, and Roma that everyone coming from Spain more or less is. I am aware that I have not socialized as mestiza the way Anzaldúa did, and yet claiming the mestiza condition should not be read as an appropriation of a vulnerable condition, but as an affirmation of the positivity of hybridity. It involves claiming the superiority of hybridity as entailing symbiosis and plasticity. It also involves accounting for my half-Andalusian, half-German–Jewish family, though from the latter I have known little, never had contact with Jewish culture, even less with the religion, and the mysterious K. engraved in family objects (fig. 60), which as a child I associated to Kafka, or to Citizen Kane, actually stands for an erasure: the Jewish name Kocherthaler that my father's family erased in Nazi times, converting it to a sort of Spanish half-translation: Del Val.[3] It involves questioning a name I never fully identified with, Jaime, always in search for gender-neutral, culturally hybrid, and nonhuman variations I have not yet fully explored. It also involves accounting for my privileges and heritages without being bound by them, having been raised as only child in a matriarchate with four mother figures and without father, surrounded by the sculptures

3 A mythical story for my child's imagination, heightened by the fact that my parents met in the Alhambra of Granada, that radical hybridization place for Arab, Jewish, Christian, and Roma cultures. And it happened on the occasion of my lyric singer mother's offering of a classical song recital with German *Lied* and Spanish song. My grandfather Kuno was a cousin of Albert Einstein, my grandmother Maria Luisa Caturla, art historian, and my father Carlos del Val, whom I hardly got to know as he died when I was 3, was a chemist as well as a violinist and mountain hiker, a lover of all arts, who loved to play the violin up in the mountains. Later I learnt that K in mathematics stands for Boltzmann constant, wave vectors, an index of heat transfer, a proportionality constant in geometry, a subatomic particle called kaon (any of a group of four mesons distinguished by a quantum number called strangeness) and the designation of asteroids, amongst others. K for *kinēsis*, kinaesthesia, *Körper, khoros, khaos, khōra*... The initially strange K fills itself with new open-ended meanings.

of my grandfather Jacinto Higueras Cátedra in whose abstract textures I got lost as a child occupying all corners of our nonlinear family house whose endless openings and connections seem to have shaped my way of thinking, along its 20,000 books, music, languages, objects from the Andalusian village of Jaén as well as from German and Spanish bourgeois culture. And how I recently discovered the astonishing closeness in sensibility to my grandmother, the German–Jewish art historian Maria Luisa Caturla (2021), whom I hardly got to know. And my pleasure in speaking and learning languages and music. And in dancing in frenzy syncopation. And, and, and…

My neurodiverse becoming goes through Erin Manning's (2016) notion of autistic perception as one that is continually opening to the noncategorized and my acknowledgement that, much though I pass for an abled, intelligent, and cultivated rational human, my sensibility is not at ease with the formalizing world of rationality. It tends to the amorphous, to microrhythmic attunements with others and the world, a protoautistic sensibility, maybe some variation of autism or Asperger's Syndrome, whose elaboration again requires acknowledging the privileges and limitations of passing for abled while positively affirming my discomfort since early chilldhood with neurotypical forms of human interaction. It implies cultivating my neurodiversity in all its never-ending facets, including dyslexia. It involves the radical neurodiverse affirmation of cultivating a dancing Dionysian madness. It implies assuming the dangerous road to madness that one takes when one is able to acknowledge at a fuller scale the hidden horrors of our world and when one finds oneself quite lonely in doing this.

Lastly, my becoming-molecular-swarm is about embracing a more radical symbiotic nature as offspring of 4 billion years of bacterial swarms whose decentralized swarming power is still alive in our nervous system and tissues, and which I have slowly been unleashing and elaborating — long before I had a name for it — in my proprioceptive movement techniques, through which I heal from a personal and cultural proprioceptive blockage and atrophy. This molecular swarm is radically microsexual (postqueer), symbiotic (both mestiza and metaspecies), and neurodiverse. Radically plastic, it enacts the shift toward a new sensibility undermining the very conditions for reduction on which all categories of oppression have been grounded.

These becomings are certainly neither identifications nor mere disidentifications. As both swarmings and disalignments they are transient states of bodily and relational transformation that never achieve final state, continually opening up the tunings of this body as tensional field, enriching the tone of the vibrant strings of life.

6.1.2.2 Metaspecies Manifesto

Ethics and legal ontology are poorly equipped to deal with the demands of creative evolution, anchored in a discourse-centeredness of the rational subject, of the supposed free will and verbal consent; bioethics is in the best of cases pathocentric, based on measuring the degree of suffering, but not positively studying the way in which hybrid affective ecologies are the basis of all evolution, biodiversity, and sustainability on Earth. Continuous, reciprocal, and collective mutation is the basis of life, not the identical reproduction of the same grounded in categorical splits and immobilities.

Affects (animal or not) are the collective mutation that creates ecologies based on the diverse. Affects are not emotions of a subject, they are relationships, affections, movement, cosensing, propriocepting. Symbiotic affects are the transversal way to decolonize all bodies. Can anyone deny the affects of animals, neurodiverse,

nonrational subjects, children (non-adults), sexual minorities, or migrants? Ecologies of mestiza, neurodiverse, metagender, and transspecies affects are the ground of a bioresistance on Earth against the annihilation carried out by dominant systems that reduce, impoverish, kill our richness, liveliness, and plasticity.

I claim a world in symbiosis in which the "human" not only stops pretending to be the center, but, renouncing to any privilege of species, gender, class or capacity, renounces therefore the very notion of species, embracing the same becoming transspecies or metaspecies that sustains all (bio)diversity on Earth.

I AM NOT HUMAN, neither man nor woman, nor white, nor European, nor rational, nor abled. I am neurodiverse, mestiza, transgender, transspecies.[4] Aware of passing for Eurowhite I claim my mestiza nature (hybrid of Jew, Black, Arab, Indian, Roma, white, Christian, Nordic, pagan, and like almost all "Spanish") and claim the superiority of all hybridity; aware of passing for rational and abled I claim my proto-autistic neurodiversity; aware of passing as a gay man, I claim my trans- or postgender nonbinary, orgiastic, postintimate, polyamorous, nudist, whore, microsexual, and postqueer natures; aware of passing for human I claim my transspecies and bacterial symbiotic metahumanity. I am a bitch more than a cyborg. I am an ontohacker. I AM NOT A SELF. I am not a unit or a duality, nor an individual, nor a subject, nor an object, nor a state, nor a museum, nor a selfie, nor a police profile, nor a profile in social media, nor the appendix of a planetary network of algorithms. NEITHER HUMAN NOR CYBORG, I am a molecular swarm, a metabody.

I *am* not. I become. *In becoming. In becomings. In becoming-with.*

…

As I advance in the disalignment, in a thousand becomings, I withdraw more and more from the human world and its self-indulgent and supremacist rituals. I hardly partake in human meals anymore, and I avoid any space where my family's holocaust is financed. I don't see it as a sacrifice; the nonverbal relationship with my metahuman relatives enriches me much more, human self-referentiality increasingly disgusts me, and soon I will stop relating to everyone who considers herself human, just as I do not relate to racist or homophobic serial killers. Till I disappear in some forest or mountain, not as a hermit but as an ithyphallic and orgiastic satyr, as a metasexual, metahuman, naked, vegan, symbiotic gatherer, becoming Dionysus, dancing the orgy of cosmic mutation until death arrives.

> *The serious artist is the only person able to encounter technology with impunity, just because he is an expert aware of the changes in sense perception. The effects of technology do not occur at the level of opinions or concepts, but alter sense ratios or patterns of perception steadily and without any resistance.*
> — Marshall McLuhan (1964, 18)

4 Of course, one should ask whether someone who passes for educated European white man, enjoying largely the privileges of the hegemonic subject, is at all entitled to speak about decolonization, racialization, neurodiversity, and so on. Is the quest for a becoming amorphous only the fantasy of a hegemonic subject who can already enjoy visibility? Or can we move beyond the visible or invisible dichotomy of power struggles into a more creative sense of indeterminacy as not simply being invisible or visible? Can we understand the imperative for visibility as also a kind of violence and create conditions for worlds that are grounded in radically different perceptual paradigms? Can we create a culture and science of movement from within, a proprioceptive culture–science not grounded in external points of vision?

> *Altering the architecture of the body results in adjusting and extending its awareness of the world.* [...] *The self becomes situated beyond the skin. This is not a disconnecting or a splitting, but an extruding of awareness.*
> — Stelarc (1998, 155, 162)

> [*T*]*his music trains a new kind of human being,* [...] *who can* [...] *participate in the spatial and temporal differences, leaps, curves, changes of direction in involutionary melodies, rhythms, dynamics which, up to now, would have been considered "superhuman."* [...] *If one considers it at all worthwhile to empathise with the temporal and spatial experiences of other living beings* [...] *one can actually achieve this only through some few works of new music, which no longer affirm the human being as he is today, but rather take him along on an endless journey into his own future.*
> — Karlheinz Stockhausen (1986)

> *When I make a tree,* [... *m*]*y tree is one that doesn't exist, and I use my own psycho-physiological dynamism in my movement toward it branches.*
> — Pablo Picasso (in Gilot and Lake 1964, 118)

> *Experience can always be recomposed, if it is its formative intensities, rather than its already acquired forms, that are attended to. Art, attentive to the relational complexity of experience's in-the-making, can make itself the experimental practice of composing new peaks of perception expressing the living, moving body's qualitative multiplicity, unfolding in new variations its capacity to change.*
> — Brian Massumi (2017, 205)

6.2 Metaformativity

Metaformance is a neologism put forward by media art theorist Claudia Giannetti (1995; 1997) to describe the characteristics proper to the interface as predominant trope in media culture, foregrounding relationality, indeterminacy, feedback, or recursivity, a collapse or redefinition of traditional splits between observer, work, author, and process, and the absence of an external viewer, pointing to a notion of subject-as-project derived from Vilém Flusser (2001) and to models of perception as internal observation derived from endophysics (Rössler 1998).

Here I propose to extend the term in two ways: first by associating it to a shift from the paradigm of discursive performativity to what I call metaformativity (Del Val 2006a; 2006b), which studies not only linguistic and discursive articulations but a broader field of movement relations and perceptions of which the former are part; and second by developing metaformance as the art of plastic perceptions.

Metaformativity studies both the emergence of alignments from within more undefined movement fields, and the possibility to open them up to greater indeterminacy. Metaformativity is the theory as well as the process of emergence of fields. It is metaduction or intraduction unfolding and reflecting on its process. Metaformance is the aesthetics and pragmatics that accompanies it.

Metaformativity is the response to the limitations in linguistic and queer theories of performativity. Performativity as proposed by Jacques Derrida's (1988) and Judith Butler's (1997) reading of John L. Austin (1962) defines how speech acts have the power to produce what they say, how the reenactment of any norm or meaning relies

on its ongoing performative reiteration, that is, of the repetition of speech acts that reinstate it, and, at the same time, how subverting the performance of the speech act (as subversive citation) also subverts the normative structure as exemplified in the subversive first-person appropriation of the term *queer*. Attempts have been made to also explain materiality, sex, and the body as being performative processes.[5]

Butler (1999) exposes the paradoxes of discursive performativity in her critique of Foucault's notion of the body as surface of inscription. Foucault builds upon Nietzschean accounts of an irreducible body, while considering the body as always defined by matrixes of power. The body is thus an effect of performative acts, but it also seems to exceed them. Butler sympathizes with the idea that there is no body ontologically outside of power matrixes, although she gestures in several occasions to something in the body that exceeds its own performative production, as *movement in the boundary* of intelligibility that may shift that very boundary. What lies beyond is however not clear, as it seems to have no ontological status. It is more a negativity or excess that allows for the troubling of the inescapable discursive regime, yet mostly from within its given structure through citational subversion. If there is no body prior to or ontologically distinct from discursive production inside matrixes of power, one could in turn ask whether discourse precedes the body as ontological a priori.

Karen Barad's (2007) posthuman performativity seems to address this problem by extending the notion of performativity to matter itself by linking queer theory and quantum mechanics, and she points in the direction of metaformativity in considering both matter and meaning a process of cuts being performed by internal observation acts, from within intra-action processes that would be constitutive of matter itself as quanta. This precisely exposes Barad's limitations as relying on the concept of observation, which in turn relies on perspectival vision.

Butler's (1997, 147) influential account of gender and queer performativity is crucially grounded in Derrida's inversion of the force of the performative. Whereas for Bourdieu the force is in reinstating a category, for Derrida there is a deeper force in decontextualising and thus resignifying a term. I think this is deeply linked to his concept of *différance,* and thus to movement, a question that perhaps got "lost in translation" as queer theory became focused on linguistic discursivity.

Performativity has been an influential political tool manifesting the possibility to open what seem like immobile structures and defines the overall operation of language and of politics as continuous production, reiteration, or subversion of *discursive apparatuses*. While I still claim the force of performativity and its value in multiple circumstances, I also think that it needs to be deeply broadened as it has partially stagnated under a linguistic focus and under the mantra *there is no outside of discourse,* which implies that matrixes of dominion are inescapable, that every single action we do reinstates or subverts a power differential, and subversion will thus create a shift in the matrix without undoing it. I think this is a very problematic narrowing

5 Butler (1993) takes in this regard an Aristotelian approach to matter as ongoing process of materialization through morphogenesis, which returns differently with Barad's (2003; 2007) posthuman performativity in which matter is also performatively emerging through intra-active cuts from within, again as dynamic morphogenesis that gives meaning to matter. In turn, Hayles (2012, 91) discusses materiality as a coming-together of physicality and attention, where materiality is an emergent process, different from physicality. This still has Aristotelian echoes in assigning the dynamism of matter to some sort of meaning. Other queer authors have created a sort of queer "accelerationism" by reducing the body altogether to code. My proposal is the reverse.

of the field of politics that assumes the imperative of perspective and language. The imperative says, "there is no escape from the fixed point of vision and its narrowing frame that circumscribes language to a self-referential and inescapable field," a Eurocentric and colonial imperative if there ever was one. It is indeed an affirmation of the supposed inescapability of human dominion systems: a self-affirmation trick of human supremacism.

I propose quite the opposite move: to see perspective and its discursive, representational frames as a cosmic anomaly within a much broader field, which requires rethinking movement and perception along the lines proposed in this book. I want to suggest that performativity's focus on language, its structures, and its signifying processes is limited when one seeks to look into a larger field of movements that both sustain and exceed normative regimes, particularly when one wants to understand the algorithmic regimes based on self-organizing code that are arguably establishing themselves as new mode of domination on the planet, but even more to understand the much less determined movements of all other life forms. For this we need a broader account of movement in which discursivity and performativity is part of a broader spectrum.

Even though discourse, as both Foucault and Butler acknowledge, is not simply linguistic, the type of strategy that performativity foregrounds is focused on signifying practices, on the repetition or displacement of segments of language (speech acts), and on the assumption that there is no world, body, or politics beyond these enunciations, as this would entail a dangerous essentialist metaphysical move that rejects any categories beyond the constructed. Becoming speakable and visible in the sphere of discourse is the imperative.

But I have already argued in Book 2 that language cannot be reduced to a set of abstractions, of signifiers and segments that one can cut and rearrange while talking or writing. Language makes sense because it is part of a much broader and amorphous proprioceptive field from which it prehistorically emerged. In order to honor the broader field of which language is part, what metaformativity proposes is to include performativity (as art of citation, subversive or not) as one register of possible movements within a broader spectrum. This broader spectrum includes the infinitesimal variations of bodies as proprioceptive fields capable of sustaining high degrees of indeterminacy in their fluctuation. Metaformativity studies this full range of movements emerging in a proprioceptive field, identifying alignments that may impose themselves. Metaformativity doesn't acknowledge the inescapability of discursive matrixes, which always already involve reduction. These may be inescapable in relative terms, as pervasive structures that may dominate a field over millennia, but not universally so.

Proprioceptive fields are, let's quickly remind ourselves, the way in which any field, body, metabody, or world of relations senses its internal changes, movements, fluctuations, variations of energy–density, distributions of force holding the field together while recomposing in relation to others, and this is also the primary means for sensing the world, in a process of ongoing and reciprocal recomposition. Some fields freeze, partially diminishing the levels of emergence and imposing movements as alignments orienting the field. Metaformativity studies theses alignments but also looks beyond. Making sense is not about creating fixities or cuts in the field, but about processing our affections, recomposing as we relate to another field in motion.

Metaformativity allows to us understand the processes through which the frames sustaining discursive performativity and representation came to be at all, expose

their logic of perceptual narrowing, inviting us to move beyond them, opening politics up to a larger and more subtle spectrum of infinitesimal variation in movement. It also implies recognizing that most of experience is not happening inside the narrow spectrum of discursive thinking but operates in the larger spectrum of proprioceptive fields.

If the *performative force* of a gesture lies in its power of decontextualization and resignification, instead the *metaformative force* of a gesture lies in its *power of indetermination.* This implies not a collapsing of structures but an ongoing antireductive movement of variation. At stake is not just to substitute one alignment by another, or to constantly move "in-between lines," but to mobilize and sustain less aligned bodies–fields. This implies opening the subject up to a less aligned ecology of metabodies or *metajects*.[6] The subject is an effect of subjection to fixed points of vision. Too long we have been claiming it as the holy grail of politics. It looked like there was no alternative. But there is an alternative: in the metabody as proprioceptive swarm and its Body Intelligence, *as capacity to resist and exceed any movement reductions.*

Whereas performance and performativity speak about displacing the content within a given frame, metaformance and metaformativity speak about exceeding the narrow orientations that fix us onto signifying frames and open our movements up to the much broader field of resonance of proprioceptions. Indetermination here is not an absolute deterritorialization, a line of flight that implies bipolar dynamics between actual and virtual that will perhaps return as microfascist line of abolition. Instead, it's the sustained openness in the movement fields that we are.

It is not about substituting an existing sensory hierarchy by another. Rather, it is about sustaining perceptual plasticity and indeterminacy. In a concrete sense this implies cultivating proprioception as frame of cross-referencing, as Massumi (2002) suggests, in which multisensory integration happens in always varying ways, with as rich and varied spectrums as possible.

> *We should be interested in perception* [...] *above all to combat hatred in the others. Our generation thought that the basis of egoism was economic:* [...] *But there is more:* [...] *Skilful alchemists of the mind can fabricate ready made perceptions, caricatures,* [...] *in order to install a single category of perception of the other* [...]. *Tolerance demands a generous and kind perception based on the richness of differences.*
> — Alain Berthoz (1997, 189–290, my translation)

6.2.1 Relational Freedom, Meta-/Ontoethics, and Meta-/Ontoecology: Counteracting Ontoviolence and Ontocolonialism; or, Metahuman Ecology and Ethics of Becoming

Metaformativity points to an ethics and ecology focusing on the ontological force of technologies: how they orient movements, while at the same time crafting perceptions and the entire field of relations. An entire planetary-scale field of perspectival

6 The metaject is suggested as a potential redefinition of the subject through the concept of metabody, as relational processes of mutation. Daigle (2023, 29) proposes the powerful concept of transjectivity as exceeding binarisms in focusing on neither the transsubjective nor the transobjective side of how we coemerge in entangled processes of affections where vulnerability becomes ability and agency, where sensitivity is core to response-ability, as core to an ethos applicable to all life forms undoing human exceptionalism.

relations has emerged over centuries, which now double-folds in a world matrix of autonomous algorithms, grounded in proprioceptive atrophy and the narrowing down of plasticity. Paradoxically, the subject with free will is itself an illusion of those fixed points and tautologically wants to persist, expand, and stay aligned with them as they grow, claiming this as its freedom. Exposing the underlying choreographies of narrow perceptions allows the mobilization of worlds that are less narrow.

Metaformative ethics or *meta-* or *ontoethics* points to a relational ethics of plasticity. It also points to expanding accounts of bioethics in an era where the ongoing engineering and modulation of bodies, populations, and territories happens in an exponentially growing amount of entangled strata, in the Big B.A.N.G. of convergent technologies.

It is not only bioprivacy that is a new issue in times of Big Data. Joanna Zylinska (2009) already points to the need of expanding bioethics to an ethics of life, related to Foucault's accounts of biopolitics as politics for the management of life. I propose to elaborate this by focusing on the metamediums as defined in Book 5, the underlying sensory architectures of media that format bodies and foreclose their potentials. The excessive focus on issues like genetic engineering hides the even more urgent fact of our *epigenetic engineering*, the deep (trans)formative force of all our alignments with all media and knowledge systems.

Ontoethics is always already relational, implying an ontoecology of relations.[7] Ontoethics and ontoecology focus on the degree of openness of movements that craft more or less open relational worlds. But this relationality presumes no paternalistic reliance on others. Rather, it implies thinking the degrees of indeterminacy or plasticity of the relations, of the field itself, as the measure for freedom. This doesn't neglect the idea of autonomy but expands it. A superaligned field will not allow emergent movements to happen. A less aligned field affords a greater freedom of movement of all regions within the field. Relationality does not imply determinism, and this is the causal thinking we need to undo.

Meta- or ontoethics and meta- or ontoecology propose an *ethics of nonreduction* in addressing issues, such as:

1. What is the particular ontological force of a metamedium (e.g., perspective's instantiation of a dualist separation between the subject and the object, fixing and hierarchically organising perception, rationalising, and quantifying, allowing the algorithmic representation of the framed and geometrically constructed portion of the world)?
2. What ontological violence hides this formative character of the medium as a substrate to other forms of violence (e.g., the power of affective contagion of media as implicit violence, which in turn transmits explicit kinds of violence at the level of content, as in the violence of actual images in TV)?
3. What relational ecology is derived from a metamedium like perspective in terms of its logic of quantification (e.g., in relation to colonialism and dualist perceptions of nature–culture, subject–object, body–mind, or man–woman? How far

7 Ontoecology resonates with Guattari's (2000) ecologies of the virtual and his three ecologies of mind, the social, and the environment, yet I purposefully avoid the notion of virtuality and the distinctions between mind, sociality, and nature, pointing to underlying movement ecologies and thus perhaps to a different account of transversality.

is the metaontological substrate of colonialism to be found in perceptual ratios that afford dualist splits, quantification, and appropriation of bodies–worlds)?

4. How does a metamedium operate by structuring other media, as metaprogram of motion structuring other programs (e.g., perspective and grids as substrate of mass media systems as well as computation)? How is the perceptual ecology of a social network like Facebook defining its ontological violence through perceptual organizations besides its content? On how many inherited geometries and frames does such a network rely (e.g., from its interface and codes to the gridded microchips, hard drives, and data centers, or its face-oriented selfie world and biometrical sociality)? How do these alignments *impose a proprioceptive atrophy?*
5. What is the intrinsic relationship between content and frame? The violence of particular gestures that are virally transmitted in mass and social media relies on the contagion power of the frame itself.
6. How are desires oriented by alignments? This problematizes the mantra "people want it." We have to investigate critically into the occasions where desires are being massively oriented, more than ever in a culture of opaque algorithms. This relates to issues of implicit censorship: the narrowing of perception makes thinkable only the narrow portion of the world that it frames. The larger field beyond becomes imperceptible and unthinkable — until you move in new ways. Broadening perception should be a crucial matter of concern for a geopolitical agenda that wants to restitute some levels of planetary health. Developing means for interpreting degrees of emergence in fields is crucial in counteracting the ontological violence of media.
7. What economies of desire, affect, sex, and work can one enact instead, which are not about capturing surplus but about increasing variation?
8. How do alignments block the energetics of bodies actually enforcing dissipation? What economies of fluctuation could one elaborate instead, an economy wherein bodies learn to move with fluctuation, transducting energy always in new ways?
9. How do alignments induce atrophy and numerous pathological states as incapacity of bodies to vary and compose with others?
10. How can one develop a new science of *knowing as moving* that serves the purpose of increasing our plasticity rather than narrowing it down?

Addressing more concrete aspects of policies, regulations, and legal ontologies urgently demands a shift from the study of content to the study of movement–perception. Of course, neuroscience focuses on perception, but often in a problematic, essentialist, and conservative way. Often, we get news in the media of some scientific study about "how perception works" or "how the brain works." But I argue that perception, our nervous system, our brains, and our bodies never work in one single way. Rather, they are intrinsically plastic: if they seem to work in one predominant way, it is because they are part of a frozen field, expressing its alignments.

Understanding movements will raise crucial questions about the ontological obsolescence of common sense, legal systems, and policies in relation to current algorithmic environments. Notions of consent, data protection, privacy, and moral responsibility appear to be radically obsolete in relation to the highly emergent, unknowable processes of autonomous algorithms, and calls for an ecological approach that analyses how relations operate in distributing response-ability, in

generating splits that afford a controlled reconnection, in affording multiple frames of opacity and untraceability.

Algorithmic culture is a good opportunity to explore the intricate entanglement of the micro and the macro, which becomes evident when looking at the underlying movements, not the structures. The European Union's current General Data Protection Regulation (GDPR), possibly the most advanced in the world, exhibits some of the contradictions emerging from the clash of current legal ontologies, still indebted to Roman property law based on stable entities, with Big Data systems' dynamism. The unknowability of data processing due to emergence, opacity, and incomprehensibility, for instance, leave the notion of consent obsolete (Mittelstadt et al. 2016). Either such technological processes are forbidden by law, or a reontologization of legal and common-sense categories need to be enacted in the face of the already advanced regime of algorithmic governance.

In an ontoethically active culture, platforms such as Facebook will either not exist or be dealt with in far more critical and creative manners than today, co-existing with a much larger panoply of alternatives. This is not utopian but *metatopian*: it is about mobilizing sensorimotor plasticity as thinking–feeling plasticity.

...

Data is never about individuals, it is always about relations. Just like genetic data give information about your family and an environment, epigenetic (behavioral) data give information of your surrounding and relations. Behavioral data are never relative to one single person. Again, a relational ethics and ecology is needed to address these problems.

Every time we align ourselves with a screen, sensor, or interface we become measurable by reducing our kinetic spectrum. We become content for data-driven economies and ecologies. Let's mobilize an antireductive fluctuation across bodies through the subtle minimal variation in proprioceptive fields.

Regaining a richer sense of body in motion, thus of self and world, is crucial for being less dependent on unsustainable technologies that separate, quantify, and control. The less we move the more we rely on others and on unsustainable systems. Moving is the key for a planetary health!

...

In Book 5, I advanced a possible mode of analysis of how metamediums structure ontoviolence across many spectrums and scales. The implications of such analysis may be radical. Are algorithms a priori unethical as always implying a reduction? Should we have a right not to be subject to perspectival regimes, interfacial regimes, and ubiquitous sensors, or any mode of reduction? Should media based on the fixed point of vision be prohibited by law, just like certain kinds of violent images are prohibited? Should any kind of reduction of proprioception be put in question? But then how? Many will argue that reducing proprioception to clicking allows the expansion onto planetary-scale networks and that this enriches us, that people want it.

The response is not in prohibiting but in broadening perceptions. This in itself should create a resistance to narrowing. But how does one broaden them within a planetary machine of reduction? Fluctuations are everywhere, in the subatomic fields of every atom of every tissue. How to let them unfold and counteract reduction? To despise dominion is what's needed, exposing its poverty and inferiority. The

joys of mutation needs to be disseminated instead. The "masters" who sit immobile are also slaves to their immobility and poverty. Immobility and reduction are a cosmic crime.

6.2.2 Metaformative Ethics of Nonreduction: Decolonizing Perception

Decolonizing perception (and thus bodies and the planet) implies moving well beyond a sheer criticism of ocularcentrism, as is performed in decolonial theories (Castro-Gómez and Grosfoguel 2007), well beyond claiming touch and vision. It needs to involve a more far-reaching disalignment of the hierarchies of perception that enact dominant fields.

The concept of autonomy as ground of freedom needs to be extended, via the intermediate concept of agency, to a broader analysis of the charge of indeterminacy of relational ecologies. Relational freedom comes about when possibilities for reconfiguration are sustained in an ecology. *Clinaos* is my name for this force of sustained opening. Likewise, the pathocentrism of many ethical frameworks, focusing on the degree of suffering of a body as measure for how much it matters, needs to be extended to an affirmative account of symbiosis. Things only matter to us (literally) as they become part of us via proprioception. This is the urgent matter when approaching issues of care, solidarity, empathy, or commons.

An ethics of plasticity is one of symbiosis that takes care of our ongoing composition of metabodies in becoming with others. Freedom, justice, rights, and agency need to be revisited as relative to a field's plasticity, as *relational indeterminacy*. Violence, instead, and domination, as the sustained imposition of movements needs to be revisited also as *relational determinacy*.

Meta-/ontoethics signals this shift from moral responsibility of a subject to an ecological response-ability, as *increased sensitivity*. Meta-/ontoecology implies questioning the totalizing account of the individual self or subject by promoting modal selves or metajects, relational subjects in becoming, which, as in Edmund Carpenter's account of Inuits or in Anzaldúa's mestiza, are expressions of nonlinear, nondualist ecologies. This multiple self resonates with the eccentric subject of feminism defined by Teresa de Lauretis (1990) which is composed of shifting multiplicities, and with Rosi Braidotti's nomadic subject, and partly also with the more abstract multiplicities in Deleuze and Guattari. Yet I incorporate indeterminacy into its shifting tissue, not only of the multiplicities to come, but movement's constitutive indeterminacy.

A revolutionary politics of collapse of structures fails to understand that underlying structures are movement trajectories with inertias and established force relations that will persist if there isn't an overall disalignment of the underlying geometries. What I propose therefore is a politics in which subtle openings are induced in all strata of the ecology, by reintroducing richer spectrums of movement perception where they got reduced by millennia of atrophy.

Counter-ontopower is an anti-reductive move.[8] Grids, as frozen swarms, become more lively swarms. But since grids will presumably continue to be there for some time, the kinds of plasticity needed to exceed their reductive effects are yet to be

8 See Massumi (2015, 244) on counter-ontopower as a kind of surplus value that "refuses capitalism's quantifying capture," as well as other modes of qualitative capture. Pre-emption operates by capturing surplus value. If ontopower is about (re)probabilizing, I suggest that counter-ontopower is about both deactualizing and deprobabilizing.

accounted for, unprecedented, an evolutionary leap into new formless movements, unheard of choruses of disaligned bodies.

…

Indetermination as justice means that injustice comes whenever movements are imposed. It will thus equate freedom, relational freedom, as the capacity of a field to sustain openness, to proprioceptively recompose, to vary. Equality and equivalence must then consider indeterminacy as well: we are neither equal nor equivalent, but we have the right not to have movements imposed.

Proprioception gives us a chance for an unprecedented sense of cosensing fraternity. *Liberté, égalité, fraternité* can be radically reinvented under the light of proprioceptive entanglement. The economy of proprioceptive immediacy, in a world of digital surveillance and pandemics, also provides a chance for a radical rethinking of economy. How can one develop an economy of variation as surplus in movement that is not postponed, abstracted, or aligned, but rather kept alive, varying in our movements? The orgy exemplifies this economy of superabundance and excess, of generosity. This points even beyond gifting economies of exchange.

Neither assemblies nor parliaments, neither academies nor schools. Choruses! Nomadic metabodies, swarming spaces, are the new economy and *technē* in a metatopian world.

6.3 Choral Ontopolitics and the Metadance of Life

Choral or group dance is foundational to the social and the "human," like individual dance is foundational to the body and the "self." In ancient Greece, the chorus as group of dancing–singing bodies was perhaps the most important institution for social cohesion, education, healing conflict, and celebrating life. There were funeral dances, war dances, ecstatic dances, most of them sacred dances associated to every kind of ritual. But this picture, which is already surprising if not incomprehensible to Western industrialized rationalists of today, is not the exception, but the norm in early human cultures. Particularly of tribal cultures (including, most likely, those from the Palaeolithic, that is, 99 percent of *sapiens* existence) one can say that everything is or was danced, perhaps especially in Africa, where every single significant occasion of life has its dance, where dance for sheer collective kinaesthetic enjoyment can be collectively improvised any night if not anytime. In fact, one can argue that most animals dance their life around most of the time, and endless cases of specific ritual dances for mating or other purposes have been documented amongst nonhuman animals also, not to speak of their astonishing visual appearance, kinaesthetics, sensory capacities, and architectures.

Instead, the geologic and evolutionary anomaly is that of civilizations where dance has been increasingly relinquished and relegated to almost inexistence, where social cohesion is operated through machines. Endless theories speak about the foundational character of synchronized rhythms for human civilization, in dance, work, and war. But now the rhythmic synchronicity underlying social cohesion is dictated by machines of which we are appendices, while embodied kinaesthetic experience is neglected in favor of a Parmenidean nightmare of immobility.

Here I will speak of the urgent need to recuperate what Havelock Ellis (1923) calls the *Dance of Life*: dancing life means that every experience is always already heightened by a kinaesthetic and sensory richness, which is the primordial kind of

aesthetic richness, a richness without which, I argue, there can be no life. One could indeed reverse the phrasing and say that every activity comes from a long rhythmic evolution in the cosmos and is itself a rhythmic expression of the cosmos, as is proposed in some Indian cosmogonies, or even in current physics. Evolution is a process of increasing diversification of ecosystems, organisms, and species, all of which are defined by sensorimotor varieties, at whose core is rhythmic diversity. The biosphere is a field of increasing diversity, a diversity that is self-unfolding and self-supporting, where the fact of diversification is the cosmic *telos* itself. The biosphere can be understood in terms of the varieties of movements that it hosts. It is therefore surprising, to say the least, that those civilizations that are neglecting movement diversity have considered themselves superior and are imposing on the Earth a homogenization and impoverishment of such calibre that a full mass extinction ensues.

We could call this expanded notion of dance *metadance:* dance beyond dance-as-human-discipline, dance as symbiotic mutation, or also *microdance:* the ongoing variation, indeterminacy, multiplicity, and irregularity of rhythmic movement, in excess of metric reduction. Microdances are not only and not necessarily small. They can be irreducible to pattern, and disalignment, *clinamen,* intrinsically differential.

Meta- or microdance speaks of the fundamental and necessary aesthetics of life as core ontopolitical premise. It is not a luxury of "higher civilizations." Rather, it is the ontological and political condition *sine qua non* of life at large. What paradoxically creates poorer and more precarious lives is a generalized culture of kinaesthetic and sensory flattening, which stems from the outrage of agriculture and urban life. This also proves that a more sophisticated technical "civilization" doesn't imply richer lives, nor richer creativity, art, and culture, as is also crucially claimed by the anthropological revolution of the original affluent society, which dismantles the fallacy that agrarian cultures live better than gatherer–hunters. Likewise, I want to claim the richness and complexity of what only bodies can do through the fundamental technique of the body: moving–sensing.

The relevance of oral traditions (which should rather be called kinaesthetic, as it is all a question of mostly nonverbal embodied knowledge transmitted through movement, including sounds) comes to the fore when analyzing the complex forms of knowledge, education, memory, political organization, and so forth that one finds in gatherer cultures who have no hierarchies or chiefs, and who develop immensely complex and respectful relations with their environments whose knowledge is transmitted in their dances, as in the Australian Corroborees and their enaction and transmission of deep ecological knowledges. The celebration of rituals of passage through dances since the middle Palaeolithic at least also has a crucial role as means for organizing the relations in the community, and for the purpose of memory, knowledge, and education.

Thus, linking here to embodied cognition theories and the embodied nature of all knowledge, I will argue that not only is the written knowledge of civilizations not superior in any respect to the kinaesthetic knowledge of tribal cultures embodied in their immensely diverse and complex dances and songs (by far exceeding the overestimated tendency to narrative), but I in fact argue that the more we externalize knowledge, the poorer it gets because externalization happens at the cost of impoverishing internal movement, its variation and fluctuation. (If you wonder why I have taken so much effort in writing this long book, given my preference for kinaesthetic knowledge, well, it is the effort that I think is needed in order to exit from the loop and turn verbocentric reason against itself!)

Tribal dance used to be all dance, at a time when everything was danced, and everyone would dance. Its split into rigid disciplines and categories, to the point of marginalization, is not the necessary effect of an unavoidable path to a "superior civilization," but of devastating hierarchies, power relations, and large-scale dominion since the Neolithic, a dominion whose very nature is movement reduction for which the orgiastic and self-organizing nature of dances and rhythms emerging in the fluctuating immediacy of bodies had to be neglected. But it cannot be erased, just like quantum fluctuations cannot be stopped. Instead, they must be enhanced if we are to stop extinction. This is the ontopolitics of dance.

It is in kinaesthetic, rather than oral, and improvisatory traditions of collective movement where the greater richness of knowledge and memory can arrive, a *knowledge that is in the movement itself,* in excess of semiotics. We live enmeshed in endless vibratory fields, of sound, light, and myriad other rhythms of life, in which resonance is always in variation, as the varying entanglement of rhythms is unstoppable.

The limitations of understanding collective intelligence, a theme that has puzzled Western rationalists for decades, is because intelligence has been wrongly thought by rooting it in the fallacy of the disembodied individual mind as source for knowledge and action, and to the domination of semiotics. Even the prodigious swarming motion of flocks has been subjected to the grotesque reductive formalizations of that immobile mind with very poor results, always aiming at prediction and control. I argue that it is not in prediction or control, but rather in sustaining indeterminacy and variation where the evolutionary force in fact lies.

This leads to an even deeper problem. Human cultures and knowledge have for too long been founded on mimesis, due to the prevailing power of vision at a distance and our impoverished sense of proprioception. Human civilization's link to rhythmic synchrony is the problem itself. Against the many theories that focus on synchrony as means of cohesion and bonding and as fundamental cognitive mold of the "human," I argue that we need to recover the much richer sense of movement that all nonhumans still have, by which we can connect to each other without synchrony or imitation and with a far more open, less homogenizing, more symbiotic and ecstatic, but also sustained kinds of knowledge and relation, always on the move, always in variation. Such is the metahuman ontopolitics of dance that I propose in order to heal ourselves and our worlds from millennia of alignments that, by destroying the planetary environment and impoverishing our lives, are leading us to extinction.

The ecstatic is arguably an even older motif than the mimetic in dance, religion, and human societies, and indeed the dithyrambic spirit of ecstatic rapture can be sensed in almost all of the oldest hymns and poems known since 2,300 BCE, in Sumer, Egypt, India, or China, a rapture of wonder at the natural world. I claim a sense of ecstasy that is not the fulguration and escape valve emerging already as a palliative remedy in aligned societies since the Neolithic, that is, the escapist orgy. I instead claim to sustain a sense of overabundant and ecstatic symbiosis by cultivating our most primordial sense: proprioception, in endless variation, for regaining the evolutionary orgy.

6.3.1 Choral Ontology and Politics

The chorus is proposed here as an ontology to understand social–cultural phenomena as a more or less aligned field of movements, as metabody or common body, as

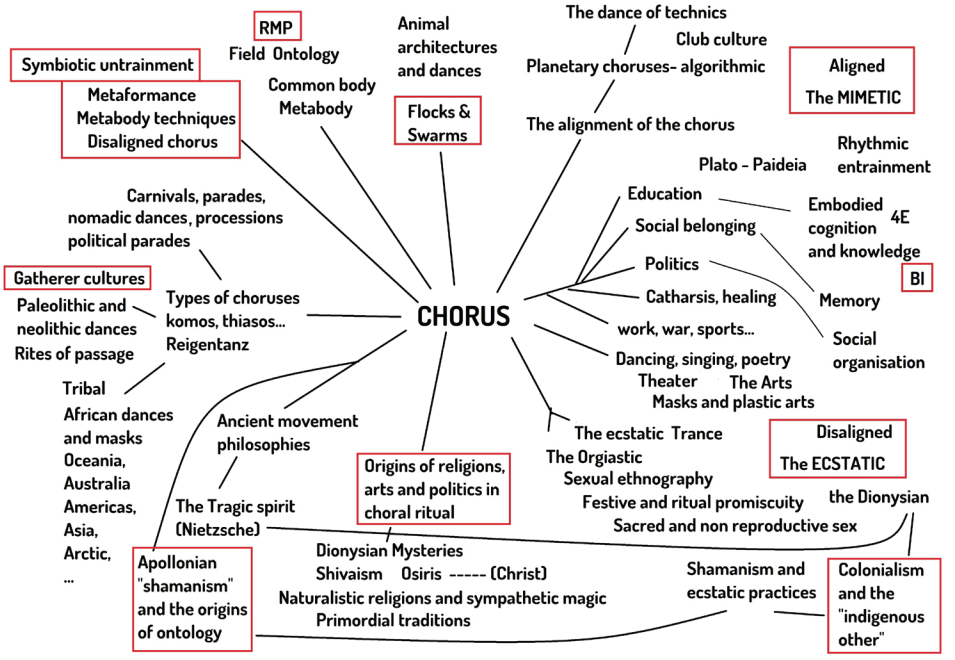


Fig. 61. Chorus field of study.

rhythmic field, and as a more aligned expression of swarms and flocks (in the gradual geometric becoming of flocks and swarms). I adopt the ancient Greek etymology by which the chorus is at the same time the group of dancing–singing bodies, the space of the dance, and the (circular) dance itself (Donath 2018, 131; Beekes 2010, 1644). It implies a field conception, in which actants, space, and action processually and intra-actively coemerge. In this it coincides with the way in which pre-Aristotelian thought would not distinguish these three elements neatly. This process implies laying out an immeasurably broad field of studies around the chorus, as can be seen in fig. 61, which keeps evolving and growing.

Group dancing–singing is a ubiquitous phenomenon in all cultures ancient and modern, whether tribal or "civilized" (i.e., implying large-scale organizations composing built environments, agriculture, farming, and cities, as well as kingdoms, states, or empires, etc.). So are its extensions in masks, body paint and extensions, musical instruments, poetry and drama, ritual, and architecture. And so is the ecstatic chorus. The need to suspend individuality and hierarchy came together with the origins of individuation, alignments, and splits. *Since there are individuals, there are masks*[9] *and rituals to suspend individuality.* The ecstatic chorus is thus historically linked to masks, costume, and body painting, modifications, or extensions in rituals, tribal dances, carnivals, or the theater, amongst other things. These are about enacting *becomings*, mutations, intensities, and transformations but are not necessarily about representation (fig. 62).

9 Masks have arguably had a main double function: the suspension of norms or individuality, and the ritualistic activation of a becoming or transformation, at times linked to mythical or magic narratives, sometimes associated to the winter festivities of changes of cycle, of rebirth and death as in the carnival, mostly linked to the more-than-human, while allowing a return of the moving body against the predominance of *faciality*.

Fig. 62. Top: masks, from the Neolithic to COVID-19. Bottom: parades and processions and other itinerant and nomadic actions, from animals, through the Dionysian *thiasos* and phallic processions, ancient *chirivaris* and medieval death dances, itinerant African dances and European choreomania, carnivals and Easter processions, to LGBTQIA+ pride, nude parades, love parades, political demonstrations, or streets interventions of *butō* or performance art and more recently parkour: the festive, ecstatic, erotic, masked, religious, and political have blended in diverse ways.

Fig. 63. Dionysus and his *thiasos*: the triumphant procession leb by Dionysus, followed by maenads and satyrs. Montage of 6 pictures taken from a vase from Athens, 420–410 BCE, from the painter of the Athens Dinos, at the National Archaeological Museum of Athens. Photo of vase and montage by author.

Itinerant or nomadic parades are another field of practices converging in the chorus: from the Dionysian *thiasos* and *pompe* and their *phallic parades* (fig. 63), through the medieval *chirivari* and the Feasts of Fools, or even death dances, through choreomanias and witches' Sabbaths, carnivals, circus parades, *romerias,* and Easter processions (which, however, present a reversal of the Dionysian procession and spirit preserve a nomadic, multisensory, choral aspect), to the LGBTQIA+ pride, political demonstrations, or street performance art, and more recently parkour: different types of parades and nomadic interventions blend the festive, the orgiastic, the religious, and the political. Some of them tend to more immanent, ecstatic, and transformative situations, others to more spectacular, orderly, and formal ones (as in military, royal, or religious parades). LGBTQIA+ pride has elements of both: often becoming a spectacle like is also the case in modern carnivals, it however has a political side linked to deep personal and social transformations and becomings it involves. The plurality of the bodies coming out into the streets is quite a revival of the Dionysian spirit in our contemporary world of selfies and emoticons: mutant bodies, colorful and in drag, dancing, all oppressed peoples coming together and celebrating, creating common space.

Arguably every culture has had its choral practices or, rather, is defined by these, mostly of crucial significance for creating social belonging, as well as for education, politics, or healing, often religious, ritualistic, and cathartic, at times ecstatic and orgiastic. As Azoulay and Ismard (2018) suggest following actor–network theories, the chorus affords a broad understanding of social formations. As Billings, Budelmann, and Macintosh (2013) propose, the chorus united aspects that became split till today and seems to have disappeared as such from dominant human cultures.

The more articulated and complex the society, the more the spacetime of its chorus will be narrowed, defined, or enclosed. If choruses are a "cultural" expression of flocks within aligned societies, one could consider a continuum with tribal cultures that are less aligned on one end, where group dancing–singing was or is more of a daily improvisational practice with less of a structured spacetime and organization; and more articulate types of choruses in more articulate and aligned cultures, as was the case of the ancient Greeks, on the other. Likewise, in contemporary superaligned global and algorithmic societies one can consider how the chorus has been split into a series of highly controlled spaces, from social media and flash mobs to clubbing culture, music videos, and stage choreographies, or even hospitals, libraries, and parliaments. All the functions that were condensed in the chorus as means for embodied knowledge, social organization, or healing are now split in endless disciplinary regimes. Was it worth the effort to perform all these splits? Or is it time to return to the *general dance of life*?

All movement was life, all life was movement.
— Luis Siret (1996, 273)

6.3.2 A World in Chorus: Chaosmic Dances and Kinediversity

I dance therefore I am, in becoming, with the world.

I love dancing. It is far deeper than a pleasure. It is the primordial act of self-making and world-making, of plastic and relational becoming. I dance ecstatically, in clubs or woods, in streets or mountains, in architectures or beaches, with music or with the more primordial rhythms of the muscles fluctuating, and the voice that comes with them. One doesn't dance *in* a place: one dances the place. The dance creates the sense of place, and of body-in-place, and of relation: of self and of world.

Dance here is not the volitional activity of a body rationally and consciously shaping forms and rhythms. It is a field activity, indeed a cosmic one, that happens in excess of individual volition (an Aristotelian scheme), an activity where BI unfolds in self-organizing manner, always in relation, not only to other bodies but to all ecosystems that we cocreate by moving. Ecosystems are woven fields of movement.

Every morning I dance, improvise, fluctuate in silence, it is my awakening into each new day's adventure. If I dance with others, it is never in unison, nor imitating. I move my own way and always in new ways. Only then can I be really connected to others, for connecting to one's proprioception is the primordial source for connecting to the world, letting your rhythms recompose with the changing rhythms of the world. Rhythmic openness is key, as your swarm of joints gets traversed by new intensities, recomposing with them, creating new memories. Differential dances can then happen, where bodies merge in and through their variation and *only through it*. There is no contradiction here. Homogeneous bonding through synchronic imitation is the forced and false connection, the anomaly that drives us to extinction.

Life and evolution are thus primordially an aesthetic process of enrichment and increasing variation, and when they stop being so, extinction appears on stage. For four billion years the rhythmic variation in the dances of molecules and flows, of swarms and flocks, has afforded an overabundance of life on Earth. Palaeolithic hominids and humans still mostly followed that path, hence the ubiquitous importance of dance in tribal cultures, where every important occasion in life has its dance, where work, dance, and play are not so easy to differentiate, where richness in movement and perception is always alive. This is the economy of flow and variation of life, which economies of accumulation and repetition are currently blocking.

With agriculture, farming, and cities in the Neolithic, a fatal turn gradually imposed itself. It was the sedentary ways of living where technics increasingly dance for us in homogeneous manner and dancing becomes a relic or a palliative remedy with less and less transformative force. From circular choruses celebrating the Earth we've gone to a chorus of satellites exiting a dying planet. The less we dance, the more extinction we create. But I will share with you my vision of a world in chorus, where dance has a primordial evolutionary role. I will show how alignments made their way and propose ways to dance beyond.

I propose a threefold thesis:

1. Richness and diversity of movement is core to life and evolution (in the entanglement of inorganic, organic, and social, where the complexity of earthly flows is inseparable from the flourishing of organic life, the flows where nonhuman

and human societies have proliferated). *Kinediversity is the deeper ground of biodiversity*.

— Dance as rhythmic unfolding and variation of bodies can be found in the animal world and beyond and is core to all tribal cultures from early Palaeolithic to today's gatherer–hunters, as creative unfolding of rhythmic fields that are the very foundation of the social.
— There are endlessly varied kinds of rhythmic fields and movement relations, most of them irregular and in ongoing evolution such as the microrhythmic[10] flocks of birds or polyrhythmic tribal dances.
— All gatherer–hunter cultures have or had extremely varied and rich choral practices that are or were the main means of social cohesion, memory, knowledge, healing, and creativity.
— Dance has thus no mysterious "origin" in civilized societies. Indeed, it has no origin. It is metacosmic.

2. The evolutionary anomaly currently creating a mass extinction on Earth is the emergence of *homogeneous, synchronic* rhythms in some human cultures in the Neolithic, along with agriculture, farming, cities, and the need for *aligned coordination of movement in large scale and hierarchical societies.* This is crucially part of the unfolding of the Algoricene and is linked to an *economy of homogenization and accumulation (instead of variation and flow).*
— Foundational to such civilizations is hence a new type of coordinated unison dance, stemming perhaps from imitative magic and dances imitating animals with circular or linear dances imitating the stars,[11] or directly related to increasingly aligned work and war activities in agrarian Neolithic cultures.

10 By "microrhythmic" I refer here to the sense of "murmuration," as in the orchestrated movement of starlings, the blurry but powerful rhythmic texture where, in excess of synchrony, myriads of microchanges in the beating and orientation of each bird creates an overall change in the dynamics of the flock. Another example is the texture created by micropolyphony in works of composer György Ligeti, as well as the murmuring walls of scintillating and light, but deep sound, of works like Morton Feldman's *Coptic Light.*

11 Salazar (1929) exposes the possible origins of circular and linear dances in rituals involving a preliminary procession and round dance around an altar. The strophe in poetry and song is related to the dance turns around the altar: strophic, *stromphos, trompō, tropē* (turn). Circular and linear dances appear depicted in vases (circular) and spear decorations (linear). Both can be around a symbol or totem, tree, menhir. In agrarian cultures there could be two or three concentric circles, like in the ornaments in ceramics, or in rows.

Siret (1996) proposes that the *geranos*, as labyrinth or meandering, serpent-like dance linked to the myth of Theseus and the labyrinth, originated in Crete as a spiraling movement imitating the movement of water, which was the paradigm of movement as life, at a time when labyrinths had not yet become linear, which came about in the geometric period after 1000 BCE. For Siret indeed the origins of bullfighting in the Minotaur myth of Crete would be in the diversity of associations of animals with water spirals. This includes the spiraling of anthropomorphic figures which appear on one side of some Cretan coins while on the other is the swastika which evolved from spiral designs. I elaborate this relation between water spirals and animal bodies as an evolutionary theory in Book 4.

Iroquois or Aztecs also had serpent or meandering dances. The grand and mimetic Aztec dances would have a cosmic dimension where "The serpent-like actions represent fertility, the squatting to the floor represent the earth and crops, the twirling in the air represent the soul, the alternating of forward and backward steps represent fire, and the zigzag steps represent water" ("Why Did the Aztecs Dance?" 2009).

Circular dances continue throughout the Middle Ages, from the rounds of the carols to the depictions of angels dancing by Fra Angelico. According to Nettl (1945) for San Basilio, dancing was the main occupation of angels. According to others, Christians went to the desert to dance, some of the first monastic orders were the *choreutes*, and in early churches and cathedrals there was a theater

— Choral movement, which was already the core means for less aligned modes of cohesion, thus evolved into the core civilizatory practice, with *unison* dance at its center but unfolding in a variety of disciplines, including sports, the military, work, etc., as the technical took gradually over, up to current digital society.
— We have transitioned from ancient cultures, where everything was danced, to a global culture, where one hardly dances. Instead technologies dance in algorithmic form for us, and we align to them in a planetary chorus of microchips and satellites of which we are appendices.
— For a period of time during the Neolithic, religious ritual was the major form, later tending to profane and professionalized dances and varying movement disciplines and techniques, and to technics as all-encompassing guiding frame for coordinated movement, a frame which itself acquires increasing predominance and autonomy.
— In the process, we go from internal proprioceptions as reference to complete exo-referential alignments with technics.
— Meanwhile, dances also become escape valves from these new alignments: ancient seasonal festivities, ecstatic dances where bodies recuperate a vortical movement, an ecstasy from rigid selves and rules and evolve into carnivals up to modern raves. Some ecstatic techniques (maybe those where trance is reached through immobility) perhaps gave way to a thrust to religious transcendence, the otherworldly, and domination. In modern times, the ongoing escape valve is in mass-media entertainment and now social media, in the addiction to consumerism, media content, drugs of all kinds, and technology itself (a generalized condition of regulated altered perception). This comes with its promise for endless availability of new products and experiences at your reach, where quantity takes over quality, increasing the poverty of embodied life and with it unlimited addiction while keeping bodies dissatisfied (the reverse of gatherer cultures).

3. In face of this, the only way out is in regaining the moving–sensing body and claiming the richness of what a body can do just by itself, its body–move-

separate from the altar where all sexes danced devoutly. Indeed, dance was integrated in the early Christian rituals for several centuries and the original choir in the cathedral was for dancing, rather than static singing. According to Ellis (1923, 44), "Even in more modern times an ancient Cornish carol sang of the life of Jesus as a dance and represented him as declaring that he died in order that man 'may come unto the general dance.' [...] In English cathedrals dancing went on until the fourteenth century. At Paris, Limoges, and elsewhere in France, the priests danced in the choir at Easter up to the seventeenth century, in Roussillon up to the eighteenth century. Roussillon is a Catalan province with Spanish traditions, and it is in Spain, where dancing is a deeper and more passionate impulse than elsewhere in Europe, that religious dancing took firmest root and flourished longest. In the cathedrals of Seville, Toledo, Valencia, and Jerez there was formerly dancing, though it now only survives at a few special festivals in the first. At Alaro in Mallorca, also at the present day, a dancing company called Els Cosiers, on the festival of St. Roch, the patron saint of the place, dance in the church in fanciful costumes with tambourines, up to the steps of the high altar, immediately after Mass, and then dance out of the church."

According to Salazar (1923), druids danced in slow circles around the totemic oak. Sueves, Alans, and Vandals also had their circular and war dances; and our ballets come from all these astronomic circular dances, sacred dances, and pantomimes. From Celts to ancient Mexicans, from Crete to India and China, it seems that circular dances have been ubiquitous, possibly emerging with agriculture as astronomical dances. They keep existing for instance as circle dances of children at school and have been very often depicted as symbol for harmony, peace, or freedom.

ment *technēs* — for regaining a lost richness of experience, for undoing our dependence on toxic systems, and for relearning to move with others and the world — by regaining a lost symbiotic sensitivity:
— claiming the possibility of open forms of social cohesion based on differential movement and not on synchrony. At stake is not only to regain dance, but disaligned dance.
— dancing in nonsynchronous, fluctuating ways, growing in symbiosis with others, and this is core for reinventing life in the age of extinctions, that is, for an ongoing dance of life, not an occasional escape valve, where every aspect of life recuperates experiential richness;
— cultivating varying modes of embodied knowledge no longer based on imitation and repetition, nor on vision at a distance, but on entanglement of proprioceptions.

I propose choral dance as lens for revisiting everything in naturecultures, as both a rhythmic and field ontology. At the center of the proposal is the trope of *the chorus as rhythmic field and common body*, a differential field where individual and collective dance merge. It is not a unison collectivity, but one where every body moves differently in relating to others. The chorus here is not in opposition to individual dancing. Here I differ from some ancient Greek and later conceptions of the chorus as unison movement. *This is core to the very possibility of understanding and affording relational openness.*

The modal-qualitative approach is also key: endlessly varied rhythmic fields can be created by unfolding the complexity of proprioceptive, internal-relational rhythms. The richness, intensity, and complexity of what bodies can do without other technics is arguably larger than what can be done through complex technical alignments whose purpose is in fact reduction. Also, such embodied practices are inherently varying, based on symbiotic exchange and ongoing mutation, as opposed to exoreferential systems of memory, writing, and repetition.

I claim the pertinence to use the term *dance* in relation to Palaeolithic or nonhuman movement and denounce the questioning of it as an anthropocentric bias that we need to invert, while broadening the spectrum of what dance is, which is not a "harmonious," orderly, and metric movement, but rather a rhythmic fluctuation in nonreductive variation, fielding forth, elaborating experience, enriching life and evolution with new symbiotic mutations. We need to deanthropocentralize these ideas, unlearning dance as a "civilized" human endeavor split from life based on geometric alignments, as palliative escape valve, as professional activity that spectators watch to have a provisional catharsis and palliative cure of their own existential atrophy. Dance, thus reconsidered, offers a way out of the excessively central role of verbal practices that humans seem so attached to, an alternative for reinventing ourselves and exiting the self-referential circle. The dance of life and life as dance are reconstrued as rhythmic movement, nonmetric, irregular, and fluctuating, and in irreducible variation. Moving with others human and nonhuman, cosensing symbiotically, rather than verbally consenting amongst certain humans, seems core to a metahuman program and politics that may exit the extinction loop.

> *In the beginning was dance and dance was rhythm, and dance was in rhythm. In the beginning was rhythm and all has been created by it and without it nothing would have been made.*
> — Serge Lifar (1966, 77, my translation)

Dance invents the body as it gives it adaptability, allowing it to go in every direction.
— Michel Serres (2011, 7)

6.3.3 Rhythmic Choreontology: There Is Only Rhythm-Dance

Some Hindu cosmogonies present a world born from rhythm: Śiva, the cosmic dancer, creates and destroys worlds through a nondual dance.

Ellis tells us:

> The significance of dancing, in the wide sense, [...] lies in the fact that it is simply an intimate concrete appeal of a general rhythm, that general rhythm which marks, not life only, but the universe [...]. It need surprise us not at all that rhythm, ever tending to be moulded into a tune, should mark all the physical and spiritual manifestations of life. [... T]he cosmic play of philosophers' thoughts rise and fall according to the same laws of rhythm. [... Dance] is life itself, [...] as Rachel Varnhagen said, of which we ourselves are the stuff. [...] Nietzsche, from first to last, showed himself possessed by the conception of the art of life as a dance, [... through which one] achieves the rhythmic freedom. (1923, 37)

Rhythm as core of *poiēsis* takes us to the origins-without-origin (or the permanent emergence) of life and the chaosmos: the fluctuations emerging in cosmic inflation and Big Bang scenarios, as unfolding of entangled rhythms in vibrating subatomic strings fusing into atoms, and of galaxy filaments and flows condensing into stars, fusing into the molecular architectures of organic life and the neuronal swarms of thought. Rhythm needs no dual principle, no tension between opposites. The body is always swarming in multiple ways at the same time, as does the complex chromodynamics of particles in atomic nuclei. Rhythm is, first of all, proprioceptive (muscular, breathing, etc.) and secondarily exteroceptive (aural, visual, spatial, etc.) and interoceptive (heartbeat, etc.). It is both in the world's rhythms and the body's rhythms that constitutes fields of entangled and ever-changing relations. Kinaesthetic, aural, and visual impressions in moving, dancing, sounding, seeing, and spacing, field forth in unstoppable *poiēsis*. The world is a multiplicity of entangled rhythms in endless variation, each of them a mode of relation-variation.

All *poiēsis* is about (relational) rhythmic unfolding. All *sympoiēsis* in naturecultures is about the emergence of rhythmic fields — modes of fluctuation–variation–composition–relational becoming. From the internal microcosmos of the body to the outer limits of the macrocosmos, everything is a question of entangled rhythms, multitudes of pulsations creating the polyrhythmic texture which we are.

We can perceive or be part of rhythms[12] of:

12 Adolfo Salazar (1949, 12) distinguishes two principles of dance and music, both dictated by rhythm: *agogic,* the speeds of movement (musical rhythm) and *dynamic,* the muscular force of movements (plastic rhythm, in space).

Salazar (1929, 403) also distinguishes two kinds of rhythms: *plastic*, can be seen in many expressions of nature organic and inorganic, in molecular architectures, crystals, plants and trees; *dynamic,* the privilege of the animal, but more generally present in circular, undulating movements, and its most fundamental form would be the "constant law of muscular movements" as relative to successions of movement and rest.

— our internal bodily motions: proprioception, breathing, heartbeat; extero-, intero-, and proprioceptive integration, visual and sound rhythms, tactile and above all proprioceptive fluctuations;
— daily, yearly, earthly, and cosmic cycles;
— weather, elements, changes, and flows: water, fire, air, and the apparently frozen motion of rocks, glaciers, and mountains;
— bodily motions of other animals (including humans) but also plants and other life forms who move by growing;
— technical motions, which are more repetitive and aligned.

We are entangled with galaxy swarms and quantum foam, love fusions of molecules and of animals, ecstatic vortexes of stars and dancing bodies, and, the more recent alignments of technics, the tendency to fix and dominate.

6.3.3.1 The Primacy of Proprioceptive Rhythm

Contrary to the modern belief that one dances to a given music, dance is the primordial fact of sensing one's own proprioceptive rhythms. This is also the source of the pleasure in dancing, as endorphins are released and new potentials for becoming with the world grow, as an intensified experience of life that can be elaborated and cultivated, as improvisatory praxis in ongoing variation that is shared across bodies, where growth is symbiotic, never of a bounded self.

Adolfo Salazar (1929, 403) speaks of a constant law of muscular movement underlying dynamic rhythm in animals, in the fluctuations between movement and rest. Dynamic rhythm is grounded in the muscular force of movement, and "abstract" music is built upon schemes derived from rhythmically organized muscular gestures (Salazar 1929, 16). For Ramón Andrés (2020, 42), it is also muscular movement that underlies rhythm and music, the bodily harmonization of swaying and rotating, of bipedal balancing of steps and posture. And for Michel Serres (2011, 7) "dance invents the body as it gives it adaptability, allowing it to go in every direction. Music will invent language because it also goes in every direction, in the sense of signification."

Molecules cohere through rhythmic attunements into always new compositions, new directions. Animals dance their life all the time, in the fluctuating attunement between bodies of a flock and with their surrounding rhythms. Wandering and curiosity cannot but be the core openness of life.

There is also what we could call a middle way of half-dancing, like what I see in my cat and dog companions: of ongoing graceful movements, of ongoing full aliveness of a plastic proprioception that is always opening up to novelty. Some humans maybe still do it, mostly outside the neurotypical spectrum, or outside sedentary urban environments. Some people have this anyway, and some environments or works, think only of certain bartenders dancing their way around the bar.

Arguably all tribal cultures since early Palaeolithic times have danced life around as core means of collective field-making, of proprioceptive common body, which

Oskar Bie (n.d.) distinguishes indirect (culturally elaborated) and direct (natural and directly perceived) rhythms. Rhythmic art is the joy of an ordering in time, though it can be an irregular one. It can be of movement and gesture, sounds, spatial or visual elements. It can be the internalization of rhythms perceived in the environment. All nature is full of rhythms and so is social life and perceiving them is a whole art of life in itself. Creating oneself rhythms is another level of social-cultural poiesis. Light is more fundamental than tone and perceiving visual rhythms of the elements or of bodily motions is more fundamental but eventually less deep as creating them through music in the proximity of tone.

William McNeill (1995) calls "muscular bonding," but which I argue can happen in excess of rhythmic synchronicity. Similarly, Janheinz Jahn (1994) claims the core role of rhythm in African culture, as underlying every expression of social life, and as the vital pulse of life, in poetry and narrative, dance and music, sculptures and masks. Polyrhythm and polymetrics alternate and cross-rhythms are crucial for reaching ecstatic and trance states.

This perhaps continued to be partly the case in increasingly aligned Neolithic and agrarian societies, where dance became increasingly relegated to specific situations, while other forms of coordinated movement became the source for the new ways of synchronic, homogenous attunement in work, therapy, sports, gymnastics, martial arts, or the military. With industrialization, alignment with machines became the core means of cohesion, while machines are now becoming increasingly autonomous: a planetary chorus of mechanical and digital dances of algorithmic world reduction, a reductive rhythm that imposes itself ensuing in a mass extinction.

Increasing externalization and alignments (exosomatization and grammatization) has happened along a rhythmic homogenization and a reduction of fluctuation. Incapable of vibrating with the microrhythmic irregularities of the world. We have called chaos whatever we no longer comprehend, what we cannot move with anymore.

Here I speak against the rhythmic alignment of the world. For this we need to open up the concept of rhythm to irregular fluctuations, micropolyphonies, and polyrhythmic and metametric flows, like the murmurations of starlings. Regular rhythm based on a meter is the reductive anomaly of the age of algorithms, of the atrophied, *unhanced trash-human* (see Book 5) incapable of moving with complexity. Reductive rhythm-as-meter, that of the atrophied human who imposes its image on the world. The musical experimentation of the twentieth century avantgardes has provided a wide array of approaches to recover a broader sense of irregular rhythm. Consider for instance each of the 173 groups, each one a section in Karlheinz Stockhausen's work *Gruppen,* as a rhythmic microcosmos, spacing its field in always new variations and modes which have no external metric reference.

But music cannot be a means for transforming our toxic ways of living if only listened to from immobility, detached from the moving body. For this we can take deeper inspiration from African and Aboriginal dance music, their complex improvisatory and polyrhythmic modes, and from nonhumans. Flocks or tribal dances often have this openness already, like do inorganic compounds. Rhythm–fluctuation, as core aspect of field forming, is not limited to the animal nor even the organic world. It is metachaosmic.

> *"What do you dance?" When a man belonging to one branch of the great Bantu division of mankind met a member of another, said Livingstone, that was the question he asked. What a man danced, that was his tribe, his social customs, his religion.* [*... W*]*e should still have to ask of it the question of the Bantu: "What do you dance?"*
>
> — Havelock Ellis (1923, 38)

6.3.3.2 What Do You Dance? Life As Dance

The planet has been dancing for eons. Evolution is a prodigious dance of movement diversification. From animal courtship to flocking and the swimming of medusas to

the dances of vortical flows and molecules. Since the Palaeolithic, all human societies have been primordially dancing choruses.

I share with you my vision of a planet in chorus. From the frenzy of popular dancing in medieval Japan and Europe, to the grandiosity of imperial dances in China or ancient Peru, from the tenderness and vigor of endless African dances, to the cosmic dances of Śiva creating and destroying worlds, from Egyptian funeral dances to the swirling of dervishes and the frenzy of shamans, from the ecstasy of Dionysian maenads to the heavenly dances of Medieval angels, from grotesque medieval death dances to modern trance dance and raves, from elegant court dances and ballet, to the frenzy of carnival and orgiastic war dances, from the round dances of children, to erotic and mating dances (fig. 64).[13]

Havelock Ellis (1923, 40) claims the primordial and ubiquitous nature of dance as expression of life in all cultures or even before human cultures, so that dancing

> is the primitive expression alike of religion and of love — of religion from the earliest human times we know of and of love from a period long anterior to the coming of man. The art of dancing, moreover, is intimately entwined with all human tradition of war, of labour, of pleasure, of education, while some of the wisest philosophers and the most ancient civilizations have regarded the dance as the pattern in accordance with which the moral life of men must be woven. [...] The dance, [...] constitutes everywhere the most primitive, [...] and the most highly developed art. Whether as a ritual dance, or as a pure emotional expression of the joy in rhythmic bodily movement, it rules the life of primitive men to such a degree that all other forms of art are subordinate to it.

Likewise, Tüllmann (1961) claims that in all tribal cultures people dance as pure enjoyment, as means for contact and eroticism, for religious purposes, for weaving history and narrative, for hunting and invoking sacred animals, for auspicious plantations and fertility, or for defining hierarchy in kingdoms: dances elaborate experience.

6.3.4 Ontopolitics of Dance: Ecstatic and "Orderly" Dances, from Palaeolithic Rituals to Modern Raves

Tell me how you dance, and I will tell you who you are. This applies also to societies.

Some scholars propose that the two major kinds of dance since the Palaeolithic are *ecstatic* and *mimetic*.[14] Two major types of dances can be seen in human cultures

13 For general references on histories of dance, see amongst other Anonymous (1911); Ellis (1914; 1923); Mason (1916); Bie (1923); C. Sachs (1933; 1937); Nettl (1945); Salazar (1949); Lifar (1966); and Jonas (1992); and in relation to theater Baty and Chavance (1932). Some of these references, such as the influential work by Sachs, are considered biased, dated, or essentialist by current Anglo-American scholarship. Even though we may agree with such statements, they are used here for historiographical purposes and offer a broad documentation on types of dancing across cultures and histories.

14 See Ellis (1923, 41): "These religious dances, it may be observed, are sometimes ecstatic, sometimes pantomimic. [...] Pantomimic dances, [...] imitate natural process, [...] a divine drama, [...] In this way ritual arises. [...] pantomimic dancing crystallised in ritual, rather than in the sphere of ecstatic dancing."

Nettl (1945, 18–29) proposes to distinguish *imitative* dance (with figures, extroverted, linked to imitative magic and patriarchal totemism) from *ecstatic* dance (spontaneous, dance in itself, without figures, introverted, linked to agrarian matriarchy).

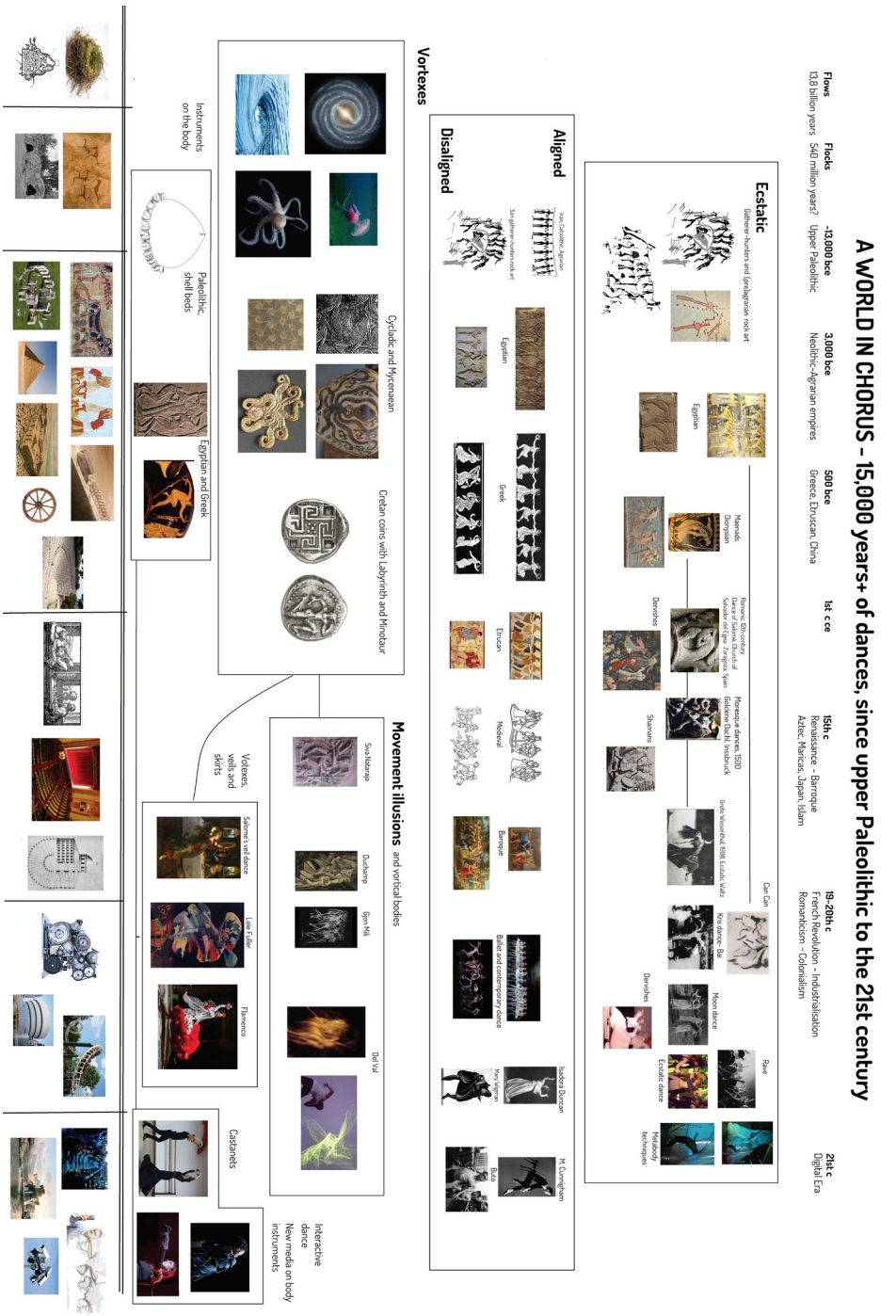


Fig. 64. Diagrams of evolutions of movement modes from Paleolithic (left) to today (right): on top evolution of ecstatic dance movements, in the middle the parallel evolution of aligned and disaligned dances, below this the evolution of vortical movements, and of worn music instruments, and at the bottom parallel modes of work and technics.

since the Neolithic: *circular–linear–geometric* and *vortical–differential,* with some in between. The latter came first and are there in the animal world already. Another way of positioning them is *differential choruses* based on cohesion of *fluctuations without synchronicity* versus *homogeneous choruses* based on cohesion though synchronous, uniform, metric movement. The latter is the anomaly of the Algoricene.

The mimetic can be geometric or disaligned, for example, movements of heavenly bodies versus vortexes and animals. Likewise, the ecstatic can be geometric or disaligned, for example, repetitive trance and geometric hallucinations versus Dionysian and differential (nonimitative nor synchronised) ecstatic dance. Mimetic and orderly dances, based on rhythmic and postural synchronicity, are a foundational stratum of human supremacist societies and strictly identified with "becoming human," consolidating in the Neolithic, with possible earlier roots. Ecstatic and disaligned (often orgiastic) dances form the other huge stratum foundational of "human" societies but exceeding and preceding the human at the same time.

(Disaligned) dance, along with (orgiastic) sex, has traditionally been a form of resilience and subversion of social order, ever since rigid social order appeared in the Neolithic, along with radical species multiplication, and dominion. Dionysian, Śivaist, and other ecstatic and orgiastic dance practices were occasions for oppressed classes to get together suppressing divisions between humans and with nonhumans. This can be seen both as continued expression of an earlier overabundance of life (the deeper sense of *orgiasm*, of the orgiastic and ecstatic) and as reaction to the new rigidities, for example, the tendency of the orgiastic to become an escape valve. These practices of "dance disobedience" continued existing during the Middle Ages up to modern and colonial times of slave resilience through dance, from capoeira or candombe, through the racist cakewalk, to hip-hop and break dance, with anti-Nazi resistance through swing, queer resistance through underground and disco dances, and to the raves of beatniks and hippies, of techno music and acid house; with recurrent prohibitions all along coming through the Christian churches, in the Reformation, in Islam, in fascist regimes, and in conservative governments such as that of Margaret Thatcher's: persecuting dance (and sex) as expression of the irreducible, ungovernable side in us.[15]

Since the times of Plato, Confucius, and even before, "civilization" has always been an issue of bringing "harmonious," "orderly," geometric, and moderate movements into bodies. Dominion was always an issue of reducing movement. But the ungovernable side has also too often been permitted under cover, as necessary escape valve, and more recently it has been assimilated in late-capitalist market niches of clubbing and festivals. Current regimes pre-empt life by aligning our movements and desires, orienting them, and actively promoting them through addictive marketing techniques and reductive perception technologies, where moving space disappears while bodies are increasingly aligned, clicking on screens.

Salazar (1949) also proposes to distinguish two main types of dance in the Palaeolithic and Neolithic: 1) mimetic, regulated, and choral; and 2) convulsive-epileptic and individual. The former would imitate the astronomical movements and phases of moon or planets while the latter would imitate the whirling of waters, winds, and storms.

15 On dance as resilience and subversion, and its recent expressions, see Costa (2022). See Ellis (1923, 65), on how, even if "dancing engendered morality [as core civilizatory activity], it is also true that in the end, by the irony of fate, morality, grown insolent, sought to crush its own parent, and for a time succeeded only too well. Four centuries ago, dancing was attacked by that spirit, in England called Puritanism, [...] as a general onset of developing Urbanism against the old Ruralism."

A more irreducible and improvised dance in open space needs to be regained. Arguably, there is no public, common space without dance.

6.3.4.1 Symbiotic Untrainment: Rhythmic Entrainment and Synchrony as Protofascist Principle

Entrainment through metric induction and rhythmic synchronicity has imposed itself on the planet and has indeed been claimed as the unavoidable mark of "civilization." Of course, these claims go along with recognizing "civilization" and its discontents as unavoidable step toward higher evolutions, but as we saw when discussing gatherer–hunter cultures and the anthropological revolution of originary affluent societies in Book 5, this is far from the case.

If the apex of such a paradigm is in fascist parades and ideals, one could indeed argue that unison, homogeneous synchrony is an intrinsically protofascist principle of social organization. No wonder that the civilizations cultivating it have unleashed a Planetary Holocaust and mass extinction.

Many models in embodied cognition and entrainment seem to justify the idea that meaningful, human, social relations are based on synchrony.[16] I refute this vision by proposing that a far more important mode of social cohesion can happen without uniforming movement, a differential kind of relationality that we urgently need to regain and reinvent.

In Book 2 I elaborated more on brain plasticity and divergent movement as untrainment against synchronic and repetitive learning, as well as on relational fluctuation as exceeding an active–passive dynamics, implying instead a differential one, all of which is based in a renewed account of proprioception as core matrix for relationality.

In a later section in this Book 6, on the Metabody techniques and disalignment, I elaborate on some exercises and practices where this differential, nonsynchronous relationality can develop.

I define symbiotic untrainment as the capacity to vary in composing new relations, or, more specifically, as the capacity to and process of fostering variation, indeterminacy, emergence, unpredictability, and self-organization in composing relations, as opposed to the tendency to align oneself with repetitive and pre-existing patterns of relations following pre-established plans and rhythmic synchronicity (synchronic entrainment). Symbiotic untrainment exposes the way in which relationality in animals including humans happens mostly not as metric synchronicity according to a predefined plan (entrainment) but as the nonmetric, rhythmic, unpredictable, and emergent attunement between the proprioceptive fluctuations of bodies moving together or comoving, cosensing, coemerging, cobecoming, in relation and mutation, or relational variation, where multiple internal fluctuations of each body attune differentially to the diverse bodies to which a body relates by means not of mimicking or replication but of differential propagation of dynamics and rhythms. Symbiotic untrainment is anchored on a deep sense of one's own proprioception and the capacity to let the body fluctuate in multiple simultaneous ways in relation to the fluctuations of the bodies around and the entire environment. Symbiotic untrainment is proposed as a core feature of evolution that foregrounds behavioral indeterminacy and indeterminate variation over teleology. It

16 On rhythmic entrainment the literature is huge. See, for instance, Merker et al. (2009); Hove and Risen (2009); and Wiltermuth and Heath (2009).

stresses the relevance of embodied and kinaesthetic knowledge for a social cohesion based on diversity and underlies the ongoing evolution of embodied knowledges as kinaesthetic, improvisational, choral practices based on differential propagation of rhythms and qualities of sensation, movement and experience. It opposes vision-centric paradigms of mimicking at a distance and foregrounds the role of differential propagation of dynamics in evolution and life.

The question is simple: if instead of looking at you from a distance I move with you in contact, while mobilizing all my joints, so that all my joints recompose their internal relations while recomposing with you, I will never imitate the movement I get from you. Rather, your movement will spread into me as a variation. If one is anchored in proprioception, this symbiosis can happen also when not in direct contact. I perceive a quality of movement coming from someone else, and because I am open to recompose my flock of joints, that quality spreads across me into a new variation. When doing this in a collective, a whole field of powerful resonance-in-variation can be activated and practiced, to the point where what might seem strange, if not impossible, is imitation.

...

The dominant human anomaly is that of geometric alignments that impose themselves, tending to homogeneity, creating a fight against vortical, differential motions. The civilizing project is precisely the project of movement reduction, a war against the flows of the Earth, perhaps grounded in a primeval fear of the helpless, atrophied bipeds, a fear from which also all cruelty and dominion have emerged.

Ecstatic, Dionysian movement is vortical, hence proprioceptive and animal, and it echoes the flows of the Earth in which life has come to be and needs to be sustained. Against it, a whole army of civilizations has appeared that turn the body-vortex into statues, frozen into postures and alignments, a body no longer feeling itself, but assuming ideal forms instead.

The tension between orderly and disorderly can be sensed both in ancient Greek philosophy and in accounts of the chorus, dance, and moving bodies, but also in other agrarian cultures of the time and before, in China, India, Egypt, Mesopotamia, or Mesoamerica: a tendency between "civilizing" movements that impose geometric reduction and a tendency to renaturalize, to regain the lost symbiotic variation, which is embodied in the Dionysian or Śivaist traditions, amongst others, arguably in all naturalistic religions inherited from pre-agrarian times, and partly assimilated in agrarian religions as colonial narratives of a "barbarian other" or a mythical past.

Orderly vs. disorderly is a false dichotomy that hides the *reductive vs. nonreductive* dichotomy, a dichotomy created by reduction itself. It is not a strict division but rather a continuum, mostly appearing in hybrid mode, as no reduction can impose itself completely. The first tends to dominate and ultimately to negate life-as-variation, whereas the latter affirms it, as it does in most of nature. The reductive tendency is the anomaly of the Algoricene.

As Lifar (1966) says, rhythm has two sides, one turned to Apollo and one to Dionysus, or one to Vishnu, another to Śiva. But Apollo and Vishnu are latecomers who want to tame Dionysus-Śiva and yet have to acknowledge their power. Dionysus-Śiva needs to keep being part of the pantheon as the core, but unacknowledged, forces.

We see this tension emerging in dances of agrarian empires when sophisticated forms of ritual and entertainment appeared in courts of kingdoms and city-states creating a division between court dances and popular dance. This is exemplified in

the Greek tendency to practice both elaborate orderly circular dances that enact the ideal movement of the stars and elaborate orgiastic practices (*orgiasmos*) of Dionysian ecstatic dances that are more like the vortexes of earthly flows (Salazar 1949).

This double account of motion — *circular* as eternal, perfect and superior, ideal of being; and *vortical* as differential disorderly becoming — also stands out in ancient Greek philosophy. Star circles and water spirals: two accounts of movement-as-life (see Book 7). Mimetic, magical dances in antiquity would emulate both circles and vortexes, but arguably as part of a naturalistic, protoscientific interest in understanding movement in order to move better with the world's mutations,[17] to regain it, already in times where it had been impoverished for millennia.

The notion of displacement or carrying, *phora,* emerged in Greece, linked to the movements of stars and planets, and became, with Aristotle, the overarching concept for movement as I expose in Book 7. Geometric reduction triumphed. But this, I argue, is the human tragedy. This reduction is the one creating a mass extinction cycle. All anthropocentric arguments claiming the superiority of such reductions need to be reversed.

I propose to look at the history of the world, and of dances, through the study of the degrees and modes of reduction or alignment, claiming those dances where less reduction, more variation and kinaesthetic joy has prevailed. We find this mostly, but not always and not only, in popular, social, and tribal dances. And, all dances were once tribal, but codified and classist imperial traditions turned their rigid back on them. I reclaim the superiority of tribal dances, their richness and variety, their embeddedness in life at large.

6.3.4.2 Classical as Classist Dances

Since the Renaissance, a class division has been enacted between highly codified court dances and the always prevailing social dancing, as well as the increasing differentiation of folk and tribal dances from the former. In the twentieth century social dancing evolved into ballrooms and later clubs and after World War II emerged the free improvisation by direct observation in discotheques — people had danced like that during the war — as well as folk songs of protest. Folk dances became increasingly split from their ritual and social function, more into relics, signs of national identity, or touristic spectacle.

Ballet came from those environments of ever more sophisticated entertainment for stages with increasingly codified movements, and even in modern dance one sees the dichotomy, since vortical movements returned at the turn of the twentieth century's Loïe Fuller, Isadora Duncan, or Mary Wigman, in somatic and improvisatory practices, or in *butō,* all which contrast with the more established, highly formal languages of dance for the big stage (prevailing in spite of the disalignments across Merce Cunningham, William Forsythe, or Wayne MacGregor, while recent expressions of disalignment on stage include Olivier Dubois's 2012 *Tragédie*).

Modern dance was partly an attempt to break the corsets of ballet from inside the dance discipline and in a highly aligned, industrialized, and mechanized society,

17 In Daoist shamanism, Mircea Eliade (1969, 347) argues that by becoming-animal the shaman became overhuman, experienced a more-than-human force and the communion with the cosmos. If one knew to correctly imitate the animal's movements one would *regain spontaneity, freedom, and sympathy with all cosmic rituals.* Like in "bear ceremonialism" in the arctic, both the imitation of an animal or of an "ascension" could become means for breaking the "boundaries and false limits of the human."

Fig. 65 (next page). Chorus Diagram. The chorus/orgy is presented as primordial expression of flocks in cultures. The Dionysian chorus got captured in the Greek theater and in domes evolving from the study of astronomy and the idea of circular orderly motion as a superior kind (while the dancing figures of early ritual become statues in temples, and later in paintings, and the singing choir becomes static in the medieval period). With the advent of perspective in the Renaissance, the chorus undergoes a revolution as disciplinary metabody of theaters (and museums), cameras and panopticons, parliaments, assemblies, and clubs, now evolving as a planetary-scale chorus of the internet in a control society of ubiquitous sensors, immersive VR domes, gaming, and ergonomic control, choruses of algorithms, satellites, and drones. All along the chorus has survived in less aligned expressions of collective dances, orgies, and more recently also protest choirs and assembly movements, waiting to return full force. In the lower side from left to right paintings by Giulio Romano, Rubens, Goya, Bouguereau, Matisse, and a photo of Jukun women in Nigeria dancing the Ajun-Kpa.

with new theories and practices of fluid motion that spread across dance, somatics, and design.[18] Meanwhile, uneven colonial hybridizations emerged, starting in the Renaissance but much more quickly with the rise of mass media in the twentieth century where Black and African American rhythms have permeated global dance music culture with endless variations, some of them bringing back a "Dionysian" spirit of frenzy while re-enacting a colonial narrative (also present in ancient Greeks [Linebough 2018]) that creates and accepts the figure of an "Indigenous other" as mir-

18 Schwartz (1992) calls "new kinaesthetics" the new understanding or ideals (*kinecepts*) and practices (*kinestructs*) of movement that appeared between 1840 and 1930 through the work of François Delsarte, Émile Dalcroze, Rudolf Laban, Isadora Duncan, Ted Shawn, Ruth St. Denis, and Mary Wigman, amongst others. This new paradigm rebelled against the rigidity inherited from classical dance and its rigid torso, and, liberating the latter, introduced a new world of fluid, spiraling movements at whose depths was the torsion. Ballet had evolved from the equally rigid court dances of the Renaissance, which express the epochal tendency to alignments as having higher status. Throughout the paper Schwartz explores how these ideals of fluid motion, though they could appear to also rebel against the new rigid alignments of industrialized, mechanized, urban life and work, were in fact introduced into the theories and designs of almost everything: from handwriting, school playgrounds, and gymnastics, to assembly lines, gramophones, typing, piano playing, bicycles, roller coasters, escalators, prosthetics, and ergonomics of every kind. And he claims that with this a whole new "poetry of motion" has appeared. Though admitting that people feel off-balance, clumsy, and stiff, they also share an experience of flowing, spiraling movement.

Now, in order to understand the limitations of this approach we should understand first the limitations of the theories grounding the new kinaesthetics, stating with Delsarte and Dalcroze, whose search for harmony in movement actually echoes Platonic ideals of orderly, harmonious motion. The Greek sources of Duncan, and the eastern of Shawn or St. Denis also have a problematic history of alignments which I have already addressed (with their own Vedic or Confucian philosophical grounds), which were possibly not quite Dionysian though Laban and Wigman may have gone slightly in some direction linked to the ecstatic. The transformative ambition of the new kinaesthetics was thus limited, despite opening pathways, but also assimilation possibilities, especially through the tools for coding movement and analyzing it as already functioning in a given frame of assumed alignments that need to be improved. One could indeed see the modern world as one possible expression of such Platonic ideals, where the planet is choreographed by fluid mechanical motions. But this approach misses two crucial questions: firstly, that fluidity doesn't prevent homogenization and alignments, which is arguably the core of the planetary problem we face; and secondly that assuming modern industrialized life and its double-edged alienating-but-still-also-potentially-fluid-and-poetic motions is at best a palliative anthropocentric perspective that ignores the devastating planetary impact of the homogenizing powers at stake and their extinction cycle. Entrainment between fluidly operating machines and the proprioceptive attunement of bodies happens at the cost, not only of a homogenization of proprioceptive experience itself, fluid though it may be, but also of the planetary flows, unleashing a mass extinction. My proposal for torsions and disalignments is thus quite different: it is not fluidity but rather proprioceptive fluctuation as fundamentally irregular and irreducible to smoothing and to external entrainment and orientation, in ongoing variation, not assuming any aspect of the dominant mode of living and claiming the power of the body for moving beyond its regimes.

Flocks/swarms
The chorus
Perspective
Panoptic
Networks
Microchip
Ergonomic control
VR Dome
Internet Panoptic

ror of civilization, allowing frenzy under regulations, and as our "animal side" that needs to be acknowledged and occasionally liberated.

Orderly and ecstatic dancing continues to coexisting in tension today in the differences between the more modest and imitative ways of dancing in some, mainly straight and European and Angloamerican clubs and the more frenzied dancing in other, mainly queer, Latino, or Black clubs, or in specific trance-music cultures (Seminario Permanente de Estudios LGTBIQ UCM 2021).

...

Dance is indistinguishable from life in nonhuman animals, and in tribal dances everything is or was danced, but in modern industrialised societies one can say that *nothing is danced* and that dance is a highly segregated and shrinking activity. Indeed, if you dance in the streets it is likely that you will be taken for mad (and Romans, like Cicero, already had such an attitude, diametrically opposed to the Greeks), a crucial symptom of how the values of life have been reversed. Machines dance (for) us instead. It is no wonder that such a culture is creating a mass extinction and taking itself to the abyss, having lost all sense of kinaesthetic enjoyment of the world except as palliative remedy given by rollercoasters, bicycles, and other industrial-capitalist experiences.

6.3.4.3 The Alignment of the Chorus

Tell me how your chorus is, and I will tell you what type of society you are. The chorus (group of dancing–singing bodies, their dance and the space they create) as field of collective attunement, foundational of society, politics, education, and embodied knowledge, is the trope I propose for all social phenomena: endless modes of composition have existed, along diverse *degrees of alignment.*

Western society has evolved as an increasingly *aligned chorus,* up till the current planetary-scale algorithmic chorus of the internet, of immobile bodies clicking on screens, the ultimate choreography of world reduction. The society of the spectacle (Debord 1995), made of split bodies reconnected in controlled manner, is its ultimate expression. Bodies split in fixed points of vision at a distance.

All arts, and more broadly the forms of social belonging and even politics, can be seen as digressions or evolutions from the chorus. Parliaments and theaters, temples and museums, church choirs and operas eventually grew out from the chorus.

Some aspects of the ancient Greek tragic chorus are still foundational to current globalised culture. Think of the choruses in the lyrics of pop songs whose roots we can arguably find in choral lyrics and poems from ancient Greece to today, and the dancing groups of the choreographies in music videos.

6.3.4.4 The Extinction of Dance

The same exploitative sedentarism that creates mass extinctions is the one that has created the extinction of dance: of human dances and of the dance of life. The dance of life has become extinct because of how we eat exploiting all life forms, because of how we dwell occupying the earth with sedentary settlements of accumulation and blockage, because of how we multiply ourselves becoming the planet's pandemic. Dominion implies a reduction of dance's power of variation.

The less we dance life around, aligned with toxic technical systems of planetary exploitation, the more we seem to promote extinction, and the less we feel ourselves and enjoy the world. The more aligned the movements, the more they impose

themselves in homogenous manner. The primordial fact of kinaesthetic enjoyment gets undermined, and without it fanatic societies proliferate, of world-destroyers trapped in the holes.

In contemporary industrialized societies — with precursors in the Romans — practices like football and their mass entertainment, have taken over the ubiquity and role of social cohesion that the dancing chorus had in ancient Greece, but even more so, alignment with machines. There has been a mass extinction of dance over the past centuries on Earth, running along the extinction of wildlife and of Aboriginal human cultures. Especially of disaligned, improvisatory, differential dance. *Kinediversity dies along with biodiversity and culture diversity*. We dance the mandates of technics, and dance as open fluctuation emerging from bodies has become almost extinct. This is the drama of civilization that needs to be reversed.

Increasing distance, separation, technical mediation, and homogenization has implied increasing alienation from the sense of self and word. The loss of proprioceptive immediacy is first of all a loss of sense of body and of being part of and connected to a world. The extinction of dance is the extinction of the world, where intensifying alignments, homogenization, externalization, expansion, globalization, segmentation, and acceleration seem to go together as we become aggregates of a hypercyborg tending toward absolute control and an impossible escape from Earth.

Classical Western dance has a thrust to quit the Earth, in high leaps against gravity, with focus on legwork. Classical Asian dance traditions tend to be more linked to the ground, with more arm-work.[19] It seems that the former has colonised the world, not only in terms of hegemonic dance for stage, but of civilizatory tendency to quit the Earth.

The sheer fact of splitting dance into imperial classical traditions of Egypt, China, Japan, India, or Europe, and popular social dance, as well as into folk and tribal dances, and the increasing importance of historiography itself, are symptoms of the dance extinction process.

...

Of course, some open improvisational street dance still survives — it never disappeared — it was the primordial form since ancient tribal cultures in the Palaeolithic and in popular dances in all continents throughout the rise of agrarian empires, but today much of street dance is part of a spectacular society of observers, whether in by passers watching break dancers or in flash mob videos.

This allows to establish a second distinction (besides the reductive or nonreductive distinction) between spectacular (external) and lived (immanent or internal) dance, where the former tends to be more formal and the latter more focused on formless bodily, rhythmic sensations. The former is more perspectival, linked to the history of stage dance in the courts of agrarian empires, particularly to the Renaissance in the Western tradition, the second is more linked to the vortexes and torsions of proprioceptive internal–relational sense of movement.

19 Another so-called "ecological influence theory" by Joan Lawson proposes that agricultural plains are associated to dances, which are more accented downward in large groups with same steps, whereas mountains seem to be associated to more leaping and individual display. In the Americas agricultural dances are reported to be more abstract and animal dances more mimetic. Indian and Scandinavian dances are reported to be more mimetic. Balkan dances are similar to those of Central America, possibly echoing geographical similarities.

The ancient Greek chorus exposes a crucial turning point, as the dithyrambic choruses of religious rites in the Dionysian Mystery cults, practised only by initiates without audience and associated to ecstasy though dance and rhythm, became captured in the theatre giving rise to tragedy where *a new type of mass audience catharsis was invented,* in the unprecedented architectures of the theatres, while the orgiastic dances of *komasts* in the parties ensuing symposia gave rise to comedy. Orgiastic ecstatic dances were arguably a colonial invention or appropriation of Greek culture in relation to northern Thracians and Scythians: "barbarians" constructed as the "other" of the civilised Greek while constituting a "hyperborean" mythical past, integrated via mystery religions (Linebaugh 2018).

Since the rise of aligned societies, this dual narrative creating an uncivilised "other" seems to have had its case with dance, and orgiastic, nonreproductive sex.

Dance as harmonious, eurythmic movement (intrinsically related to music and gymnastics) was described as the core civilising and educational *technē* by Plato, Aristotle, and Confucius but also implicitly by Indian traditions of dance (dominated by the *mudras,* the gestures of the sacred scripts), and more recently this cohesive power of harmonious movement has been acknowledged by Ellis, François Delsarte, Émile Dalcroze, or William McNeill amongst others.[20] But rhythmic, orderly, and harmonious movement is however also practiced in numerous human alignments of work and war, from harvesting and sailing to the military, as well as in gymnastics, somatics, martial arts, or sports. Singing is often accompanying regular movements of sailors and harvesters, or military music bands, and more generally keeping unison.

But disaligned group dance, *where every individual moves differently but still as part of an open collectivity,* seems to also have existed in relation to what we proposed as one of the two major dance categories: on one hand the ecstatic, and on the other the mimetic, pantomimic, formal, choreographed, and narrative. The ecstatic is not mimetic. Rather, it is concretely corporeal and informal.

…

Movement of vertebrate animals is torsional, vortical, made of ongoing fluctuations, stretches, spirals, fold, torsions, and tensions, coming from the spirals of invertebrates and the water flows they evolved in. Dogs and cats feel the world muscularly and in proximity by smell, then additionally by integrating hearing, then vision. They graciously walk, run, play, jump, cuddle, express joy. Their life runs altogether in dancing or semi-dancing, their rich, varied, and graceful overall movement at all times. Their movement is powerfully proprioceptive, felt from within, neither acted out for a spectator nor split into signs and symbols, neither rehearsed nor written, it is of indivisible duration, improvised in variation while grounded in embodied knowledge and memory.

Ecstatic movement in the Dionysian tradition and beyond has that quality. It is a return to indivisible duration and an undoing of the split enacted by human supremacism and more generally all dances emerging in the fringes of dominant alignments since the Neolithic. Hence, there is the association of dance to resilience, subversion,

20 See Ellis (1923, 63) on the civilizatory power of dance and its relation to work or war. Adolfo Salazar (1949) also claims the role of repetitive coordinated rhythm in social activities and work: the grape harvest, rowers, winnowers, reapers, hemp, and flax mashers, spearing and shooting arrows, or sex, which dance gathers and recombines into a dynamic and plastic movement. The foundational civilizatory role of coordinated, unison, movement is discussed with particular depth by McNeill (1995).

and marginality, to unification of the oppressed where social classes tend to mix, whereas in other dances classes, genders, and social groups are split.[21] Not by chance such ecstatic dances were also condemned by the Church, though they survived, ubiquitous, in the Middle Ages, tolerated at times as necessary escape valves to rigid morality, as monotheisms gradually stopped dancing on Earth, letting only angels dance in a thrust to transcendence. From the dancing rounds of angels of medieval Christianity (Ellis 1923, 42) we have gone to dances of satellites orbiting Earth.

...

The scope of my critique is not limited to dance as art: all movements and alignments, from the repetitive movements of harvesting in the Neolithic to the twentieth- and twenty-first-century kinaesthetics of increasing alignments with machines need to be scrutinized in understanding the mode and degree of alignment of movements. This is partly what I study in Algoricene theory.

A general kinetic meta-anthropology studies alignments in dance and in all aspects of life, spacetime, architecture, decorative designs (often a means to reintroduce movement in rigid objects and spaces), work, kinship, or sex.

From clicking on keyboards to pushing and pulling handles of mechanical machines, from driving a car to experiencing vertigo in a roller-coaster, from sitting at tables to walking upstairs, from harvesting in agriculture to selfies and tweeting, from farming to datafying oneself, from walking to talking, from building to transporting on wheels, from gyms to hospitals, from porn to chems and chemsex, from microchips to satellites, from engines to shooting weapons, from sports to the military, from furniture to buildings, from clothes to art, from TV to decorative objects, from reading or drawing to VR and gaming: a planetary chorus of superaligned bodies has emerged and along with it a mass extinction cycle.

> *The best antiquarians, let me tell you, trace dancing back to the creation of the universe; it is coeval with that Eros who was the beginning of all things. In the dance of the heavenly bodies, in the complex involutions whereby the planets are brought into harmonious intercourse with the fixed stars, you have an example of that art in its infancy, which, by gradual development, by continual improvements and additions, seems at length to have reached its climax in the subtle harmonious versatility of modern Pantomime.*
> — Lucian of Samosata (1905, n.p.)

6.3.5 Fourteen Billion Years of Dance: The Origins (without Origin) of Dance, Music, and Rhythmical Moving–Sounding–Singing

The chorus touches upon the question of the "origins" of dance and music, and their associations to religious cult. But the origins of dancing get lost in the animal world

21 Since the emergence of professional dancers in the Neolithic, dance as entertainment for the powerful started to become split from ritual, which was itself originally the primordial social dance. In turn, dancers were mostly of lower classes, and because of the association of dance and eroticism, often associated to sex work, including the presumed ancient kinds of sacred prostitution in temples. See Ellis (1923, 54), on the role of Egypt as foundational of professional and classical dance traditions, at least in the West.

and beyond, indistinguishable from sounding–singing–resonating.[22] In fact, dance, like sex, *has no origin.*

In many animals, including humans, dance emerged with music (sounding–singing) and was inseparable from it. But dance as proprioceptive rhythmical unfolding and experience is prior to sound, as in invertebrates that have no voice or ears, not even a brain and proprioception strictly speaking, but still self-sense their movement, which, as in medusas, is almost indistinguishable from the movement of the flows they inhabit. *Moving creatively with the flows, and not against them.* This is what we need to relearn.

6.3.5.1 Dancitecture or Architechdance: Archē*-Modes and Animal Dance and Architecture*

In the animal world, one finds choral dances of pure joy and life affirmation, as well as couple dances of courtship, and "work" dances such as the waggle dance of bees described by Karl von Frisch (1974). Choral singing–flying seems to have a primordial function in flocks of birds, to create a field of consistency and resonance, besides endless communicative functions. Kropotkin (1996) claims that flocks of birds dance just for the pleasure of doing it. Thus, choral dancing–sounding is a core field forming activity in all animals, not only birds, also insect swarms, schools of fish, or herds.

Animals already have the following behaviors and practices (often indistinguishable from one another):

— dancing;
— singing–sounding (music) and (proto)speech;
— ritual as protodrama or theater: fight, courtship, territory, communication, and social life,
— plastic arts and "fashion": their bodies as living sculptures and paintings for mating, and as tools for fighting and moving;

22 The etymology of the words for *dance* gives an idea of the primordial prehistoric role of dance as creating space and social cohesion. We see Proto-Indo-European roots related to trembling, enclosing, and throwing, and from Greek, Sanskrit, and Latin roots related to tending, tension, jumping, joy, and to come and go, which later unfold as concepts of space and of groups of bodies.
   — *Orkhēsis* was the art of dance from *orkheomai* or *orkheisthai,* to dance, which is the etymological root for *orkhestra* both as place in the theater where bodies danced and sung and much later as group of playing musicians. *Orkheisthai* was perhaps an intensive of *erkhesthai* "to go, come," but not all experts accept that possibly linked to the Proto-Indo-European root **erg^{h}-* ("to tremble") (Beekes 2010).
   — *Khoreia* was circular dance in ancient Greece, or circular movement, as that of the stars. *Khoreia* comes from *khoros*: the circular dance, the place of the dance, and later the group of dancers-singers. Perhaps from Proto-Indo-European **ǵ^{h}oros,* from Proto-Indo-European **ǵ^{h}er-* ("to catch, enclose"), with some original meaning of "encircling or ring (dance)," whence *khortos,* "enclosure" and Latin *cohors,* with comparable meanings ("multitude, troop") (*Wiktionary,* s.v. "χορός," https://en.wiktionary.org/wiki/%CF%87%CE%BF%CF%81%CF%8C%CF%82).
   — *Terpsikhorē* was the name of the muse of dance, means pleasant (joyful) dance, therefore felt movement. The etymology of chorus might also be associated to *kharas,* "joy," according to Plato.
   — *Saltatione* ("jumping") was another name for dancing in Roman times, equivalent to the Greek *orkhēsis,* hence the Latin name of Lucian's treatise on dance and pantomime.
   — Dance or *Tanz,* from *tan-* ("tension" in Sanskrit) and *tendere* (in Latin).
   — *Ballare* comes from round dance called *ballistea* (possibly of Etruscan or Roman origin), from the root **ball,* "to give impulse." From Late Latin *ballō,* borrowed from, or related to, ancient Greek *ballizō*, from Proto-Indo-European **gʷelH-* ("to throw") (*Wiktionary,* s.v. "ballare," https://en.wiktionary.org/wiki/ballare).

— technics, architecture, and "design": ant colonies, beehives, spiderwebs, bird's nests, etc.

They are only split from human modes in terms of degrees of alignments and codification–articulation. My claim all the way through is the superiority of the open, irregular, nondetermined, as necessary ingredients of life and evolution.

Ellis (1923, 37) proposes that "dancing and building are the two primary and essential arts [...] and dancing came first. [...] It is even possible that, in earlier than human times, dancing and architecture may have been the result of the same impulse. The nest of birds is the chief early form of building, and Edmund Selous has suggested [...] that the nest may first have arisen as an accidental result of the ecstatic sexual dance of birds."

One of the origins-without-origin of dance and of the bond of dance and eroticism is in animal courtship. On the relation between dance and eroticism in animals and humans Ellis (1923, 45) says: "Among insects and among birds it may be said that dancing is often an essential part of love. [...] Among some peoples, indeed, as the Omahas, the same word meant both to dance and to love." In his treatise *About Dancing*, the Syrian–Greek satirist Lucian (1905) equates dance to Eros as an equally ancient cosmic principle.

One could say that not only dance but also plastic arts have their origins in animal mating. One only has to see the peacock spider! Consider the relation of the latter (as a great example of an almost ubiquitous phenomenon in nature) and dance masks from Africa or Oceania, where the plasticity of the mask is inseparable from the dancing, which is often initiatory, ecstatic, and erotic (fig. 62). In many animals, like in many tribal cultures or in ancient Greece, the courtship–erotic–ecstatic dance and the fight or war dance look very similar or converge, as in Greek *korybants*. Endless types of mating dances have been observed in animals, from spiders to birds or primates, along with distinctive dimorphisms and plastic–visual appearance.

Plastic arts, one could argue, have their origin in the plastic sexual appearance of some animals and flowers. Indeed masks, body paint, adornments on the naked body,[23] and wearable music instruments seem to be the precursors of clothing, which

23 The question of naked dancing bodies should be reversed: when did body adornments and paintings become clothes, and what for? Palaeolithic and tribal dances mostly happen(ed) without clothes, though they often involve full body masks: did clothes appear as elaboration of masks, decorations, paints, and music instruments? Animals have prodigious adornments built into their bodies. It seems like humans, out of lack thereof, have had to invent themselves ways to enhance their nudity (see López Anadón 2006) and to escape their self-awareness through masks for becoming other, which at some point flipped into the reverse: a hiding and neglection of the body's plasticity, its dancing and sexual appeal. (Were we more connected to our proprioception, and less to distant vision, we might as well not need all this paraphernalia.)

Egyptian and Greek dances would often involve naked bodies, in Greeks the male is nearly always depicted naked, and women only if they were prostitutes, else even ecstatic Maenads appear fully dressed. In the Bible there are testimonies of naked Hebrew dances, like David's dance before the ark. Likewise, jugglers are reported to have danced naked, like courtesans, especially but not only in erotic dancing, the erotic arguably not being split from other aspects of life and dance till more recent Christian periods.

Regarding veil dances and striptease, some place their origin in the myth of the Sumerian goddess Inanna's trip to the underworld in which she would gradually take off seven layers of clothes while descending, till naked.

Bacchanalia, Saturnalia, Lupercalia, the medieval Feast of Fools, carnivals, or Sabbath dances may have involved different degrees and kinds of nudity, including in open spaces. It was Puritanism which brought in the modern sense of modesty.

may have initiated as means to arouse rather than for hiding a taboo (López Anadón 2006). But colors also serve as warning for the dangerous toxicity of many marine animals too, which also echoes in the rich war attires of many tribal cultures.

Animal architectures can have a complexity defying any current human knowledge, like the massive mounds of termites hosting millions of individuals, with highly complex ventilation and tunneling systems, but unlike dominant human large-scale architectures, they are organically bound with the environment, without disrupting it, cocreating it. (The challenge is not to imitate some of their features as is done by some modern architecture while keeping the core mistakes of sedentary occupation of the Earth, nor simulating chemical stigmergy, flocking, and collective animal intelligence. The geometric becoming of architectures needs to be undone.)

Architecture here means any body or structure, organic or inorganic, embodied, or external to the body that provides shelter, protection, or a relatively bounded but never fully closed living environment of some sort. In a broad sense, this applies to every organism, as every organism is a symbiotic host for other living systems. It also implies assemblages of organisms, like biofilm or ecosystems, that can be a structural or living affordance to others or themselves. Affordance is another key term for architecture: as movement relations with significance for dwelling that are continuously elaborated and sustained, with a minimal but constant variation.

Here we redefine architecture as field of movement relations, just as we have redefined dance in the same way. Dance and architecture are thus two names for the same thing, dancitecture or architecdance, which has only become split in trash-human geometric environments that are built and rigid, while movements are aligned.

Nonhuman or metahuman (symbiotically varying) architectures are defined by their irregularity and organicity, as part of the Earth's flows, and include endlessly varied and admirable kinds of

— bird nests (made of branches, mud, or other);
— beaver architectures;
— anthills and termite mounds;
— insect hive architectures;
— spider webs;
— burrows;
— caves and rock shelters;
— body architectures (ants forming together a floating architecture, bridge, or gluing leaves together);
— stigmergy (chemical, often pheromonal traces left in the environment for collective coordination by, for example, ants but similarly by slime molds; one could even associate to stigmergy the traces left by dogs in their urine, creating an whole relational architecture in cities);
— bacterial biofilm;
— cells;

In the twentieth century there was a strong revival of the naked body with the German *Freikörperkultur* culture emerging before Nazis took hold (Toepfer 1997), with a notable expression in the *Monte Verità* commune in Ascona, Italy, emerging since the start of the twentieth century, where very numerous and famous intellectuals, artists, and anarchists formed a vegan, naturist, nudist, anarchist, free love, and free dance commune, where Rudolf Laban also hosted a dance school between 1913 and 1917, and where Mary Wigman and Isadora Duncan also participated. Later, after the May 1968, hippie, and Stonewall revolutions, a renewal of nudity on and off-stage appears, along with performance art, *butō*, and other postwar expressions, only rarely with erotic undertones.

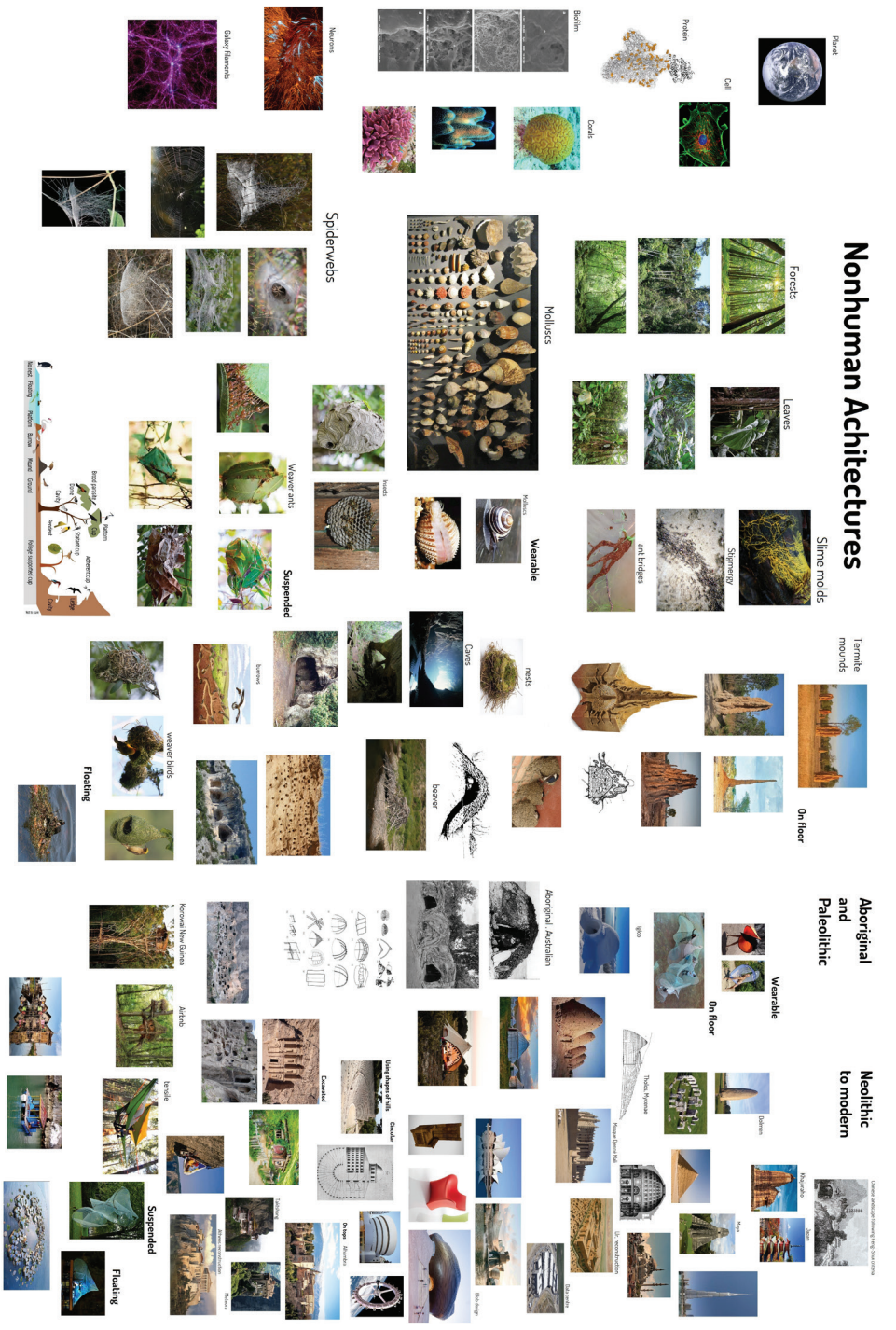


Fig. 66. Diagram of nonhuman architecture types (biofilm, molluscs, corals, forests, leaves, stigmergy, ants, termite mounds, weaver ants, spiderwebs, bird nests, beaver nests, burrows, holes, and caves) and their correspondence in Aboriginal/Paleolithic and Neolithic to modern architectures: on floor (on a plain and on mountain sides and tops), suspended, and floating. An additional category can be wearable architecture. Womb-like bubbles emerging within webs are the broader cosmological archetype, from galaxy filaments to molecules and cells.

— molecules;
— corals, molluscs, and invertebrates, like snails, as examples of wearable architecture;
— Aboriginal architectures following principles of organicity;
— organisms as symbiotic architectures (vertebrates, plants, fungi, and protists);
— entire forests and ecosystems;
— plants and leaves as architectures;
— swarms and flocks as mobile architectures;
— webs of filaments (galaxy filaments, neuronal networks, the internet, etc.);
— spheres and gravity (planets, stars, etc.).

All these, like speciations or dialects, change from one species, subspecies, and region to another, as do the movements and dances (for instance, the bee waggle dance changes depending on the region so that not all bees would understand each other, likewise the techniques and types of termite mounds vary enormously across the globe). These changes in movements and architectures are part of the epigenetic variations that in the longer run also imply genetic ones. They are the unavoidable way of things in an *enferant* evolution where ongoing variation–fluctuation is also linked to field forming, so that continuous divergences also tend to resonate converging into fields of provisional consistency (something that puzzled people like Teilhard de Chardin [1967], on thinking his concepts of dispersions, radiations, and channeling in speciations.)

Hyperhuman or trash-human architectures, instead, are but a degree of geometric reduction and homogenization of the above, which also grows along their imposed planetary expansion and disruption. They grew eventually around fireplaces and ritual dances — becoming houses and temples — into cities, global networks, and a planetary nightmare.

We have gone from being in love with life and the world (before the onset of urban life) to being enclosed in our fears and paranoias. This strictly corresponds to the Neolithic turn to urban and later to industrialized environments. The deepest pleasures are the simplest: the joy of sensing and moving outdoors, in the fields, with every hour of the day, dancing it, from dawn to dusk, from midday to midnight, absorbing every morsel of light, in the ecstasy and magic of the ever-changing wonders around us. In industrial environments these have become a luxury and escape, where it is time to have them be the totality of life again, to live again in the ecstatic rapture of the Earth's flows, the infinite joy of every walk, the utter sheer joy of dancing every hour of the day, absorbing, and becoming, every sunset, every dawn.

We have created ourselves an environment that kills movement and the senses, and we invent a thousand sophistries to try to palliate the disaster (our decorations, arts, cooked food, or gardens) while never going to the source.

6.3.6 *Archē*-Modes, Phases or Strata, and Temporalities of Dance

In terms of human dance, a span of over 100,000 years has been proposed by Yosif Garfinkel who suggests a

> model of five major chronological phases [...] for the history of human dance. These phases did not replace one another, but accumulated as successive layers. The earliest phase is associated with courtship, thus explaining the potent role

> of dance in sexual desire and seduction. The second phase is associated with the appearance of modern human behavior and the earliest burials, which were rites of passage that involved the first communal dances. The third phase is associated with the appearance of hybrid human–animal figurines that point to altered states of consciousness and aspirations to change reality; this is when trance dance, shamanism, magic and religion came in. The fourth phase is connected with the beginning of agriculture in Neolithic villages, which was coordinated by elaborate calendric ceremonies. The fifth and final phase is associated with urban societies, economic complexity and specialization; well-trained professional dancers now performed acrobatic body movements and elaborate choreography for the enjoyment of others. The history of dance thus reflects the history of human rituals and religion. (2018, 1)

I suggest though, echoing Kropotkin, that even more primordial than mating dances in animals and early humans is the choral improvisation (of flocks, schools, swarms, and herds in the case of animals) as the primordial activity of social cohesion and field forming, of kinaesthetic joy, play, and *proprioceptive bonding*. Extending Garfinkel's proposal, one could identify the following *archē*-modes and strata or phases of "human" dancing. They should not be taken as separate categories, are often intertwined and hard to distinguish.

— In gatherer–hunter societies, ancient and present, collective dancing–singing is the primordial form of social cohesion, memory, education, embodied knowledge, permeating all aspects of life: from joyful affirmation and love, through cosmic change and wander, to loss and death: every important event in life has its dance or is itself danced, linked the corresponding animistic and magical rituals, along ecstatic and mimetic modes.
  — joy, social cohesion;
  — embodied knowledge, education, memory, communication (mainly nonverbal, beyond semiotics, based on rhythmic attunements);
  — mating and orgiastic eroticism;
  — rites of passage and sexual initiation (puberty, marriage, etc.), being core to social organization, categorization, and hierarchy, therefore to politics;
  — death, mourning, accompanying the dead[24];

24 Death has been a major motif of ritual dance since the Palaeolithic. According to Garfinkel (2018) around 100,000 years ago the first burials point to the appearance of rites of passage. Funeral dances, and dances performed and painted in Egyptian, Etruscan, or Greek tombs and burials may have varied from solemn to joyful, often with the intention of entertaining the dead, accompanying them in their journey. A great deal of the work of shamans and their dances is related to accompanying the dead, as psychopomps.

Baty and Chavance (1932) claim the importance of Egyptian theater 1,000 years before Aeschylus as emerging from the rituals around Osiris's death, burial, and resurrection, including processions and a complex staging, like one thousand years later with Greek tragedy emerging from the rituals of death and rebirth of Dionysus. Both gods being related to harvest, these deaths had a cosmic significance so that at stake was the rebirth of life and of the Earth during winter but linked also to cults of the human dead.

Most cults in antiquity, especially Mysteric ones in Greece, whether Dionysian or Apollonian, have the motif of death at their very core, often in the link between the death of the year and the Earth cycle and human death. Dionysian and Apollonian present two very different chthonic ways of relating to death involving different types of ecstasy or trance, one through frenzy, the other more linked to immobility.

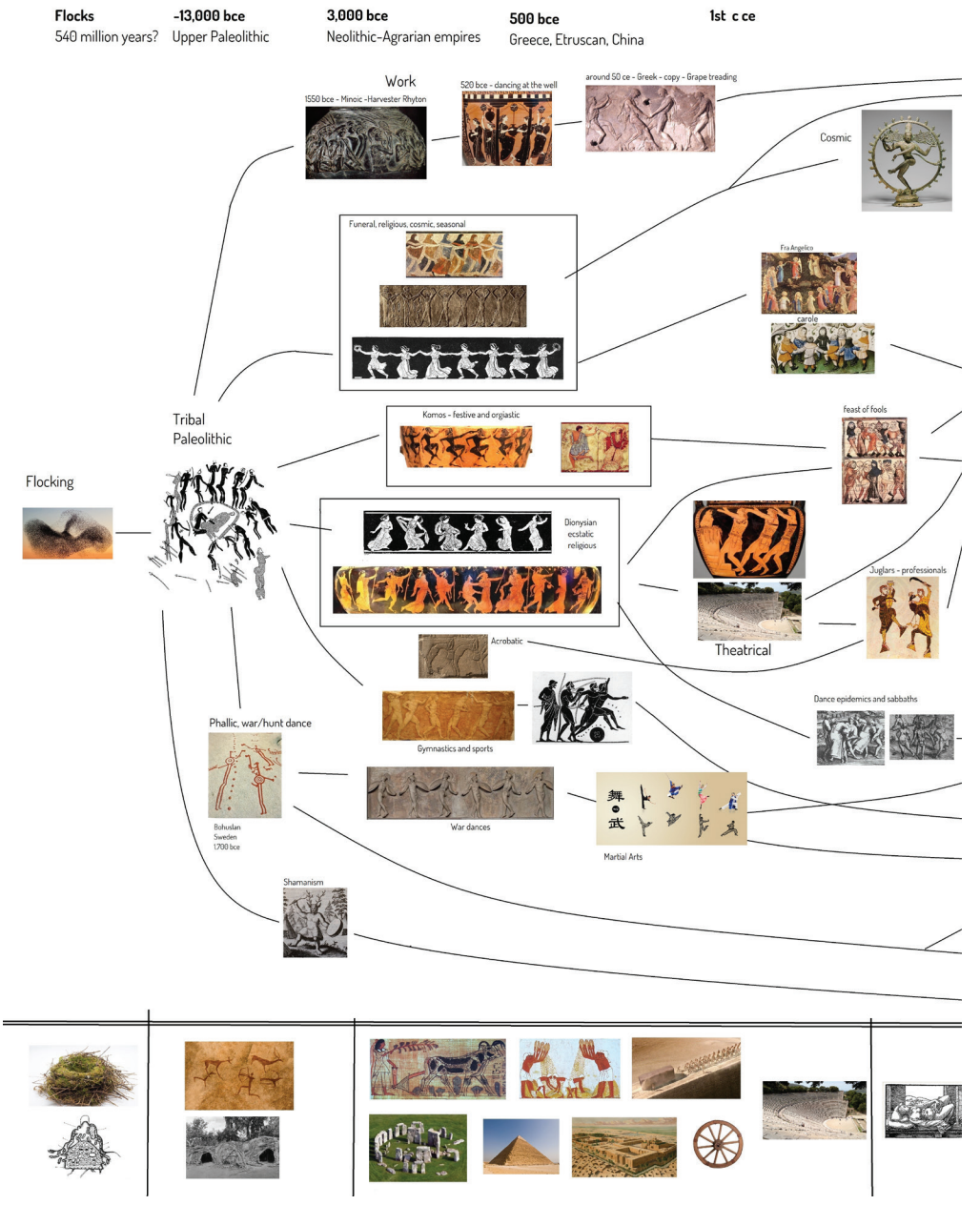
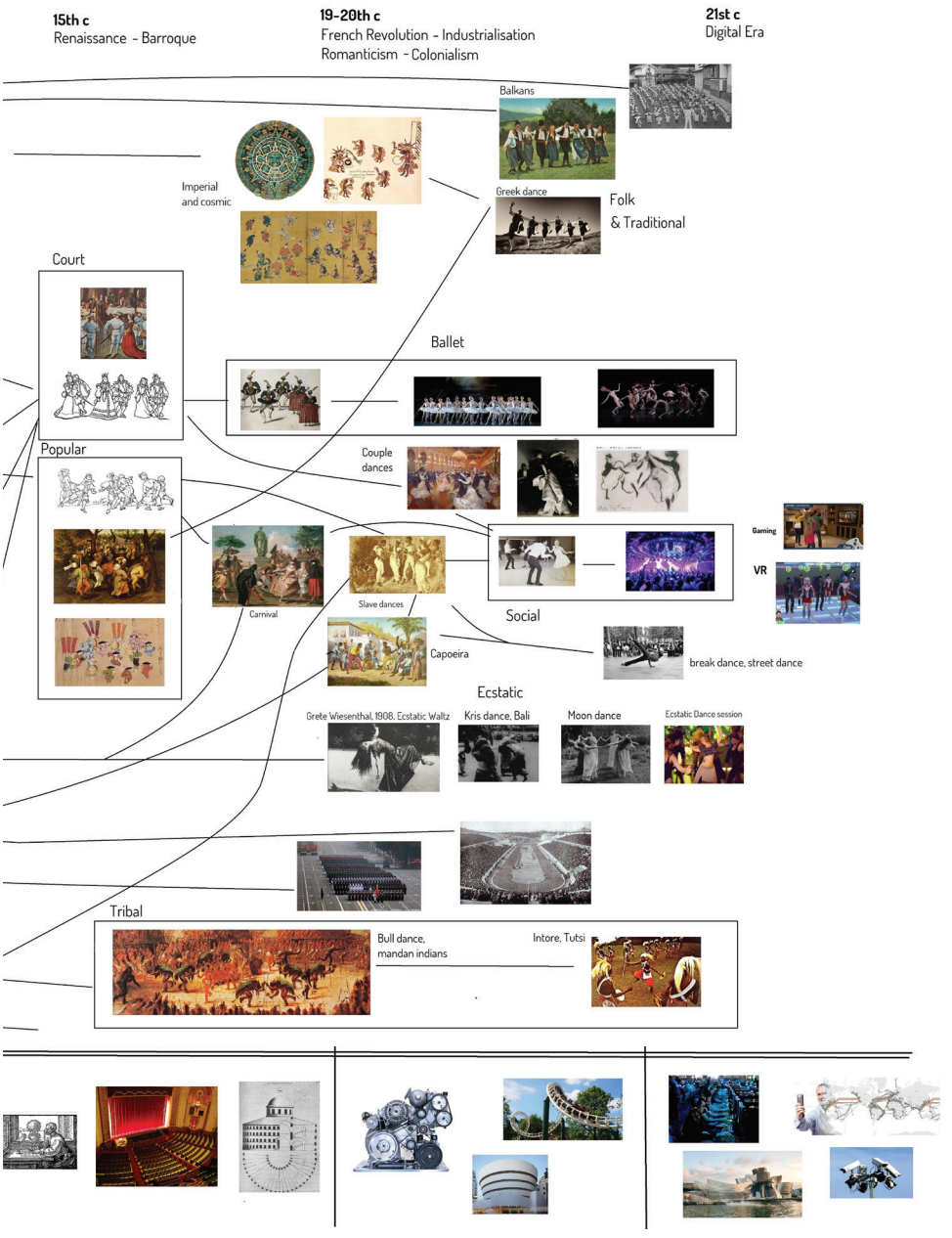


Fig. 67. World in chorus diagram with some of the core evolutions highlighted, not implying strict linear sequences, rather connections between kinds. At the bottom parallel modes of work and technics.


15th c
Renaissance - Barroque
19-20th c
French Revolution - Industrialisation
Romanticism - Colonialism
21st c
Digital Era
Balkans
Imperial
and cosmic
Greek dance
Folk
& Traditional
Court
Ballet
Popular
Couple
dances
Gaming
VR
Carnival
Slave dances
Social
Capoeira
break dance, street dance
Ecstatic
Grete Wiesenthal, 1908, Ecstatic Waltz
Kris dance, Bali
Moon dance
Ecstatic Dance session
Tribal
Bull dance,
mandan indians
Intore, Tutsi

  - — healing illness, calming conflict;
  - — cosmic, seasonal, propitiatory, weather and rain dances, fertility dances, or merely expressing wonder and singing change;
  - — play, training, fight, war (later martial arts, gymnastics, sports, and agonistic contests or choral competitions for healing social conflict giving rise to the Olympic games)[25];
  - — hunting dances and gathering dances (later harvesting, agriculture, and farming dances);
  - — building and migrating, other work dances and technics (later replaced by machine alignments).
- — Great Unisono movements emerge in Neolithic societies and early historical societies, where ploughing, farming, harvesting, or building started to imply synchronized coordination, perhaps for the first time in the history of the Earth. It is in this period that circular dances seem to appear.
  - — In this epoch, agriculture, farming and cities introduce inequalities, impoverish nutrition and quality of life, introduce work and exploitation. Around 5,000 years ago appear writing and the wheel, kingdoms, empires, war, and slaves.
  - — Rites of passage in the tribe become seasonal celebrations of larger scale in religious rituals. Mimetic and ecstatic dances continue evolving along the new modes. Ecstatic dances of shamans and sorcerers have largely a healing (therapeutic) function.
  - — Professional dancers–singers and priests appear (perhaps from earlier figures of shamans or magicians) as well as profane dance and entertainment in courts, with emergent distinctions between courtly and popular dances.
- — Consolidating since the Renaissance, machines themselves become the main source of movement alignments, while they acquire increasing autonomy.

Medieval *death dances* instead acquire a different, grotesque tone, with convulsive, epileptic movement that may be close to those of maenads but were possibly mimicking the movements of people ill with the pest. As pictorial and literary genre, it is not clear how far it was actually danced or whether it served as a warning of the Church to exercise awe and fear. Later the Church prohibited dancing in burials and graveyards, and so the tradition of dancing death came to a provisional still. The death dance, *Danse Macabre* or *Totentanz* was primarily a lyric–dramatic literary genre developed in the Middle Ages mainly in France and Germany though with outstanding examples in other places such as the fifteenth-century Spanish *Danza General de la Muerte.* The etymology of *macabre* has been itself subject of controversy, one of its sources being in Arab culture, which had itself a rich tradition of funeral and death dances, *maqbara* being an Arab word for graveyard. Merry dances like the *jota* in Spain have been funeral dances till recently.

25 In Greece, dance and gymnastics were not entirely split and both choral contests and the Olympic games served a similar purpose of appeasing social conflict. The Greek chorus would sing in contests that had a similar function to the Olympic games: healing social conflict. The *gymnopédies* in Sparta were religious festivities with choruses of naked boys executing strenuous dances imitating the gymnastic exercises, around the statues of gods. This uncertain boundary between dance, sports, and other kinds of training is not unique to Greece, it is instead nearly ubiquitous. In China, martial arts have movements similar to classical dance. Likewise, Brazilian capoeira is both a dance and a martial art. The relation between war and dance is even older, if we think of precursors of war in tribal or animal fight and in hunting dances, and even Socrates later would say: "the best dancer is the best warrior."

Both in Palaeolithic paintings of dances and in more recent tribal dances one can see an association between war dances, trance and eroticism, with ithyphallic figures painted in rock art, dancing, holding weapons, and possibly in trance, like we see later in Greece with the korybants an ecstatic and orgiastic war dance, or in recent African war, trance dances. This association disappears in modern military parades and celebrations.

— Arguably, machine alignment since the Neolithic was the source of increasingly homogeneous unison movements.
— In the process, disciplinary divisions continue multiplying in accelerated form, along with colonial expansions that imply both an uneven hybridization of movement traditions and a radical extinction of tribal societies.
— Echoes of shamanistic healing, and of social cohesion and enjoyment can be seen in the catharsis of ancient tragedy or of modern opera and concerts.
— Other rhythmic entrainments in sports, military, work, increasing disciplinary divisions, up to addictive mass media and social media as ongoing escape valve and capitalization in spectacular societies.
— Machine design itself incorporated in the twentieth-century theories of fluid spiraling motion (Schwartz 1992) that have made our coupling with machines more organic, and yet without avoiding a mass extinction of movement diversity that implies a mass extinction of life.
— Machines tend to autonomous movement.

Temporalities and strata accumulating and transducting across each other include:

— Animal–Palaeolithic–tribal: *fluctuating time, indeterminate, rhizomatic, multiple or circular cyclic time*, *or no time, no measuring*; living the present, slow evolutions, multiple indeterminate temporalities of ecosystems, flows, animal-human migrations, animal, and human tribal societies (continued existing in separate spacetimes till almost extinction).
— Neolithic and early historic states: *linear time, linear spaces, measurement*; agriculture, farming, cities, kingdoms, and empires; writing and counting.
— Colonial–Industrial–Digital: *exponential timespaces and changes*; globalism, colonialism, mass media; globalized planet, industrial transport, and digital instantaneous connection, colonial hybridity, technical acceleration, disciplinary multiplication; extinction singularity.

6.3.6.1 Unfolding of the Arts from the Chorus: From Altamira to VR, from Animals to Neural Implants.

Dance is prior to communication (and thus to sound) as primordial proprioceptive self-making. Dance has created spacetime bodies unfolding in modes and degrees of alignment of societies, kinships, movements–perceptions, architectures, behaviors, memories, knowledges, and life rhythms.

Dancing–singing has aligned itself and spaced itself out into musical instruments, clothes, masks and body paint, weapons, temples and architectures, language, poetry, and writing, and increasingly aligned technics. Meanwhile the chorus, as core of social cohesion, became parliament, school, clinic, army, later state and corporation, and now planetary-scale computation systems.

From animal dancing–singing and plastic appearance the religious ritual and the artistic impulse has unfolded. From religious rituals of dancing–singing and their often mask-based visual plasticity, eventually all art forms have evolved. From ancient sacrifices an entire Planetary Holocaust of slaughter and extinction has unfolded, perhaps as primordial expression of how the fearful biped affirmed its triumph over its surrounding predators, that were initially so superior.

— Animal ritual → magic and animist rituals, ecstatic, sacrificial → religion and religious rituals, ecstatic, sacrificial → chorus, *kōmos* → theater, parliament →

modern rituals of rational science, datafication, world appropriation, slaughter, and spectacular addictive consumption.

From dances–songs–masks unfold:

— Ritual, oral literature, and theater
  — poetry[26] and narrative of myths → novel
  — chorus and *kōmos* → tragedy and comedy, theater → opera
— Music
  — liturgy → singing choir → medieval monody → polyphony → oratorium
    — Death ritual → *treno, epicedium* → medieval death dance → requiem
  — strophic dance–song round an altar → strophic song → courtly, Renaissance, romantic → pop
  — popular and court dances → dance suites → symphonies
    — variations, for instance the chaconne[27]
  — first music instruments, shells on body for dance, slapsticks, drums, flutes → all instruments and orchestras without dance

26 Poetry in ancient Greece was not only to be sung and performed, as part of an oral tradition, but danced, chorally! And this applies to all ancient cultures: the anomaly is the writing–reading culture of the West. The Chinese *Book of Odes,* the Indian *Rig Veda,* the Egyptian *Book of the Dead* and its Hymns to Osiris, Sumerian hymns, or the ancient American codices, are all texts to be performed, sung, danced!... part of an oral tradition where improvisation, memory, transmission, and preservation are entangled and grounded in an embodied knowledge. It appears in all those chants that show an ecstatic rapture in singing to the rising sun, the night, and the Earth as being one with oneself: a joyful, ecstatic rapture of living, where losses are also sung as part of the ecstatic flow. A synaesthetic, mystical rapture where light, sensations, elements, and movements around, are also the movements deep inside oneself, where one feels alive moving–dancing with them. A spirit which is far from the self-referential black hole of the atrophied, sedentary, urban human, preoccupied only with its own lacks, fears, and paranoias that has became the dominant norm, especially in the European spirit dominated by Christian guilt.

27 The chaconne is an example of how fiery popular dances, in this case possibly of Mexican origin entering Spain since around 1600, were (colonially) appropriated by European courts and became a more solemn dance. The chaconne also exposes the link between variation form and dance, and between dance suites and later symphonic work. Bach's famous violin chaconne in D minor embodies this sense of dance and variation related to what is thought to be a memento for the death of his wife, hence deepening the relation between dance, death, and mutation, and it is perhaps not by chance that it is made of sixty-four phrases, in constant mutation of the first one, like the Chinese book of mutations, *Yijing,* has sixty-four hexagrams, each one a mutation of the world, and Śivaist Hinduism has sixty-four *kalā* or arts of living, of which Śiva is the master and amongst the first of which appear dancing and singing.

Dance underlies classical Western music more than is often thought. For instance, as proposed by Mellers (1981), most of Bach's work is based on dances; Mozart is reported to have said that what he really cared for was dancing (see Ellis 1923); Beethoven was the master of syncopation and much of his music is a Dionysian dance, not least the choral symphony; syncopation is also very strong also in Brahms; the grand entry into modern music happens through Stravinsky's *Sacre du Printemps,* a Dionysian ballet that recreates ancient pagan rituals of frantic dance and sacrifice; in major avantgarde pieces of the post-war period, like Stockhausen's *Gruppen,* or in works by Messiaen (largely inspired by birds), Berio, Boulez, and differently Cage, rhythmic innovation is key, opening up the way to meterless rhythms, for which perhaps the synthesis with Wagner's rhythmless flux was needed, leading to rhythmic serialism and group writing, a flux which acquires yet another new expression in Ligeti's micropolyphonies, which are also microrhythmic, while Xenakis recuperates some of the ancient Greek rhythmics in resonance with stochastics, architecture, and multimedia interventions. But all along polyrhythmics and polymetrics have been alive in Africa and other indigenous musics, permeating the totality of globalized popular song through colonialism and enslaved people, who inflicted European songs with the frantic energy of African, and Black American rhythms.

- — improvisation → composition and performance → recording → digital composition → algorithmic composition and AI
- — Plastic arts and fashion
  - — masks, ritual cave paintings, totems → temple and palace sculptures and paintings → museums and galleries → Film and TV → VR, Gaming, AI, Robotics
  - — body paint, ornamentation, on body music instruments → dress and design
- — Design and architecture, technics
  - — rhythms of work and techniques of the body (Mauss 2006) become externalized in tools, instruments, machines, and architectures
  - — altars and temples, tombs, megaliths, pyramids, theaters, observatories (for cosmic cycles, such as Stonehenge, also called the "Giants' Dance") → large-scale building architecture
  - — mating ritual → nest → house → village → architecture → cities
  - — ornamentation → affordances of objects — technics — movements in relation to the object and their expanded field, for example, pottery for accumulating, holding, filling, emptying, carrying (amphora) → technics → engineering and infrastructures
  - — hunting → agricultural → writing → industrial → digital
- — Communication, memory, and knowledge
  - — nonverbal, embodied–kinaesthetic → sonic and gestural → verbal, oral → notations and drawings → writing (with agrarian empires, for state bureaucracy) → typography → code
- — Politics
  - — chorus, social cohesion, and conflict resolution → dancing as sense-making and common body
  - — village assembly–chorus evolving from dancing to verbal consensus → kingdoms → parliaments → modern assembly movements
- — Dominion
  - — animal and human sacrifice in ritual → modern farming and slaughter as the foundations of the human supremacy pyramid.

6.3.6.1.1 Evolution of the Arts from the Chorus

I will tentatively propose the chorus as corporeal–collective matrix from which all arts have emerged, and as their ongoing substrate. To understand the varieties of aesthetic implications of the chorus, we can start by considering both a chorus from a large-scale civilization, like the Dionysian in Greece and a tribal chorus, as in African tribal mask dances.

The chorus is primarily understood here as *a group of dancing and singing bodies* (initially with no external spectators or audience). Besides the more obvious relation to dance, music, and sung words, we need to extend the implications of the chorus to the importance of masks, body modifications, and extensions, body painting, textiles, and "design," craftsmanship, symbols, and signs (therefore writing), narrative or poetry, the ritual aspect of the dance related to temples or altars and its relation to magic, religion, sexuality,[28] politics, education, social relations as well as catharsis

28 See Ellis (1903; 1923) on the relation between (mostly choral) dance and sexuality rituals of courtship in animals and most or all tribal human cultures. Ellis traces this back to the entire animal kingdom where "ecstatic" dances of insects, birds, and nearly every animal are related to courtship, and can

and healing. In every expression of the chorus, one will find different manifestations and combinations of the above.

My reference to African dances and masks, or to the ancient Greek chorus, risks sounding like an excessively generalist, romaticizing appropriation, but at stake is to claim the diversity, richness, inventiveness, and force of improvisatory multisensory choral practices that by far exceed all the comparatively timid attempts of recent Western performance art to regain the body from and against millennia of colonialist neglection.

The chorus became gradually split in more aligned spaces, senses, and disciplines, from an originary matrix of *multisensory collective improvisation practices.*

One can consider for instance the following evolutions and relations (figs. 85d, 86d, and 86e):

— Greek theater architecture was mentioned in Book 5 as a capture and "taming" of the nomadic Dionysian chorus; the stadium can be seen as another expression of a similar architecture. Both persist till today and evolved in an increasing separation between the actor, the audience, the creator, and the work being performed.
— The altar or temple also needs to be considered as a site for choral rituals involving dance and music, which later became site for more static cults and for sculpture and painting, including churches in the Middle Ages, till the Florentine bourgeoisie inaugurated the era of private collections in palaces and bourgeois homes, which eventually led to the creation of museums. Before that, paintings in churches and monasteries were more like immersive caves (as in prehistoric times and in current VR). Meanwhile, the chorus persisted while mutating across its diverse expressions in medieval death dances, carnivals, Easter processions, other types of processions and parades (such as LGBTQIA+ pride), and orgiastic celebrations.
— Considering the chorus also as social–political field, linked to early kinds of assemblies, one can see its evolution into more articulate assemblies and the architecture of parliaments, where immobile bodies speak to each other at a distance rather than feeling each other in motion, though a renewal of choral assembly politics has been seen over the past decades, as claimed by Donath (2018).
— Music unfolded from the dancing–singing unisono chorus into monody and polyphony of immobile singing choruses, then into harmonic–melodic musical forms and instrumental music, from religious to drama and symphonic and into bourgeois romantic strophic song, which in mass culture became the dominant form (still based on the chorus or refrain), now evolving into an algorithmic cul-

be seen evolving in nearly or all tribal human cultures in numerous kinds of collective rituals where dance and sexuality express together. Arguably this is visible still today in clubbing culture, as a modern expression of the chorus. Foster (2001) questions the tendency of modern and contemporary American dance to desexualize the body, in a tradition spanning from Isadora Duncan and before to Merce Cunningham, Steve Paxton's contact improvisation, or the 1995 gay male version of *Swan Lake* by Matthew Bourne. My take is broader though in considering dance, the chorus, and the relational body in motion as swarming trope for animal and human societies, whose consistency needs to be understood as rhythmic field of resonance. As Foster points out, modern societies, especially since the Victorian Era, are cautious in considering dance inappropriate for expressing sexuality or even madness, and thus modern dance expresses *the abstraction of every sexual and excessive element in dance,* which however implies a *racist and colonialist prejudice.*

ture of consumption, while dissolving in avantgarde music into pulseless rhythmic fields. The voice unfolded from chorus to monody and religious polyphony, into song, and through the avantgarde experiments it can now explode into new choral improvisation techniques of varying uses of the voice connected to the moving body as sounding body. "Group" writing in 20th-century musical compositions by Stockhausen, especially in the 1957 work *Gruppen,* is a good example of field compositions, where every group is a note constellation defining its relational conditions: timbre, durations, attacks, rhythms, speeds, spatialization, protoharmonies, and protomelodies, in continuous variation from one group to another, an idea that can be transposed to multisensory movement improvisations. Variation more generally is another core improvisational musical form, stemming perhaps from some dances like the chaccone.

— From Palaeolithic beds of shells worn on the body as instrument, through ancient Egyptian slapsticks, finger snapping, and castanets, or the Morris dance[29] bells worn on the legs, across the castanets, finger snapping, and *zapateado* of Flamenco, up to interactive dance with digital sensors worn on the body for generating sounds and visuals, the generation of sound through the moving body seems to have closed a circle (fig. 64). The music as separate preexisting score is the great anomaly appearing in between. Hence the importance of recuperating improvisation techniques when working with new media instead or perpetuating the errors of the "choreographic era."

— Renaissance perspective, engraving, print, and the *camera obscura* gave rise to a whole new era of framings of bodies–movements, including in dance, music, and theater stages, as well as in architecture and painting, later leading to the rise of photography and cinema, which in the 20th century evolved into perspectival mass media like TV and radio, into recording and stereo systems of music production and consumption of increasingly homogeneous and endlessly repeatable products, of individual bodies aligned with their reproduction apparatuses, thus more and more alienated from collective improvisations. These return marginally in practices like contact improvisation, capoeira, break dance, rap, or even parkour, but often risking assimilation in market niches of homogenization that pre-empt the improvisatory practice of its emergent nature, a nature that I want to place a their most salient feature. Clubbing culture is also to be seen as a return of the chorus, but in a highly aligned scenario as mentioned in Book 5, while outdoors cruising for public sex in gay subcultures can be seen as modern expression of the chorus–orgy where the sexual is, however, segregated from other aspects of life.

— The tendency to increasingly abstract compositions detached from corporeal improvisation and practice can also be seen in different practices. For instance, in music one finds in the classical era a balance between improvisation, composition and performance (epitomized by Beethoven as great improviser, master of syncopated rhythm and variation, whose Dionysian side has perhaps not been claimed enough, and whose 9th Symphony, in spite of being a European symbol and of becoming a tune for merchandizing, is also a radical, choral, Dionysian affirmation). Instead, in the 20th-century avantgardes there is a strong tendency to favor abstract approaches to composition, often very detached from perfor-

29 The vigorous English "Morris dance" stems from Palaeolithic elk worship and involves bells on the legs and animal masks.

mance practice. In a tradition that goes back to the Pythagoreans and Plato, music is considered to lie in abstract numeric relations rather than embodied practices. But this also allowed the freeing of music from tonal relations, melody, harmony, meter, timbre, and spatial centralization, and unleashed an unprecedented laboratory of pulseless and spatialized practices that we can now recover from a more embodied and improvisational approach. All along, improvisation practices like jazz continue to appear, perhaps not by chance with African origins and linked to cultures where the sense of moving body and the interrelatedness of dancing and singing is more present. This, in turn, in another reverse loop, informed the whole tradition of pop music, based on African and African American rhythms and dance culture, but massively assimilated in homogeneous mass culture of production and consumption, including clubbing culture and their highly controlled panopticon architectures of invasive sound and repetitive choreographies.

— This tendency to automation and controlled separation has so far reached its culmination in smartphone culture of consumption and production of online videos (again see Book 5 for a critique of its implications), where dating apps and chemsex take over cruising sites as contemporary global form of the orgy.
— Interactive media art and performance can be seen as another contemporary approach to the choral and the creation of relational fields,[30] but subdued to the logic of the technology itself, its unsustainable production, and its telos in control.
— Meanwhile we saw a powerful but short return of the chorus in the assemblies of Occupy movements around the world. 15M[31] movements were revolutionary in creating a provisional opening, a metatopia, a plane of immanence where for a while things could remix in excess of inherited alignments, a huge force field, a vortex, a metabody of choruses, of bodies not just talking but moving, sensing, relating, creating common space and common body in the streets of our hypercontrol societies.[32] They didn't last very long, and now face the challenge of a dystopian hypersurveillance and pandemics society, but its energy is still vibrating in those who, like me, were massively involved in the movement. This book and the Metabody project are taking on that energy.

30 As analyzed in Baalman's (2022) *Composing Interactions*.

31 15M or Indignados was the Spanish Occupy movement emerging on May 15, 2011, presumably a precursor for the US movement coming later that year in September. There was speculation as to whether the date and name 15M would bear any relation to the fifteen chapters of Deleuze and Guattari's *A Thousand Plateaus*, where plateau is *meseta* in Spanish, since the book seems to have inspired the rhizomatic nature of the movement, whose online platform was called *n–1*. See my reflection on the experience within 15M movement as choral politics and provisional field of immanence and openness in Del Val (2021a).

32 The pre-emption of movements from within was a crucial problem in the 15M / Occupy movements. See Massumi (2015, 243) for a parallelism of discourses and practices in radical politics movements such as the Occupy movements and pre-emptive ontopower. Besides this, in queer and other movements there has been a tendency to discourse-centrism, representationalism, and overtextualization of the body–sex that has sometimes foreclosed the political field to practices that change the content but leave the frame intact, while inciting the proliferation of paternalistic affects and contagious gestures. This has afforded different modes of capitalization and pre-emption of social movements from within, often through a sort of *queer branding of minorities promoted by queer commissaries that police the boundaries of radical politics.* See Del Val (2011).

The chorus has remained sometimes in the background, sometimes coming back more intensely. The Dionysian returns under endless disguises: from Picasso's more-than-human intensity of defiguration to Beethoven's choral frenzy of rhythmic variation. Or in Stravinsky's *The Rite of Spring* and its echoes of ancient Siberian ritual dances. The "Eastern barbarian," as Greeks would call this god, is always around, waiting to return.

In terms of the arts as well as of social movements and practices one could identify a potential strong return of this spirit in the early twentieth century and since the 1960s: from May '68 and the sexual revolution, the eclosion of street art and performance, to the Occupy movements. But surveillance capitalism and the COVID-19 pandemic seem to be inducing a new wave of erasure of choral expressions.

Enslaved people, nomads, and migrants have been largely those sustaining or bringing back choral bodily practices in imperial territories, from capoeira to every African American rhythm underlying pop culture, in a reversal of slave society that takes us back to its origins in ancient agrarian empires.

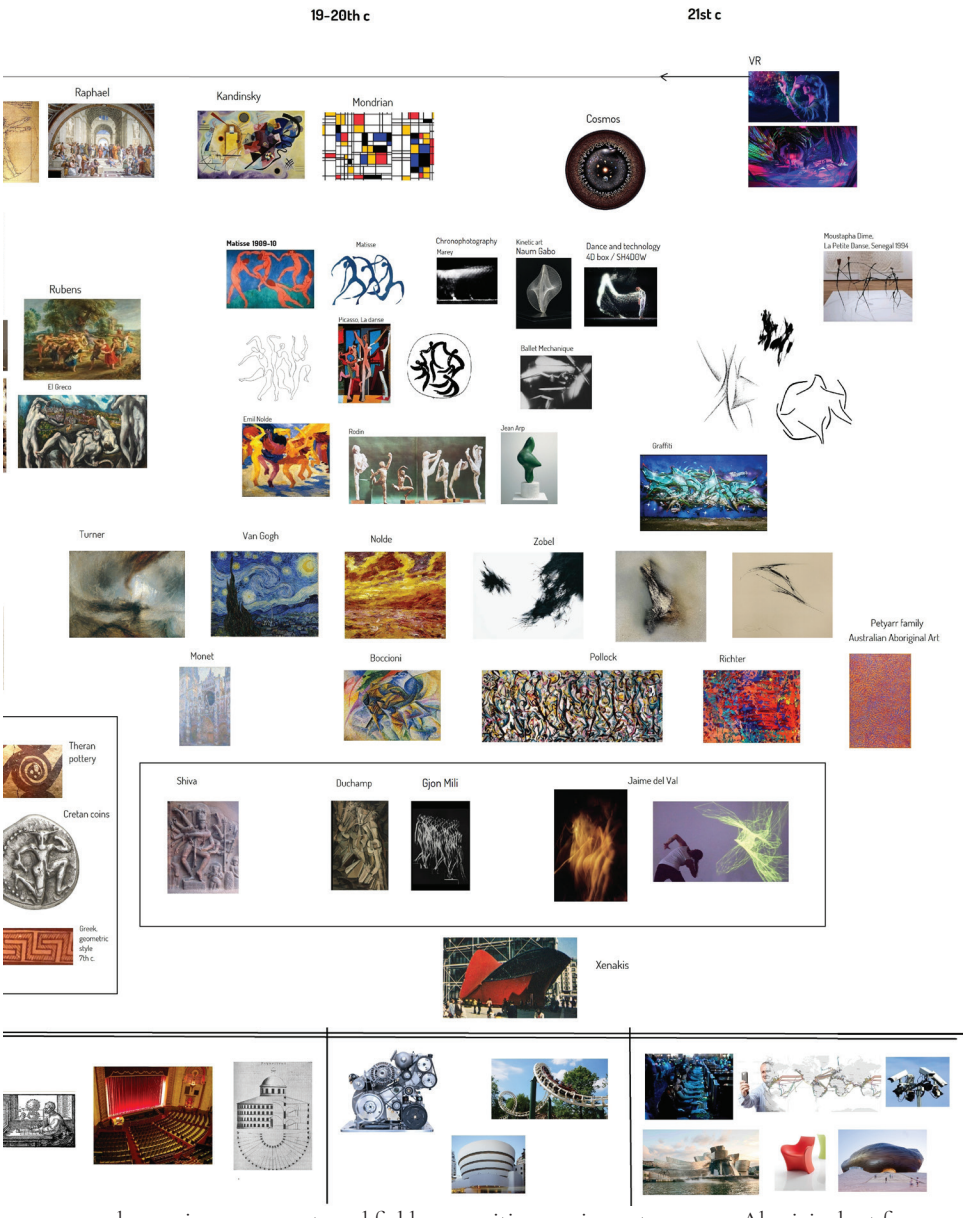
From a *metachoral* perspective, seemingly disconnected practices can be seen as related.[33] Perhaps the anomaly is the Western split between disciplines in highly aligned scenarios. One can study the expressions of the chorus and its alignments and variations in terms of:

— Degree of improvisation and indeterminacy, of open-endedness in participation and relation, and plasticity of rhythms, of improvisation versus repertoires, of corporeal versus abstract composition or choreography, of degree of split between spectator and creator, of the balance between improvisation or performance versus production and consumption of repeatable products and perceptions (mass media and clubbing), or through the study of instrument traditions, forms of writings, and balance or not between modes of improvisation composition, and performance (as was the case in many periods of classical music, for instance in Bach's, Mozart's, and Beethoven's time).
— Degree and mode of emergent space: nomad, urban, interior, aligned (street action, theater stage, camera, stereo system, smartphone, metaverse) and degree of alignment of orientations.
— Degree and mode of movement variation and multisensory integration, degree of homogenization of sensorimotor ratios (mass media), modes of relation, contact, and composition of bodies.

The problematic shift happened when the chorus became spectacle. At stake is to undo the spectacle and regain the chorus, also as means of a transformative education, where unfolding sensorimotor variation is key.

33 One can, for instance, see resonances between African masks or the body suspensions done in tribal cultures, recuperated by Fakir Musafar and Stelarc. In architecture, there has been of course the proliferation of disaligned approaches to design. But if we don't allow movements to be redesigned too, they can become empty boxes for consumerism. Think of the Guggenheim in Bilbao, and how it promisingly hosts spacetime deformations like Richard Serra's *The Matter of Time,* and yet they become part of a global economy of the panchoreographic and selfie culture. Away with design! Space needs to emerge from movement! Just barely design some principles to be taken on by movement!

Fig. 68. Body–movement and the arts diagram exposing the evolution of underlying types of movement in visual arts, from their origin in animal bodies and masks, unfolding in a double tendency to geometric reduction (mainly on top) and to sustainment of vortical motions (mainly below), and at the bottom parallel modes of work and technics. From Altamira and ritual masks-dances to VR, from flocks to flocking simulations and AI, from animal plasticity to neural implants, one can trace an evolution from enacted, embodied, and participatory or immersive plastic art in open space (starting from the visual plasticity of animal bodies, through masks and body paint in human ritual dances) to an increasingly spectacular and framed observation, which however is being partly overcome with a return to nonspectacular, improvisatory, participatory, ritual, outdoors, and nomadic forms. The evolution is also from unrealistic lines, neither curves, nor geometric, that one finds in Palaeolithic drawings and sculptures, to geometric and representational design, focusing on the human face and figure, peaking since the Renaissance with linear perspective, which again modern art has overcome returning to a sensibility that is much closer to "primitive" art while photography and film take over the job of representing the world (whether human figures–faces or other images in the scientific domain, from atomic microscopy to the limits of the observable universe). In the process, one can also see unfolding the difference between geometric and static compositions and those that follow a vortical motion, or even



more amorphous micromovements and field compositions, as in contemporary Aboriginal art from Australia and in some impressionists like Monet. Likewise, one can distinguish solid from rigid static forms, and disperse from energetic dynamic form. And most important is to distinguish, along a continuum, tendencies to reduction and control versus tendencies to increasing indeterminate variation: this is where digital media and the smooth design of blobjects don't pass the test. Blobjects embody the tendency to capitalize novelty in desire through ambiguous curves, which seems to be permeating the design of everything, so that for instance all brands of cars look more and more alike. Architecturally, from termite mounds, stigmergy, and other animal architectures to blobjects and "intelligent," parametric, AI, or interactive design and architecture, it seems that a circle has been closed? But the smoothness of blobjects reveals the dead end of that circle and the need to return to the irregular and organic architectures of animals taking them further: building only with our bodies (no tools), never imposing on the environment a predefined idea or design, avoiding sedentarism and with it fixity, accumulation, property, and multiplication, foregrounding sensorimotor richness, perhaps back to trees and tropical environments... and as vegan gatherers! The great anomaly is representational, perspectival art. Otherwise it is all a question of movement. And of the art movements themselves: those that keep mutating, as modal nodes of provisional cohesion.

6.3.6.1.2 Movement in the Arts: Elements for a Kinetic Art Ontology

Could we revisit all arts from the perspective of movement and dance? Could it be that, like dance, all art also has struggled *between tendencies to geometric reduction and the return of (vortical) motion?*

Maria Laffitte (1953, 37) calls it the struggle between a baroque–biological imperative that draws on the senses and vegetal life (I would add on flows, spirals, and animal, bodily movement) hence more Aristotelian in kind, and an imperative of crystallization that tends to geometric forms, hence Platonic in kind. The latter is present since prehistory (perhaps stemming from hallucinations where one sees entoptic phenomena). Mechanized representations liberated the artist from the responsibility of mimetism.

I suggest a slightly different differentiation: *between reduction of movement into form and nonreduction of movement as sensed–felt.* These have a complex relation to the mimetic versus ecstatic divide, which partly inverts Laffitte's divisions, since the geometric is effect of the mimetic, as abstraction from the movements of the world, although possibly also related to ecstatic, hallucinatory visions. The vortical I place more in a nonimitative sense of immanent and ecstatic movement, though possibly mixed up with the mimesis of spirals.

We will consider not only the content, but the movement of perception. Movement in arts can be studied in terms of:

— illusions of movement, movement simulations, kinetic art;
— implied movement;
— representations of movement;
— actual movemets of the work, again kinetic art;
— types of movement and moving bodies, kinds of implicit or explicit movements of the figures or landscapes (vortexes of bodies of natural phenomena) and movements of the whole painting or parts of it;
— invitations to the viewer to move, movement created in relation to the work, mode of perception;
— art movements and transitions and related social movements - as actual movements and how they happen.

...

Modern Western art has brought back a kinetic and perceptual sensibility in some ways close to that of Palaeolithic art, whether in drawing, sculpture, or performance art. At the same time, we have gone from the ritual cave paintings to immersive VR and interactive digital media, which seem to have overcome the spectacular divide. Scenographies and staging since ancient Greece seem to have also come full circle to the autonomy of the stage itself as protagonist and as moving space (as in the works of Aurelien Bory), albeit still bound to the audience–actor–creator–work divides so dear to Western traditions. Land art, street art, and ritual performance art are part of this overcoming of art as object of consumption framed at safe distance. Jazz and Black American music–dance traditions have been significant in bringing to the fore improvisational practices again, which have also been cultivated in the more minoritarian music and dance avantgardes. Abstract film has in turn allowed a focus on pure movement of the moving image without narrative or representation. Media art can also point to a dissolution of the spectator and an involvement of the moving body (but one can do that without the costly and unsustainable digital technologies!).

From the grand cosmic architectural plans of entire temple cities like Teotihuacan in Mexico or Khajuraho in India, through Egyptian pyramids, or the many Greek *akropoleis*, to the planetary network of satellites, microchips, data centers, and drones, the tendency to grand and sedentary design has closed a circle too. It is time to return to animal and Aboriginal architectures: from the wonders of termites, spiders, bird nests, burrows, and beehives to the caves and nest structures of human Aboriginals, and toward new inventions in organic, mobile, dynamic, and amorphous architectures that move and dissolve with the flows.

Cosmological conceptions of movement are intertwined with dances and with buildings of the past. A great example is the *feng shui* compass, part of an ancient Chinese art of geomancy that associates the *yin–yang* and hexagrams of Daoist and *Yijing* cosmologies to localizations of places following their "good or bad energies," both for building significant sites or for living, and by understanding how the building will affect the place, following complex criteria of orientation, landscape, geography, geophysics, astrology, and the *Yijing* hexagrams. *Feng shui,* which was needed to palliate the disaster of sedentary settlements, was prohibited by the communist regime, ensuing in the biggest and most devastating urbanization project in the history of the Earth. But what is often forgotten is that before buildings there were dances, which created the sacred place: dances were connected to the Earth long before we started modifying the Earth. And without modifying it we would not need palliative remedies!

Stonehenge was possibly both a temple and an astronomical observatory, associated to rituals, that would include dances. So did the giant ithyphallic figure of Cerne Abbas presumably linked to fertility rituals and phallic pole dances for centuries or millennia. Labyrinths were also related to dances, including those related fertility, but perhaps also associated to death and rebirth rituals. Possibly all these architectures came from much earlier dancing in those places.

Uluru is the Aboriginal name for the rock in the middle of Australia that colonists called Ayers Rock, and which for Aboriginals is the center or crossroads of paths from the Dream Time when the Earth was created, paths whose complex knowledge is crucial for survival as they include the places hosting water, a knowledge transmitted through songs, dances, and ceremonies, and whose astonishing complexity is deeply embedded in the life of Aboriginals. Dances, thus, don't merely celebrate but construct and transmit complex ecological knowledges. Disembodied, immobile, rational, Western knowledge cannot but imply a disearthification instead.

Dance–rhythm creates the body and the collective, the place and the site. I have an ecstatic tendency to dance spaces and moments which call my attention, whether in natural or built architectural environments, a sunset, or a cloud. I can easily imagine this tendency to ecstatically dance natural spaces and occasions in prehistoric people, and how in the process they became a place (for sacred ritual) and later a site for buildings (altars, temples, tombs, theaters). Dances elaborate the experience of place, connect you to it, create a resonance, a deep embodied knowledge and memory: a new knowledge of moving in the world, and a new memory in the synapses of the brain and the habits of bodies. Greek *akropoleis* seem to be chosen based upon such a sensitivity of celebrating of and connection to the Earth and the elements, like most or all sacred places of antiquity. Nowadays it seems like that kind of relation is inexistent in industrialized environments of radical Earth disruption based on utter lack of resonance, with one's body and with "place."

Movement first: this is the principle.

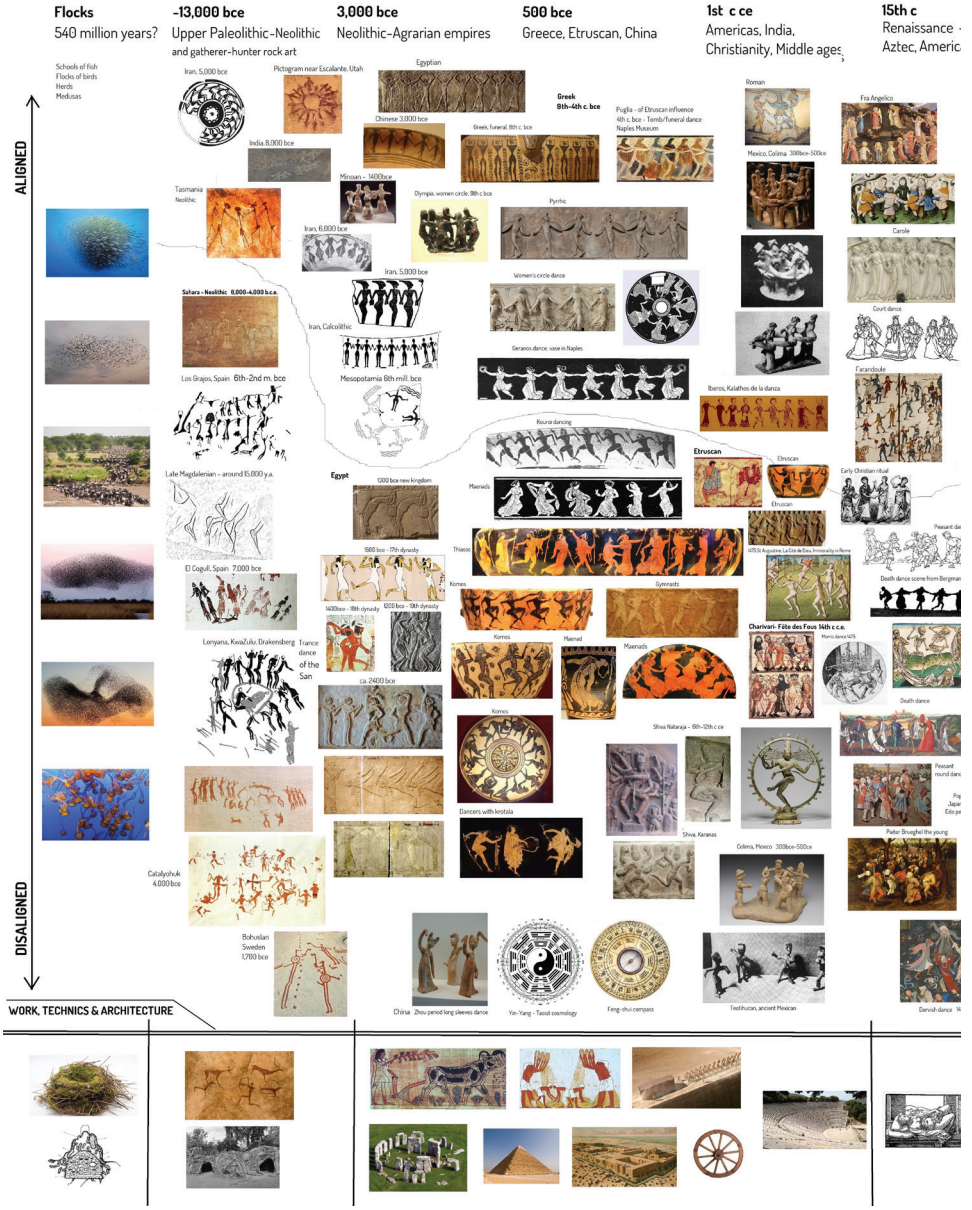


Fig. 69. World in chorus diagram showing 15,000 years of dances. Below are generally the more disaligned dances, and above the more aligned ones. One can see the emergence of circular dances in the Neolithic, the resurgence of disaligned dances with the Dionysian, which goes again to the background in the Middle Ages without ever disappearing, returning in modern and recent social dance now challenged by hypersurveillance culture. At the bottom parallel modes of work and technics.

We have gone full circle. Contemporary cosmology has overcome the mechanistic inflection and brings back visions very close to early animism and ancient cosmologies, where everything has motion and movement equates life, while the universe rhythmically self-unfolds from an ever-present indeterminate substrate of quantum fluctuations; contemporary art has overcome the perspectival inflection and brings back sensibilities that are closer to Palaeolithic and Aboriginal arts; contemporary social movements seem to overcome state politics of parliaments, returning

to assembly, self-organization, and mobilization; dance and performance timidly dare to quit the theaters and return occasionally to the streets; anthropology claims the better ways of living of gatherer cultures over agricultural civilizations; biology and cognitive sciences claim the embodied nature of cognition and the sentience of animals or even plants... and so forth. But these revolutions are still marginal with regard to the suicidal fanatism of human supremacist dominion and its unison parade toward extinction.

6.3.7 The Emergence of Mimetic and Unison Movements, and and the Binary Logic of Ecstasy

When or how did the evolutionary anomaly of mimetic and unison movements emerge? Animals don't necessarily imitate, and never move in completely unison coordination. A lot of their behavior is genetically encoded and expresses itself very soon after birth if not before, and their flocking behavior is never purely imitative but a differential relational resonance of distances, orientations, and speeds. In humans, instead, there has been an increasing tendency, perhaps since we started making tools and looking from a distance, to elaborate modes of behavior and learning that are less genetically encoded, being instead more, we could say, epigenetic and imitative. This tendency to learn by imitation (as we lose the differential capacity to resonate with other bodies in proprioceptive and multisensory immediacy) is perhaps itself a primordial foundation of imitative dances. Or imitative dances might be foundational to that development in turn.

In terms of ritual dance, an early significant expression of mimetic movement can perhaps be found in *sympathetic magic* linked to animistic ritual associated to animals and hunting appearing perhaps in the Middle or Upper Palaeolithic, possibly at similar times as ecstatic dances and rituals, or before. Cave paintings of animals were most likely related to such rituals. Perhaps the earliest form of mimesis was in dances imitating animals (or ecstatically invoking their spirits) and in the associated masks, both source for sacred adoration, admiration, fear, and as propitiatory dances for hunting, a major preoccupation of hominids for two million years till the appearance of agriculture. But the animal itself is a vortex of motions, hence some of these dances may have prefigured later imitations of vortical flows.

It is in the Neolithic when we see the appearance of numerous depictions of bodies dancing in unison in circles or lines. This has to do partly with the medium of pottery on which they appear, itself associated to the processes of accumulation in agricultural societies, and to the pottery wheel, but also quite probably with the emergence of a new kind of mimetic circular dance that imitates the movement of the heavenly bodies, associated to the new calendric and astronomical preoccupations of agricultural societies. At the same time, new modes of coordinated activity appear in work, associated to harvesting, including the enslavement of human and nonhuman animals for agriculture and for the construction of large tombs, pyramids, altars, temples, observatories, and a variety of megalithic constructions. War, colonialism, and slavery were in turn most likely related to new kinds of large-scale military training, which again needed a new level of unison coordination. Elaborate funeral rituals with coordinated dances may be another source for this change, as well as elaborate seasonal celebrations. The round and chain dances appearing in the vases of the Neolithic thus reflect an overall emergence of unison coordination, leading to the ideals of civilized movement in Plato and Confucius, and of classical Indian, Egyptian, and other codified court and religious dances, all of which were a core educational means for developing the rhythmic capacity for coordination altogether, and for social bonding.

But social bonding can happen without unison movement, as is clear in animals and many tribal dances: unison coordination is about the emergence of a type of social boding in hierarchical societies where bodies lose their relational immediacy. In this period, class divisions in dance appear along the class divisions in society, and with the appearance of professional dancers. These circular and chain dances

continue to exist today as symbols for fraternity, harmony, and peace, but also play, as in the circular dances of children at schools, and have been depicted continuously, since the Neolithic, through Greece, in medieval and Renaissance dances, up to modernity, including in famous modern artworks such as the various versions of *The Dance* by Matisse. They even feature in anarchist communes like Monte Verità in the early twentieth century. Circular dances are omnipresent in popular and folk dances, even though largely split from their ancient ritual meaning or their social function, having become "tradition" weaving national, regional, or indigenous identities and a source for neocolonial, touristic exotism and exploitation.

Aligned and disaligned modes can mix up: circular dances can become open, vertiginous, and disaligned serpentines, or can have changing floor plans, while ecstatic techniques can involve repetitive movements or even immobility. The modes can shift and mix between:

1. mimetic and ecstatic;
2. geometric and informal;
3. static posture and internal bodily changes;
4. mobilizing more or less the different parts (arms, legs, head, torso);
5. chained or loose;
6. with more or less changes of height versus floor (from high leaps to floor work);
7. unison or each one differently;
8. changing relations to one another (like flocks) or not;
9. changing relations in differential way (like flocks) or following geometric floor plans;
10. in fixed architectural places or itinerant and in open spaces;
11. with spectators or only for those dancing (or shifting in between), circles can break and become serpentines moving around spectators who join, shifting nomadically, or becoming again lines and circles in a fixed place, with more or less changing rhythms;
12. improvised or choreographed;
13. with songs or instruments on the body, or with external players;
14. with improvised, written, or recorded music, or with no music;
15. with masks, adornments, body paint, clothes, or nudity;
16. with sung texts or not;
17. associated to different types of ritual or as pure improvisational joy;
18. associated to classes or as dissolution of distinctions;
19. for civilizing purposes or for becoming nonhuman;
20. rare/occasional or frequent/ongoing practice, more or less part of the totality of life, more or less linked to rich ongoing movements in life (as in semidancing like most nonhumans), and in greater or lesser diversity of forms of expression linked to the diverse occasions of life.

In modern times, with the new kinaesthetics of mechanical machines permeating all aspects of life, from industry to leisure (as in rollercoasters) and informing the analysis of movement through photography and film, there is an increasing technical mediation of choreographed movements. The core *technē* since the Renaissance is perspectival vision, the major revolution toward global choreographies. This occurs both in terms of orienting movement and for analyzing it, and for designing machines themselves: from mechanical machines at home, through vehicles, up to

current digital interfaces, VR, and social media as means for homogenous contagion of choreographies.

Meanwhile, mass unison parades in the military or in fascist and communist regimes, as well as mass unison exercises, such as those of workers in Japan, continue having an educational function while social bonding shifts from dance to mass-media sports like football. But the dance of technics itself could be seen as further expression and *telos* of these alignments, with a major layer in global transportation networks, and today unfolding through AI, robotics, drones, satellites, and autonomous weapons, amongst others.

6.3.7.1 Chor(giast)ic Ontology: Hints of a Past Before the Split

The Greek chorus, especially in some of its complex Dionysian expressions, exposed a blend of elements that have gradually disaggregated over time, though in split form they persist and return:

1. dance, music, poetry, or drama, as well as plastic arts and space;
2. the sacred, divine, mystical, religious, and mythological;
3. the ecstatic and the ritualistic, the cathartic or healing;
4. the orgiastic and erotic;
5. the sensual, food and wine;
6. open-air spaces or natural spaces, and the unification with nature;
7. the nomadic or processional;
8. the political, the undoing of boundaries;
9. the social;
10. the educational;

The blending of the festive, outdoors space, nature, food and wine, dance and music, the divine, and the erotic that one can find in ancient Greece — associated to the *kōmos* and to Dionysian scenes — eventually disappears in the modern world, where the orgy is depicted (except in some neoclassical revivals like Bouguereau) as purely sexual, indoors act. Many of the orgy scenes depicted in Greek vases include dancing figures and other elements that imply their relation to the *kōmos*. These scenes differ strongly from other scenes of courtship and pederasty, or scenes including *hetairai* (the highly cultivated prostitutes participating at symposia, as different from the *pornai*, the brothel prostitutes) and exposing some of the complexities of sexual and social relations in Greece, of the affirmative and free cultivations of arts of pleasure, and of existing forms of domination and hierarchies, as well as of mythological narratives (as in satyr scenes), where male nudity can be seen itself as a costume identifying heroes or athletes, not always corresponding to nudity in daily life.

In Greece, erotic scenes did not yet count as pornography, though some forms may have anticipated it. It is precisely the blending of eroticism, festivity, food, dance, music, and the divine found in Greece that creates a difference with later pornographic expressions where the sexual gets cut off from other spheres of life.

In other erotic iconographies of ancient cultures, as in Peru, and till recently in Africa, one can see the ritual and religious character, often related to dance, and very at odds with western segregations of the sexual to a specific pornographic regime. From the ancient and numerous Palaeolithic Venus sculptures, vulvas (at times as entire caves as the Utroba cave), and phalluses, ithyphallic sculptures, and megaliths that, depending on the case and theory, are seen as phallic, or as female symbols

for the Earth reaching to the sky (mostly funerary, but also astronomical), no early erotic images could count as pornographic because sexuality had not been segregated yet. Such phallic or earthly megaliths and vulva-caves became some of the first architectures.

The numerous orgiastic scenes decorating the exterior of the Kandāriyā Mahādeva temple in the Khajuraho complex (850–1000 CE) in India, possibly dedicated to Śiva and Pārvatī, to Tantrism, or to the Kamasutra, expose an extraordinary expression of the nonsegregated celebration of sexuality in non-Western traditions. Ithyphallic images of Śiva in numerous other temples also express this.

Alain Daniélou (1992) proposes an equivalence between the Indian god Śiva and the Greek Dionysus, while the former would be a more ancient and primordial forerunner also of the Egyptian Osiris,[34] both pre-Celtic and pre-Minoan, associated to the megaliths, phallic sculptures and processions, spreading from India to Portugal in the Neolithic, but also linked to matriarchy, spiral designs, and frenzy in spiraling body movements. Both are religions of nature, vegetation, and agriculture, of fertility, orgiastic ecstasy, and eros, of dance, music, and drama, of celebration and joy, of changes of cycles and of the dead, of the overwhelming and monstruous, of the animals and trees, of the oppressed and poor, of the abnormal and outlaw, of the elimination of social barriers. As more ancient and matriarchal religions they became partly assimilated into patriarchal Aryan religions and even in monotheisms, both in Vedic India and in Olympian Greece, and later Christianity had their festivities echoing the pagan winter celebrations. Their rituals permeated Buddhism, and were practiced by ancient Cannaneans, Babylonians, or Hebrews, and persisted later in the guise of carnivals or heresies, up to modern private orgies or sex clubs, as the law of variation that lurks behind any tendency to alignment and reduction, waiting to return, the divine madness behind any rationalization.

Daniélou distinguishes two major sources for religion since the origins of sedentary peoples: one linked to nature, the other to social organization in the city, tending to monotheism through the influence of nomadic conquerors who, not having a profound relation to natural environments, "carry their gods with them." The latter creates an anthropocentric religion, dissociating themselves from nature and leading to an era of destruction and conflict (Kali Yuga). In the Bible, Cain was indeed the agriculturist and builder of cities, who kills his brother herdsman, Abel. The dominant anthropocentric religions have either persecuted or partly tolerated and integrated roots from the more primordial naturalistic religions that predated agriculture, farming, and cities, and whose relation to the nonrational, infra- and overhuman became condemned.

Daniélou exposes the correspondences between Śivaism and Dionysian Mysteries: where the Indian *kumara* equates the Greek *kouroi*, the Indian *bhaktas* equate the Greek *bakkhoi*, the Indian *kiriana* equates the Greek *dithyramb*, and Indian tantrism equates Dionysian orgiasm as ecstatic ritualistic techniques that unleash and channel the energies in the body.

34 As Frazer (2010) proposes, Dionysus doesn't have to be considered a Greek successor of Osiris (thus neither of Śiva), rather, it is the common ground of agricultural practices that underlies both, and Dionysus could have a Thracian origin (rather than Minoan). According to Frazer, Osiris and Dionysus were the most popular gods for Egyptians and Greeks, respectively, as gods of both life, eros, and death: gods of trees and crops, of fertility, and of the dead, of the changes of cycles and rebirth, of the chthonic underworld, of the ecstatic practices stemming from ancient sympathetic magic for instigating the fertility of the Earth, and of ecstatic dance, music, festivity, and drama.

Śivaism opposes the Vedic idea of the world as illusion or Maya, presenting it instead as power (*śakti*) and the world as pure rhythm, hence Śiva as divine ithyphallic dancer of creation, transformation, and destruction, in the interplay of the centrifugal force of Śiva and the centripetal of *śakti* (which later became Viṣṇu, equivalent to Apollo). In Śivaism eroticism is an orgiastic play of gratuitous and endless creation, dissemination, and pleasure, where fecundation is considered of lesser value, where temples, dances, and rituals are in nature itself, where sacred prostitution of all genders is part of the divine ecstatic play, where Śiva is hermaphroditic and self-creating like a fenix, where processions of transgendered people are part of the play of never-ending transmutation, where ecstatic dances are not to be seen but practiced by initiated ones, with specific movements for reaching trance, with the heads up, as one finds in Greek maenads and in Indian dances, or in African trance dances, and where drama originates from the ritual dance, rituals that aim to heal the primordial human supremacy split.

Tantric techniques are about unfolding our potential for contributing to the world's unfolding, creating affective bonds with the world, linked to the *samkhya* cosmology (macrocosmos) and the knowledge of the microcosmos (yoga), mostly spread through oral traditions of initiates, linked to a doctrine, a knowledge, rituals, and rules for living, disseminated by the initiates.

Zimmer (1952) presents Śivaism as affirmation of all that appears and of dynamism itself (echoing Nietzsche's account of the Dionysian tragic spirit), in the interplay of power (*śakti*), game (*lila*), and ecstatic love (*preman*) for the world. Tantra as different from other practices seeks affirmation not by suppressing forces and potentials, but by cultivating them,[35] and sustaining them (not as escape valves), affirming the depths and complexity of our inner microcosmos and its relation to the macrocosmos, becoming Śiva by cultivating the sustained, immanent, and excited channeling of the internal flows, cultivating the vital, ecstatic, and erotic joy of never-ending transformations, and celebrating not the eventual, transient forms but the dynamism itself, where retaining and accumulating is a crime against the world's transmutation and the swirl of cosmic dynamism.

> *Dancing is indeed the most fundamental and primitive form of the orgy, and that which most completely and healthfully fulfils its object.*
> — Havelock Ellis (1906, n.p.)

6.3.7.2 (Ch)orgiastic Ontology: The Orgiastic Nature of Dance

Ecstasy, dance, eroticism, war, and the divine were often confounded in ancient religious cults. Likewise, sacred sex and "sacred prostitution" in temples was often associated to early professionalized dancing–singing in Egypt, Cadiz, Sumer, or Greece, where the *hetairai* had prominent and influential roles in *symposia* and may have influenced philosophy in ways yet to be accounted for, being also cultivated dancers, singers, poets, philosophers, not entirely unlike the Japanese geishas. Male

35 Daniélou (1987, 213) points to Vedanta as being opposed to Tantrism for its conception of the world as illusion. As happened in Greece with Dionysus, Śiva had to be accepted reluctantly by the newer gods of which Śiva represented an opposite logic of affirmation. Like Dionysus he was perhaps the most ancient and important god, and the most beloved by people, but partly rejected or damned amongst the new Aryan religions of the Vedas (Daniélou 2012, 43). But, as happened in Greece with Apollo, in India a dual term of elevation, contraction, and order was introduced through Viṣṇu as preserver, Brahma as creator, and Śiva as destroyer only.

equivalents of sacred dancers–singers–poets–philosophers–prostitutes may also have existed. In both, the erotic is not split from the artistic or even philosophical. Dance and sex mingle in orgiastic *kōmos* scenes depicted in Greek vases, like they do in numerous ithyphallic dancing figures. In other contexts, both had a further sacred meaning, and even in Neolithic rock paintings ithyphallic figures appear performing war dances, another ancient link. Tüllmann (1961) speaks of the erotic character of many initiation rituals and dances and of the existence of orgiastic fertility celebrations and of very diverse kinds of promiscuous festivity in tribal cultures of Africa, Oceania, South Asia, or the Americas.

Orgiasm was the Greek name for the orgiastic character of the Dionysian Mysteries, described by Nietzsche in *Twilight of the Idols* (2005) as an overabundant feeling of aliveness, core to his sense of the Dionysian. Daniélou puts it in close relation to tantrism, both being ecstatic techniques by which one cultivates energies, channeling them without ever repressing them. This notion is quite at odds with how the orgy has evolved later as a sometimes tolerated escape valve mechanism and logic in aligned societies.

Partridge (1960) proposes to distinguish two types of orgies: a more conformist type related to existing practices in a society (as in Greece and Rome), and a more rebellious and individualist one of people going against predominant social tendencies (as in heretics or modern libertines). Ritual orgies existed perhaps in all ancient agricultural societies, as escape valves and fertility rituals. Indeed, I argue that they were perhaps born with agriculture and less needed in less hierarchical gatherer cultures. Something else is orgiasm as ecstatic technique of life augmentation.

Patridge analyzes the different expressions of the orgy as revealing profound differences between cultures, notably between the Greek and Roman cultures. Where Greek culture cultivates complex and diverse arts of pleasure, the Roman one has a tendency to cruelty and domination by excess, which foreshadows the sense of sin and guilt in Christianity (while the main Christian festivities of Christmas and Easter are based on pagan festivities of fertility and changes of cycle around the winter time). Patridge exposes the politics of the orgy, its practices, and regulations as crucially connected to many if not all other aspects of sexuality and of societies: from prostitution and marriage to public space. He thus hints to a potential *orgiastic ontology of societies.*

Tell me how your orgy is, and I will tell you what type of society you are.

Patridge lays bare the way in which the rigid alignments imposed by the Church in medieval times led to a great variety of hysterical expressions, visions, and excesses, including choreomanias, or the Feast of Fools, and how witchcraft and heresy were eventually invented as a way to demonize women and other people who had a free sexuality, condemning not only sex but also dance. *The orgy was always a profoundly political issue.* The Renaissance saw a revival of paganism and the Church in Rome was notoriously orgiastic in the times of Borgia, which eventually laid grounds for the reformation and its ensuing puritanism, where more individual types of libertines would appear, including, later, De Sade and Casanova. A tendency continuing till today in a global society of private clubs, still inflicted by Victorian puritanism and its variations, spreading across the planet through European colonialism.

Sexual revolutions in early-20th-century Germany were erased by Nazism, and the global ones of the 1970s have been followed by the new restrictions of the AIDS pandemics and of a digital surveillance society, where much of the orgiastic gets assimilated on the internet, both in porn and in online video chats, dating apps,

Fig. 70. The recurrence of the Dionysian and orgiastic motifs, from prehistoric Venuses, phalluses, and vulvas, and cave paintings of ritual orgies, through the ancient Greek representations of the ecstatic Thiasos with its maenads and ithyphallic satyrs, and in ancient Indian and other cultures, through the resurgence of the motif from the Renaissance till today (in paintings by Tiziano, van Keemsker, Rubens, Poussin, Ricci, Bouguereau, Matisse, Picasso), and contemporary or recent orgy representa-

tions in film, pornography and art (Tom of Finland, gay porn, orgy scene of *The Perfume*, and orgy paintings by five different artists: Cecily Brown, Blas Gallego, Robert Ross, Walter Brown, Isra Paez) to gay sex clubs and cruising, toward a potential resurgence of the Dionysian? The unique blend of elements (sacred, orgiastic, artistic, social, and other) of the Greek chorus–*kōmos*–orgy gets increasingly disaggregated so that in modern orgy representations the sexual elements are separated completely from all the others.

and in related practices such as chemsex. Meanwhile gay and swinger clubs constitute established niches for orgies in closed spaces within neoliberal capitalism, often combining dancing, in some cases for mixed public and with specific fetish thematics, where it is rare to find a space that does not constitute a very specific niche and proposes a more hybrid dynamics. Marginal cruising practices of public sex in the open air continue to exist, as praised and defended since the 1970s and '80s by Marco Vassi or Patrick Califia-Rice, some hippy communes reappear sexing in the open air, and Ukrainians proposed in 2022 to celebrate mass open air orgy with over 15,000 people should Putin activate a nuclear attack. Perhaps all these are marginal cues, toward an unseen return of the orgy?

Evolution is an orgy. Stopping it is a cosmic crime.

6.3.8 The Taming of Dionysus and the Extinction of Dance

> *The dance is the mother of the arts.* [*... It*] *lives at once in time and space.* [...] *The dance breaks down the distinctions of body and soul,* [*... it breaks down*] *all the distinctions that a more advanced civilization has established.* [*... In the life*] *of ancient civilization scarcely anything approaches the dance in importance.* [...] *The dance is life on a higher level simply* [*... T*]*his is still not art in the usual sense.* [...] *But when in higher cultures it becomes art in the narrower sense, when it becomes a spectacle* [...]*, then its universal power is broken. It disintegrates.*
>
> — Curt Sachs (1937, 3–6)

Ancient Greek society is a unique and uniquely documented example of a mature dominant civilization, foundational in turn to the Western tradition, in which choral dance still held the crucial importance that it had in tribal cultures, as fundamental means of social belonging and organization, education, religion, ritual, politics, and art, not in the modern sense of art as separated discipline, but in a broader sense, mingled with life; an importance which got lost soon afterwards, already in Roman times. This allows us to diagnose the transition from less aligned to more aligned societies from the perspective of movement organizations.

The trope for this narrative is what I call "the taming of Dionysus" as a crucial, underestimated process in which disaligned dances, as one finds in the Dionysian cult, either became aligned, or were tolerated under regulation, often appropriated from colonized people considered less "civilized," while choral dances became captured in the theater and increasingly regulated and choreographed, setting the foundations for what Debord (1995) called the "society of the spectacle," which continues today as mode of controlled reconnection of what was previously split, and which uses the sense of drunkenness and ecstasy as controlled escape valve in increasingly aligned societies. The Greek chorus exposes the process, contradictions, tensions, and complexities of this crucial turning point, as the final and mature shift from self-organizing, comoving societies where sociality emerges from the coming together of difference, to algorithmically ordered ones where sociality is organized top-down according to homogenizing alignments, a process in which aspects of both continued to coexist over centuries, with collective dance still as central trope, before it finally (almost) disappeared.

I also call this process the *extincion of dance*: from its central position in society as core to a flexible cohesion, with precursors in nonhuman flocking, to a marginal role, at times tolerated and at times prohibited or ridiculed in more aligned socie-

ties, where dance is looked at as a spectacle, occasionally practiced as escapist social dance or surviving as a relic in folklore and ethnography, while the still existing indigenous communities that still have dance as central to life, such as the San gatherer–hunters, have almost disappeared.

This process also crucially involves the transition from the unruly Dionysian chorus of ecstatic *nonsynchronous dances,* which I claim were norm in most tribal societies and outside agrarian empires, linked to what I call *symbiotic untrainment,* to more aligned and *synchronous choruses* as foundational institutions in the polis, a turn whose articulation and tensions we will see most clearly in Plato.

The main thesis here proposed, of which the taming of Dionysus is a privileged example, is (fig. 71): (1) the centrality of dance in life and of choral dances in human societies; (2) the distinction between disaligned and aligned dances, the latter emerging in aligned agrarian societies and with them unison synchronized movement, associated to work and social cohesion in homogeneous cultures of exploitation; (3) this contrasts with other more flexible kinds of dances associated with more flexible societies that are subject of study in gatherer–hunter communities and that eventually were common in preagrarian times; (4) aligned choral dances gradually took over starting in the Neolithic as core provisional form of social cohesion, to later gradually disappear as other modes of organization took over, from bureaucracy and architecture to machines, as part of a gradual "extinction of dance," that includes the rise of spectacular dance and an increasing set of distinctions in which dances stopped being practiced by all and felt as embodied practice, and became an experience to watch, or an occasional escape valve; (5) in this process, disaligned dances were at times still cultivated or allowed, at times appropriated following a colonial dynamics from people considered "less civilized," as seems to be the case with the maenadic Dionysian cults in the mountains, possibly stemming from colonized Thracians, and later in modern colonialism, through African enslaved people and African Americans, where unruly dance was both a mode of resistance and a mode of assimilation, with their rhythms being foundational to global pop music and club culture of today, where the unruly, disaligned dancing has proliferated along with increasingly homogenizing panchoreographics of pop music videos[36] whose ecstatic dancing-singing choruses have been assimilated into global capital, disseminating choreographies in social dance and club culture where disaligned dance has become an escape valve, along with flashmobs, homogeneous memes, and Tiktok choreographies; (6) along the way, the "Dionysian" never fully disappeared and several stronger waves of resurgence happened, in the Middle ages and in modern dance, while the few remaining gatherer–hunter societies keep cultivating their less aligned dances; but (7) a deeper return of the disaligned chorus is needed for a deeper transformation of ways of living beyond aligned societies, in the face of the upcoming ecosocial collapse prompted by homogeneous cultures of accumulation and their homogeneous synchronous movements, and for a restoration of movement diversification in the biosphere as core evolutionary principle.

36 A prominent return of an (often quite ecstatic and sensual if not erotic) choral dance linked to song (as in the ancient dithyramb) is in music videos, particularly since their explosion after Michael Jackson's *Thriller* in 1983, where unruly dances and rhythms, stemming from Black music via jazz and other forms became assimilated by a market-driven system of production of globalized products, such as dance-pop.

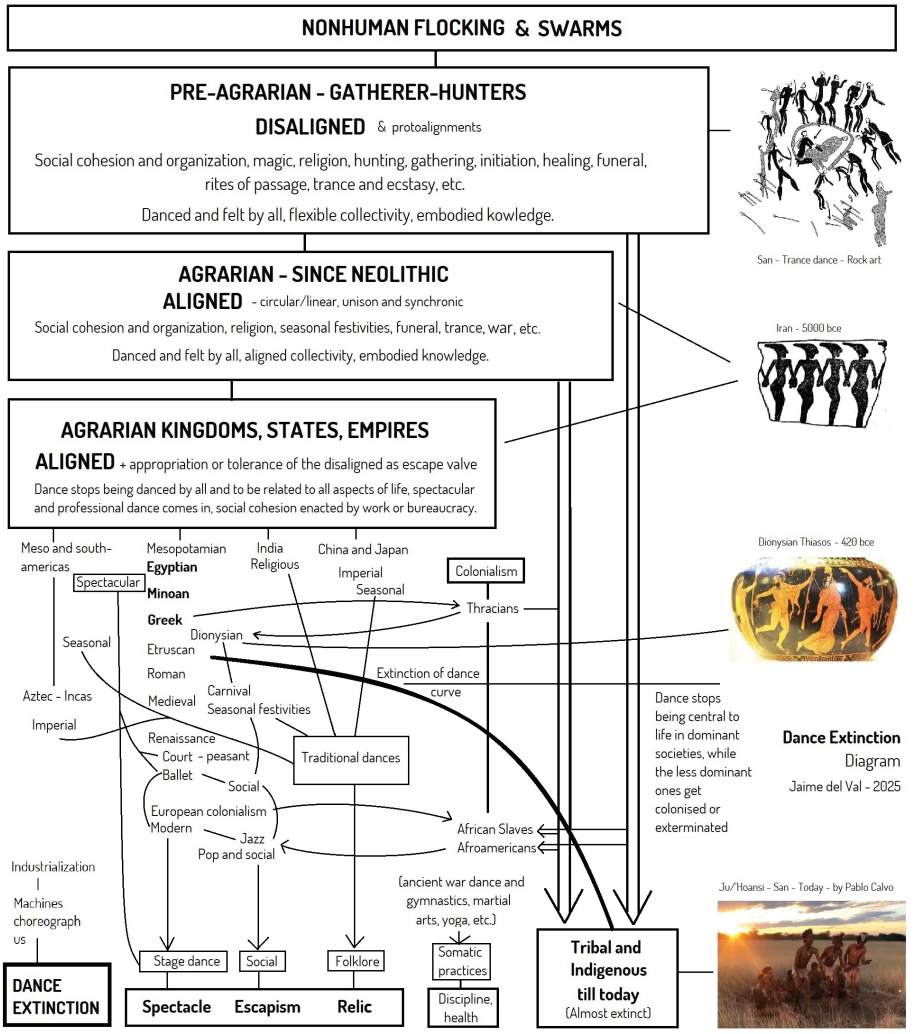


Fig. 71. Extinction of dance diagram.

6.3.8.1 Setting the Stage: Chorality in Preagrarian and Agrarian Societies

As different from other proposals differentiating ecstatic and mimetic (Ellis 1923, Nettl 1945) or abstract–imageless–convulsive from imitational–harmonious dances and their mixes (Sachs 1937; Salazar 1949), we propose to differentiate disaligned (asynchronic) from aligned (synchronic) along a continuum, linked to the degree of flexibility and egalitarianism of the related social organizations, proposing the disaligned as the more egalitarian and emergent, traceable in tribal dances of gatherer–hunters (hence also in preagrarian dances), in "Dionysian" kinds of dances where each body dances differently while being in a group (including all the derivatives of the Dionysian since antiquity through the middle ages, as resistance to and escape from the more orderly movements of agrarian empires), up to the resurgences of disaligned practices in modern times (again as resistance to mechanization, and now digitization), but linked here to a claim for a systemic shift where dancing all of life again, in disaligned form, is claimed as only livable future for an Earth regeneration, a symbiotic untrainment for a choral ontopolitics.

Sachs distinguishes between extrovert (expanded) and introvert (close) dances: the former are "newer," linked to agriculture, matriarchy, and abstraction, convulsive trance, "shamanistic" practices, and ancestor cults; the latter are older and linked to animal dances, imitation, imitative magic, hunter cultures, totemism, patriarchy, and chorality. In both the mask is present and types often mix (Sachs 1937, 210ff). Imitative and pantomimic dances would be often related to wish, to the will to instigate something, such as fertility (224), but are also a form of knowledge, of enacting by mimicking the movements of the world, an idea which resonates with Siret's (1996) proposals. Instead, the nonimitative may have originated from ecstatic rituals linked to the dead or the ancestors and with the activation of impersonal forces. According to Sachs, dances evolved from the Paleolithic from loose circles without touching, often with someone or something in the center, to circles touching, multiple circles, lines, serpentines, open circles, and other formations, as well as introducing the solo dance, and much later only the couple dance (Sachs 1937, 217) linked to further new divisions in the Neolithic between peasant and seignorial dances, both with sexual connotations linked to fertility, a split from which spectacular dance emerged. We see hence already the transition from the loose circle to the tight one.

Garfinkel (2003) associates the flourishing of group dances in the rise of agriculture with the role of dance in articulating social cohesion in the new village communities. For Garfinkel, dance used to have a foundational societal role which it largely lost with the emergence of states and bureaucracy. Garfinkel gathers for the first time a vast amount of evidence of dance depictions between the 8th to 3rd millennia BCE and proposes that dance became the main motif for social cohesion in the early agrarian village community, as reply to social life being confined to individual households, especially when houses became rectangular and larger, spreading from the 8th millenium BCE from the Levant to Mesopotamia and Iran to Anatolia, Greece, and Eastern Europe, and to Egypt later on, peaking already on the 6th millennium BCE and gradually waning afterward, as other means for creating social bonds took over in early states, gradually giving rise to spectacular dance.

And yet typical (but not exclusive) of this age is already the synchronous dance, where bodies move in unison, or with the same posture, mostly in circles, which one can see ubiquitously depicted in pottery, although other less aligned dances can be found, remains perhaps from earlier periods. I suggest that synchronized unison movement gradually emerged along with large-scale work activities that demanded this new type of coordination, like agriculture, building, or rowing. The preoccupation with astronomical cycles rises, which leads to astronomy and the study of the circular motion of heavenly bodies, which may have had early transpositions to circular dances in seasonal rituals related to the fertility of the Earth. Lastly, pottery, depicting most ancient dances, is linked to accumulation in agriculture and itself circular. The pottery wheel has its own circular motion, hence also the circular depiction of dances which may or may not correspond to actual circular dances, although I argue that both the dances and the depictions underwent a similar and entangled evolution (fig. 72).

Santos da Rosa et al. (2021) have applied Garfinkel's criteria for an archaeology of dance to the study of Spanish Levantine rock art, which dates to around 5,500–4,000 BCE, analyzing 27 possible scenes from a transitional period from gatherer–hunter to sedentary societies. They claim the core role of dance in knowledge and social organization, including gender binarism, and identify an increase in belicosity toward the end, as the Neolithic advances. Yet they indentify mostly synchronous linear or cir-

Fig. 72. Diagram of circular dances and circular pottery depictions.

cular movements, not considering the possibility of disaligned dances, both in terms of individual body movements, in the different movements in different bodies, and in the overall conformation of the group, without assuming synchrony, nor linearity/circularity. In this sense, Garfinkel's focus in Neolithic circular–linear dance could lead to a bias when analyzing less aligned and nonsynchronous movements. Similarly, the different gender conformations could speak of diverse types of flexibility in gender (in)differentiation enacted through the dance, as we will see below. Hence I suggest archeology of dance should be enlarged with ideas from current anthropological studies of existing gatherer–hunter societies, and with ideas of disaligned, nonsynchronous dances along a continuum, corresponding also to the degrees of flexible social organization. The types of nonsynchronous body movements, of variations within each body, and of overall group movement in relation to space and to specific spatial affordances can be infinitely varied. The privileged trope is in flocking behaviors, where changes in individual and group movements can coexist as a mobile field of more or less changing internal relations. It is the gradual emergence of geometric patterns and alignments that needs to be accounted for.

Likewise, when approaching the importance of dance as a form of knowledge, one needs to go beyond its role in transmitting mythological or ecological knowledge about the environment or even its ritual enactment of the social organization. In the same way that there is a specific mode of knowledge in making music (knowledge understood here as in the Greek concept of *technē,* relative to the expressive process itself and what it affords for group cohesion), the deep embodied knowledge of dance as expressive medium is in the rhythms and movements themselves, enacting an improvisational practice that has intrinsic, expressive, nonverbal, nonsemiotic qualities and evolutions, and which is core to society. It is crucial then to understand the infinitely varied improvisational, self-organizing modes of rhythmic, embodied knowledge that are neither based on signs, verbality, or writing, nor on rules, all these appearing later along with aligned societies. I propose to understand these dynamics as entangled proprioceptions creating complex rhythmic fields, evolving over time, always in variation, as opposed to top-down abstract knowledge externalized in fixed signs. Most crucially, I propose to diagnose diverse degrees of alignment–rigidity, or inversely of plasticity–flexibility. Thus, knowledge in dances can be not only (1) narrative and (2) ritualistic, performatively enacting social bonds and organizations, but also (3) rhythmic and kinaesthetic, relative to particular kinds of expressive vibrancy and togetherness, and (4) of comoving plasticity and sensitivity for cohesion with others and coevolution with the environment, linked more or less to all of life: food and dwelling, kinship and social bonds, learning and the aesthetic enriching of experience.

The fact that with agriculture ornamentation flourishes links to the fact outlined by Sachs (1937) that a hunter wouldn't need to paint a dance scene, if one considers that both the dances and the cave paintings have each their own magical goal. Hence one should not think that dance was less important in ancient gatherer–hunter societies, given also its crucial role in contemporary gatherer–hunter societies. One can indeed see hints of disaligned nonsynchronous dances in numerous cave paintings (fig. 73), which contrast sharply with the aligned figures proliferating mostly from 6,000 BCE. Here one should consider the simultaneous and entangled emergence of both unison circular–linear dances and of geometric design as part of the same epochal shift. We can turn to current observations of dances in nomadic gatherer–

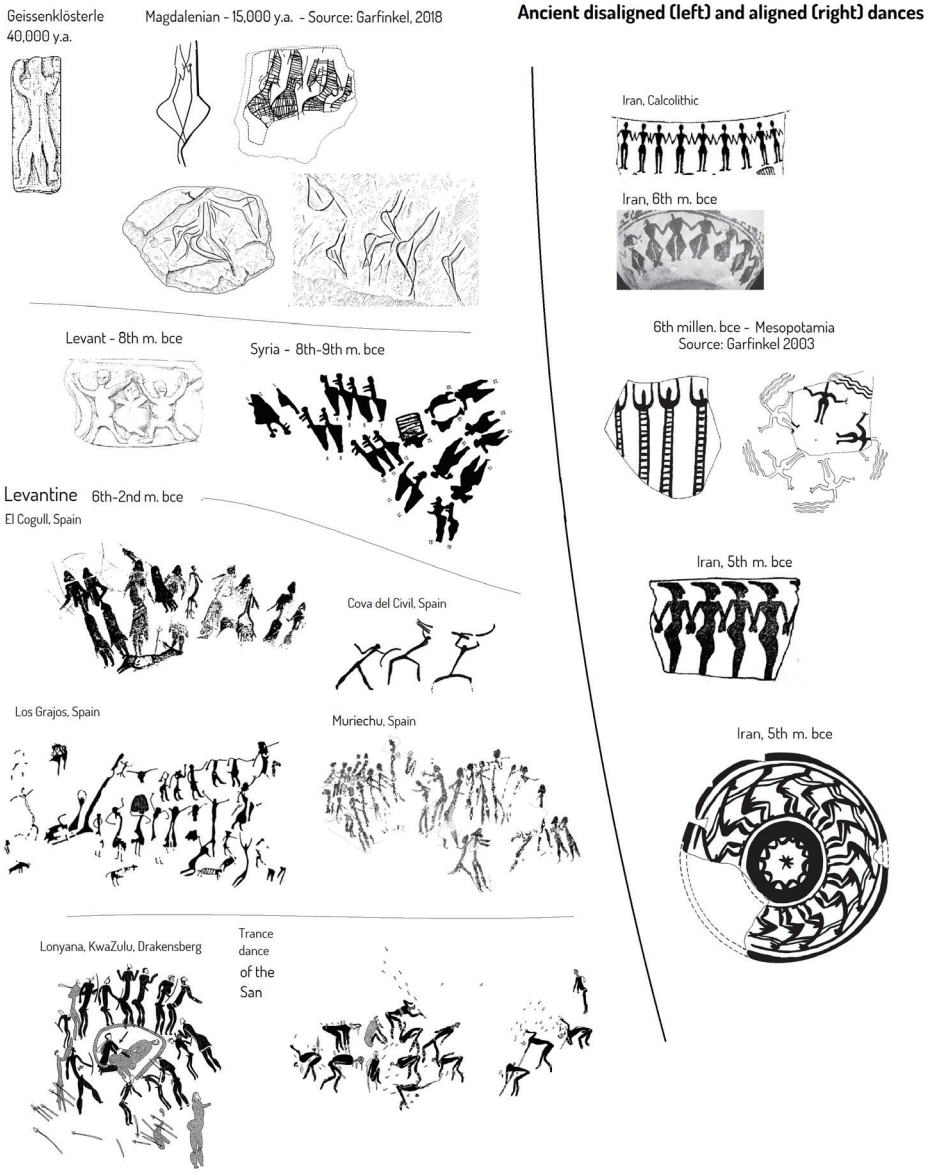


Fig. 73. Diagram of ancient aligned and disaligned dances: on the upper left the most ancient known depictions of dances following Garfinkel (2018), lower on the left early Neolithic depictions from the Levant and Syria, still in a disaligned or protoaligned mode, followed by Levantine rock art from Spain following Santos da Rosa et al. (2021) from transitional periods from gatherer–hunter or shepherd to agrarian, and at the bottom left rock art from the trance dance of the San gatherer–hunters (Lewis-Williams 2006, 345). Up on the right aligned dances and geometric depictions from the Neolithic onward, following Garfinkel (2003), from Iran and Mesopotamia, sharply contrasting with those on the left. There seem to be, as one would expect, intermediate forms between the more aligned and the less aligned, both in terms of the dance and of its depiction, both aspects going eventually together.

hunter cultures to get an idea about certain traits of possible Paleolithic cultures and about the differences with dances of sedentary cultures.

In this regard, Guenther (2020, 73) notices in the analysis of dances in some contemporary San gatherer–hunter communities the internal flexibility and idiosyncracy of each dancer as well as the loose intonation of the sung improvisational practice. Guenther exposes two main types, ritual or trance and ludic or playful dance. Both overlap with different degrees of (ontological) transformative power, and with abundance of mimicking of animals, whereby ludic dance can happen almost anytime, with moments of a trance-like character (204–6). Guenther exposes the mutability, ambiguity, and transformative nature of these dances and their societies, and the more-than-human, animal becomings and identifications they entail. Lewis-Williams and Pearce (2004) expose the way in which trance dance is practiced nonhierarchically in some San societies as part of the sharing, by women and men alike, in rituals at times lasting over several days. Lee (1979, 18, 272, 365) also exposes the ongoingness and egalitarianism of San dances. The San are a privileged example, because not only is their culture still alive and has been extensively studied, but there is also abundant rock art showing disaligned trance dances, in some cases dated over 2,000 years old (Lewis-Williams 2006, 345) while their practices may span tens of millennia into the past, if not more.

Finnegan (2015) crucially claims that in certain dances of Mbendjele and Mbuti gatherer–hunters from the Baka people genders are provisionally distributed in groups where "impromptu coalitions distribute social power by literally dancing it out," where "the immediate somatic force expressed through the dialogism of ritual dance, and central to egalitarian sociality, is the antithesis of capitalism." Rudge (2019), in turn, claims that egalitarianism is embedded in and expressed through music and dance practices that are intrinsically flexible in African gatherer–hunters. These issues are core to what I claim in this book as a choral politics for regaining open, comoving societies, rather than ones whose movements are hyperaligned and where politics is (at best) an issue of verbal consensus of rational human adults.

In watching some of the contemporary video footage of dances of communities like San or Baka people, of which one can find quite abundant examples online, one can see that everyone in the community takes part, from all genders and ages, and that there is no strict imitation or overall synchrony. Along these lines, Pablo Calvo de Castro (2024) has recently exposed how dances in indigenous cultures vary according to whether they are gatherer–hunters, shepherds, mixed, or agricultural communities, whereby the more they go in the direction of sedentarism, the more homogeneous the rhythms tend to be, expressing property, like shepherds' dances and body paint are linked to their livestock, whereas nomadic gatherer–hunters tend to have dances that express their mimetic and symbiotic relation with their environments, with richer and less synchronous rhythms and vocalizations, made with the few tools they carry around or just with the moving body and the voice.

6.3.8.2 The Greek Chorus as Nodal Point

Choral dances in ancient Greek society allow us to see the tensions between disaligned and aligned dances within a complex society where choral dance initially still held a foundational role, while disaligned dance tended to become an escape valve (appropriated from colonized "barbarians") and a spectacle.

As Bacon (1994) states, the chorus was core to Greek life in all its spheres, and not an aesthetic event to watch: "The chorus members were ordinary citizens like

the performers of the dithyramb, who since childhood had witnessed the songs and dances for all occasions that were their common inheritance" (6), and "as a natural and necessary form of human interaction which they had witnessed and participated in since childhood, a social reality, rather than the artificial artistic convention they seem to us" (15).

Sachs (1937, 245) highlights the uniqueness of the exceptional importance of choral dance in Greek culture, unlike other great civilizations of the time, such as Egypt or Rome, where dance was no longer practiced by people as an integral part of life, and as an expression that simultaneously combines collectivity and individuality, while also being different from Eastern choral dances, whose ecstasy seems to dissolve individuality. Sachs affirms the importance of Egyptian and Cretan, and later, in the Alexandrian period, Indian influences in Greek dance.

Eventually the chorus as space and as circular dance came first, associated to ritual, later becaming a more articulate concept of group or collective (Donath 2018, 131). Possibly of Minoan origins (Lonsdale 1993, 115), chorus initially meant the place for the dance, analogous to orchestra in the theater, but later most likely as a dancing place in the *agora* (Donath 2018, 132). Also other processional or itinerant forms could count as choral (Webster 1970, 8). Architectural elements would later grow around the dancing places near the Dionysian temples, developing into the theater. But Dionysian and other mystery cults would also happen in nature, at night, in the mountains, where the more furious, frantic, ecstatic dances of rapture, *enthousiasmos,* or *bakkheia* would take place. Rohde (2000) provides vivid depictions of the rapture or madness (*mania*) of such gatherings, mainly performed by women, so-called maenads. Patridge (1960) also refers to itinerant women choruses that danced on mountaintops on the way from Athens to Mount Parnassus for Dionysian celebrations, linked to the Delphi sanctuary (San Cristóbal 2023).

The Greek word *khoros* could also mean specific choral dances, mainly circular ones (*kuklios khoros*) taking on very different expressions as solemn dances, war dances, and lyric dances, among others.[37] Circular motion had a special importance for the Greeks in general and for Plato in particular (Pont 2008), as it did to many other earlier agrarian cultures. It was the movement of the astronomical bodies and the cosmic cycles. Up until the Middle ages the choral/*carole/Reigen* would refer only or mostly to circular group dances, while *danse/Tanz* would be the word for the newer couple dances consolidating mainly in medieval courts, and which only since the 14th century became the all-encompassing word for dance (Sachs 1937, 273). I further argue, following Siret (1996), that water spirals, and with them vortical movements of nonhuman and human bodies, are another important genealogy, underlying the Dionysian, but also dances like the abovementioned *geranos,* a ser-

37 In ancient Greek dance, Séchan (1930) differentiates between dances of war and those of a gymnastic or gymnopedic type; of peace, religious and lyrical type (*emmeleia,* including parthenic, *hyporkhēma, geranos, kuklios khoros,* and others), as well as veil dances; orgiastic (Dionysian); theatrical (the chorus proper, including the tragic *emmeleia,* the lascivious *kordax* in comedy and the satyrical *sikinnis*); and of private life (funeral, nuptial, festive, symposium dances, including acrobatic and professional solo dances, and others). One could also add work dances (like the grape treading) and mythological dances (like the Nereids' dance). Nearly all are choral. One finds solo performers in the sympotic, acrobatic, and veil dances. Depictions in vases are often ambiguous as they cannot be understood strictly as "representations" in the modern sense, often they have their own ritual or narrative purpose so that mythology and actual cult get confused, while theatrical choruses can often be identified through the presence of masks, which are often highly articulate full body masks, often of nonhuman animal kind.

pentine dance evoking the Cretan labyrinth, whose spirals were arguably a sign for the movement of life.

As was said, here we differentiate between synchronous (aligned) and nonsynchronous (disaligned) group dances. In the latter, the group cohesion emerges from the entanglement of diverse individual movements, a feature that one finds in Dionysian dance, in many tribal dances, and in some contemporary improvisation practices, from clubbing to contact improvisation, practices which I associate to disalignment and to symbiotic untrainment. In these, individual and group coexist, or even are one and the same, but both being able to flourish reciprocally, as the plasticity of each individual connects to the others, constituting the plasticity of the group.

Arguably all imperial or large-scale dominant societies have elaborated large spectacles of choreographed dance: from Chinese, Japanese, or Indian, through Egyptian and Greek, Aztec or Inca, to European ballet, in the face of which disaligned dances seem to have also proliferated, often linked to subaltern groups, enslaved people, and migrants disseminating the rhythmic ecstasy of an unruly body as form of subversion and liberation. In the case of Greek dance, the major precursors seem to be in the rich and ancient tradition of Egyptian and Minoan dances, but also in Thracian "barbarians" from the north. Colonized peoples are thus a core genealogy of unruly dances as counterpart to the synchronous movements of empires.

Choral dances of different kinds were used in Greece for ritual, contests, processions, and theatrical performances, and in relation to different types of social groups or tribes. In some cases, the actual dance would have the role of transforming and reconfiguring the social order and space, whether through ritual catharsis or through ecstatic liberation (Donath 2018, 139). As group formation the chorus was arguably the primordial means of social belonging. According to Kowalzig (2004), there were initially numerous different types of choruses in honor of different deities, but by the time of Plato the chorus had become associated almost exclusively with Dionysus. Around the 4th century BCE, the chorus was mainly a contest of dancing–singing in the theater.

Tragedy itself came from the chorus and was initially only chorus (Nietzsche 1999). Dithyrambic group songs–dances celebrated in round spaces near the Dionysus temples (Elftheratou 2014, 70) with performers dressed in goat skin, embodying the Dionysus's cohort of satyrs or as an echo of earlier animal sacrifices, hence the etymology of tragedy in *tragos odos,* or "song of the goat." Drama was itself mostly a chorus, originating from improvisatory performances or rituals:

> About the early form of these choruses that gave rise to tragedy perhaps a century before the birth of Aeschylus, we know very little beyond the fact that they consisted of elaborately costumed choruses of fifty each, ten of men and ten of boys, representing the ten tribes of Athens. (Bacon 1994, 7–8)

Sachs (1937, 243) affirms that the drama's choruses would have lost their circular form of the ritual to become linear dances, of choruses in several lines, in their transition to the spectacular.

But quite different seems to have been the chorality of the actual maenadic cult of Dionysus, that seems to stem from the Thracians (Rohde 2000), the northern people colonized by the Greeks before the 8th century BCE. According to San Cristóbal (2023), since the Mycenaean period there were groups of women devoted to the cult of Dionysus and in the archaic and classical period up until Roman times

his ritual retinue was mainly composed of women: *Thyiades* (from the verb *thuō,* "to move in great agitation") better known as maenads, who were not mere mythological figures but real ones and the main representants of the *thiasos,* the orgiastic Dionysian retinue, though in later periods it became occasionally mixed, with men and women. While difference between myth and real cult is sometimes difficult to attest, there is evidence of the ecstatic cult of the Thyiades dancing in the mountains of Delphi on the Parnassus since Alcman, the 7th c. BCE poet, through Sophocles, Aeschylus, Euripides, and Aristophanes, to Plutarch and Pausanias in the 2nd c. CE. The main scenery of these rituals was (like in ancient Śivaist and Minoan religion, and in all preagrarian cultures) nature, in the mountains, and the main aspect is the wild dancing entering ecstasy till exhaustion, where the women dissolve back into nature, becoming animal, and are liberated from the submissions of civic life. Plutarch and Pausanias describe the wild dances on top of the Parnassus as habitual Dionysian practice. The maenads are often represented bearing the *thursos,* the sacred rod of Dionysus. In the process, they awaken Dionysus from his mythical death, his chthonic sleep (as god of vegetation awakening from the death of winter), and become both nurses and worshippers of the newborn and reborn god. Plutarch associates Dionysus with Osiris, both being linked to a ritual of death and rebirth, while Pausanias in turn recalls that the choral dances performed by the Thyiades on their way from Delphi to Athens would be more civic and choreographed, exposing that maenads took part both in the wild bacchic rites and in more civic ones, closer to other more civic female Dionysian confraternities (San Cristobál 2023).

The Dionysian chorus[38] was the central element of the Dionysian Mysteries, one of the most important amongst the many mystery cults of Ancient Greece, as religions for closed circles of initiates relative to secret rituals; this was arguably its oldest significance. Mystery religions grew around the actual common dancing, eating, and celebrating. Lucian (1905, 245) comments:

> Among the ancient mysteries, not one is to be found that does not include dancing. [… A]nd their ordinances show the value they attached to rhythm and dance as elements in religion. […] As to the rites of Dionysus, you know, without my telling you, that they consisted in dancing from beginning to end.

38 The Dionysian chorus is often depicted as an ecstatic, inebriated, and orgiastic group of dancing–singing bodies. Nietzsche identified in the chorus and its *orgiasmos* as it existed before tragedy a tragic spirit of overabundance of life, of affirmation of pathos, of the monstrous in existence as much as of pleasure, as a sign of health, and itself a practice of becoming pure rhythmic movement: muscular, formless flow. Some Dionysian choruses were itinerant or nomadic. In mythology Dionysus mostly appears triumphantly leading his *thiasos*, a procession of ecstatic, dancing, and singing figures of maenads and satyrs. At the start of the Great Dionysia, the main festivity in Athens, the *pompē* was the large procession leading to the theater of Dionysus. It would appear on a *carrus navalis* that is the precursor of the carnival (Sachs 1937, 242). The origins of the Dionysian chorus have been extensively debated. Following scholars like Harrison (1903; 1913), it would be related to the ancient matriarchal Aegean and Minoan cultures, to the initiatory rituals of ecstatic confraternities such as the Cretan *kourētes* (in honor of Rhea) and Phrygian korybants (in honor of Cybele), and of the maenads as representing Dionysus's mother Semele, killed by Zeus and rescued from the underworld by his son. The origins of the chorus would be related to the Dionysian Mysteries as religion of unification with nature bringing together all the oppressed, that was prior, and remained marginal to the Indo-Aryan, patriarchal, Olympic religion. Dionysus was the god of the immanent indivisible duration (in Bergson's terms) as opposed to the Olympic tendency to rationalization and hierarchy (Harrison 1903; 1913). Dionysus was the god with whom one would identify, becoming them (Mariño Sánchez 2014, 192–200).

Some scholars also depict the Dionysian Mysteries as religion of the oppressed. Indeed Dionysus was also called Eleutherios, the liberator, and Khthonios, the subterranean, as god of liminality, transformation, the more-than-human, and the transgression of gender, class, and species boundaries.[39]

The chorus was also of fundamental importance for education in Greek culture (Jaeger 1939). It served the purpose of community-building according to tribal identities and their unification in the *polis* (particularly Athens), often in the form of contests, for bringing peace into internal conflicts of the community by means of cathartic purification, at times by the staging of conflict itself in war dances, a motif which is considered to have been also the origin of the Olympic Games. Here also the Dionysian chorus had a profound and complex importance.

According to Wilson (2003), the chorus had as deep a political significance, if not deeper, as actual councils, which were formed similarly in groups of fifty before they shrank to fifteen or twelve, a motif with clear precursors in most if not all tribal cultures. Agonistic (contest) choruses were a means to pacify internal conflict, through catharsis, healing, and purification: "Dionysiac dance and song is an event that brings all together at the centre of the populous and prosperous city. [...] for Dionysos's dance-song had powerful associations with ideas of cleansing and renewal, particularly of civic renewal" (170). This, however, is but an extension or remainder of the healing role of dance in tribal communities, as well as its role in social organization, where rites of passage and social groups are literally danced out, often in flexible form.

According to Seaford (2013, 279):

> The chorus of mystic initiates, in imagining themselves as coexistent with the cosmos as they prefigured their eternal solidarity, provided both for Platonic philosophy and (differently) for the polis a transcendent model of happy cohesion. It is as a result of this political significance that the mystic chorus developed at Athens into the public performance of dithyramb and tragedy, in both of which the chorus is marked by solidarity and anonymity."

By the fourth century BCE, choruses had become highly organized and one of the most important and well-funded institutions in Athens and other cities, and constituted perhaps the most important part of the great festivities in the city, not only in the Great Dionysia.

6.3.8.3 Plato's Quest for the Orderly Chorus

The "taming of Dionysus" in the theater in Athens is one of the pivotal nodes I propose for the evolution of Western societies. In the theater we have the origins of spectacle by having a massive audience of tens of thousands feeling intoxicated by the dithyrambic drunkenness, entering a collective communion with the unison chorus as form of mass social catharsis, but without actually dancing it ecstatically any more, while social cohesion and education become increasingly bound to choreographed and geometric choral dances. Plato's elaborations on the chorus are perhaps the most paradigmatic example of the "taming of Dionysus" here portrayed, as well as of the importance of dance in Greek *paideia* or education.

39 According to Harrison (1903; 1913) and Mariño Sánchez (2014) the Dionysian Mysteries and its orgiastic choruses were a religion of the oppressed.

In his *Laws*, we see the extraordinary importance Plato gives to the chorus, as group of bodies dancing and singing, mostly as a circular dance, which for him is a primordial means of education, as it brings orderly circular motion in bodies (*Laws* II 654 [Plato 1921]; VII 790, 813–17 [Plato 1926]). It speaks about the importance of movement per se for Plato and for Greek culture but also of the tension between "orderly" and "disorderly" movement.

The dancing chorus is one of the few movements of animal or human bodies analyzed by Plato in the *Laws,* outside the description he makes of the 10 primordial forms of motion, in this case as part of gymnastics and together with fight, as the core aspect of education, to the extent that for him the uneducated was the one not partaking in a chorus (*Laws* II 654). This shows the importance of movement for the Greeks, and of orderly movement as civilizatory force. For Plato, rhythm and harmony together create the art of choristry, where eurhythmics is a gift of the gods against wild rhythms. In Plato's *Laws* "corybantism" is mentioned as an illness, a pathological frenzy that can be cured through regular movements.

Already in Book I of the *Republic* Plato had warned about the danger of wild rhythms and wine parties. In the *Laws* he proposes the art of eurhythmy for cultivating rhythm in movement and harmony in the voice, as a fundamental problem of education and politics in the ideal state, but only part of early education.

Dance in Greece was part of the larger art of *mousikē*, which in turn would relate to architecture and ethics through the modes and scales. This perhaps explains that in spite of the importance that the chorus had for Plato in education, it wasn't part of the higher education curriculum in the Academy. In higher education, the study of mathematics was related, through Pythagoras, to the study of music intervals, which were in turn related to proportions in the circular movements of the heavens, a "music of the spheres," a cosmic dance, so that in high education one would study the mathematical substrate of the rhythms and proportions that would underlie choral dances, and which was also their most direct connection to eternal forms (Pont 2008). As we see, the study of movement and its reduction to intelligible, orderly mathematical forms and meters was a crucial question for Plato.

In the *Laws,* Plato introduces three choruses: a first one for the Muses (children), a second for Apollo (youth till thirty years old), a third one for Dionysus (for older men between thirty and sixty) at a time when in Athens the chorus had become increasingly associated with Dionysus alone. His position could be interpreted according to Kowalzig (2004) as conservative, against the predominant "Dionysian tendency" of the time, which was appearing in the transition from archaic to democratic societies, where instead a broader spectrum of population could become choral performers.

While in *Phaedrus* he defends the Dionysian as one of the four types of divine madness or *mania*, there are instead numerous items in the *Laws* exposing Plato's preference for orderly motion and paradoxical concern, at times contempt, for the Dionysian frenzy (*Laws* II 654–73; VII 790, 799–802, 813–17). Especially unambiguous and clear is this passage where he attacks Dionysian dances while later defending the *pyrrhic* (war dance) and the *emmeleia* (peaceful dance):

> So, in the first place, we must draw a line between questionable dancing and dancing that is above question. *All the dancing that is of a Bacchic kind and cultivated by those who indulge in drunken imitations of Pans, Sileni and Satyrs* (as they call them), when performing certain *rites of expiation and initiation* — all this class of dancing cannot easily be defined either as pacific or as warlike, or as of any one

> distinct kind. The most correct way of defining it seems to me to be this — to separate it off both from pacific and from warlike dancing, and to pronounce that *this kind of dancing is unfitted for our citizens*: and having thus *disposed of it and dismissed it,* we will now return to the warlike and pacific kinds which do beyond question belong to us. (*Laws* VII 815, my emphasis)

In *Laws* II 654–73 the question is more complex, as the Dionysian chorus, which takes most of the discussion, seems to be partly "tolerated" with many reserves, on one hand as part of the process of taming and tuning into rhythms the frenzied movement he associates to nonhumankind (present for instance in newborn, who in turn need to be tamed by the cradle movements), and on the other with the Dionysian chorus as the third type of chorus in the *polis,* for the older men who are capable of discerning the correct from the incorrect while being able to regain a sense of youth through the drunken dance. The Dionysian dance condemned by Plato seems to be indeed the one which appears in very numerous depictions of the Dionysian scenes, infused by the *orgiasmos, enthousiasmos, mania,* or *bakkheia,* of which maenads in the mountains seem to be the epitome, but which may also have had more civic expressions.

He unfolds a remarkably long set of excuses and excursus, which maybe echo the sympathy for *mania* in *Phaedrus* and for wine in the *Symposium,* which he however no longer openly defends as acceptable in the city unless with a thousand regulations. Like a sort of *pharmakon,* a bit of frenzy needs to get cultivated, never in excess, a cathartic tool (Belfiore 1986) as another means for virtue. But he is also clever enough to say: let's have the enemy inside, but tamed and in a cage of laws and regulations, as expression of what one should take distance from or be careful with in the ideal city, but which is in all of us and cannot be denied, part of our nonhuman heritage. Dionysus is thus tolerated as the foreign god. But otherwise, orderly, regular movements are the exclusive brand of humans, Plato claims, the ones to cultivate, the ones where correctness and pleasure don't mean the same, where the good seems to ally with geometric patterns that are closer to eternal forms.

Many, if not all, foundational issues underlying the current civilizational crisis can be found in the long and complex passages of Plato's *Laws* on the chorus as a main form of education, including sexism, classism, slavery, and speciesism, in the need to segregate groups by kinds of dances for men, women, enslaved people, masters, etc., while including every human in a chorus and the fundamental means for education, for taming the animal frenzy in us, through movement. So far, one can say that Plato's orderly vision triumphed, while underlying a planetary crisis without future, in the face of which is imperative the return of the disaligned chorus, and a planetary politics of disaligned dance.

6.3.9 The Ecstatic and Beyond

As I mentioned previously, some scholars propose that the two major kinds of dance are ecstatic and mimetic. The ecstatic is of primordial importance in the history of religions and human cultures, associated not only to Siberian and other expressions of shamanism (Eliade 2004), but to extremely varied techniques for achieving trance states, practices that may be foundational to most, if not all human religions and cultures. The mimetic is perhaps equally foundational, from early sympathetic magic and rituals imitating animals to mythological narratives and drama.

The fact that trance can be achieved only by dancing without drugs exposes the power of movement to transform the entire biochemistry of the body (cognitive, metabolic, hormonal, epigenetic, emotional, etc.).

The ecstatic in early human cultures is a complex and obscure phenomenon as it goes back into prehistory and is subject to the interpretations that recent "civilized" academics have made, often reproducing a number of problematic appropriations, constructions, and divisions between primitive, indigenous, animal, and civilized, with a double move of romanticizing the "primitive" as in New Age trends, and of despising it as the necessary "other" through colonial appropriations, a process which has arguably and perhaps obviously happened in all agrarian civilizations since the Neolithic, related to colonialism, slavery, and the distinction from a mythical "savage or barbarian" past (Linebaugh 2018).

Nevertheless, I propose some tentative distinctions around the phenomenon of the ecstatic, and its possible (pre)historical precursors and derivatives, in order to claim one particular approach to it, as related to my own practices: the ecstatic as means for cultivating an ongoing symbiotic becoming with the world for a deep transformation of our ways of living, not for occasional escape valves nor transcendental revelations, but as augmentation of life sustained all the way through, and in relation to all life forms, and not as rebalancing for certain humans against the onset of generalized impoverishment of life.

The ecstatic is itself a crucial field of study related to the chorus as it is core to the Dionysian, but also significantly exceeds the Dionysian, which is itself not an exception but rather a particular and significant expression of a rather ubiquitous phenomenon, under many variations. From the Dionysian and Śivaist trance dances, through all sorts of shamanistic practices, the whirling Dervish Sufi dances, from African trance dances to contemporary groups of so called "ecstatic dance"; from Egyptian high kicks, to can-can, from Śiva's spiraling movements to Flamenco skirts swirling, from the Greek maenads to modern ecstatic dance: dance as ecstasy, frenzy, rapture, collective madness, eroticism, healing, or abolition of divides has acquired endless expressions, very often mixed up with tendencies to alignment

I suggest that the ecstatic appeared in the Palaeolithic already as both life-augmentation and palliative remedy for a human protosubject that was increasingly individuated and dissociated from its own movement and its environment, and by the accidental discovery of hallucinogens and the ecstatic nature of some rhythms, body movements, dances, and musics, as well as the use of full body masks and paint as means for enabling a becoming or transformation related to impersonal forces, animals, or other powers which our increasing tendency to abstraction projected into the world's fluxes.

The ubiquitous and astonishingly powerful and diverse full body masks that one finds in virtually all ancient and tribal cultures can link to the mimetic or to the ecstatic, as do the numerous masks that do not imitate humans or animals but enact alien and nonhuman powers.

Let us first distinguish three main ways of reaching trance states in relation to movement: through varying movement, through repetitive movement, and though immobile practices, mostly with music, often but not always involving drugs, alcohol, or sexual arousal, but sometimes also fasting, sensory deprivation, and other techniques relative to the space and the dress, mask, body paint, smoke, etc. Ecstatic techniques can involve the following elements, each one with its own spectrum (from left to right):

1. immobility————————repetitive movement————————varying movement
2. without music————repetitive music (modes)————————varying music
3. fasting————————————food and drink————————wine intoxication
4. sensory deprivation————————————sex and sensory superabundance
5. no drugs————————————some drugs————————————hallucinogenic
6. cavern————tent or house————temple————mountains at night
7. visuals, lighting, mirrors, space setting, smoke, fire, indoors————outdoors
8. masks, attire————————adornments, body paint————————nudity

Important here is claiming the ecstatic power of movement per se (and inversely of immobility and sensory deprivation) which is no wonder: "states of mind" are always embodied, and any practice that takes us out of habit is prone to create "altered states" of different kinds. Plus, as we already said, movement unleashes endorphins and other biochemical processes in the body that can lead to trance if cultivated properly, or even spontaneously, and be associated and intensified in relation to other emotional states and neuronal–biochemical (so called "spiritual") intensities.

The practices I propose vary from these (as well as from other somatic practices ancient and modern), because they lack repetition and pattern and are based on constant microvariation. Frenzy here can emerge from subtle variations but is not the frame of reference. Some attendees to my workshops have said that the effect reminded them of trance achieved via repetition, or to ayahuasca sessions: this highlights the transmodal nature of the body and how similar states can be achieved in different ways. Unblocking the swarm of joints is the deep liberation of sustained ecstasy, for pleasure and joy in moving–sensing, that I propose, at the reach of any body, no matter how little one can move.

But my proposal for cultivating variation in movement rather than repetition or immobile practices has to do with a deeper and sustained regaining of movement for an equally deeper and sustained transformation of all aspects of life in dominant human cultures, toward a general dance of life as gatherer cultures living in the open.

The wild dance of Greek maenads, as of some shamans, and in modern ecstatic dance practices seems to suggest that trance through dance doesn't necessarily come through repetition of rhythms and patterns, though mixtures may appear, and forms of whirling, stamping, jumping, or vibrating body parts. But how to make of movement an ongoing technique for a more sustained openness and richness, exiting the loop that oscillates between aligned existence and occasional, escapist frenzy?

…

We can further differentiate types of ecstasy and trance: first between static (drug- or immobility-induced) and dancing, and then between repetitive dancing and variation. Could one distinguish these two main types of ecstasy: the "out of body" that leads to transcendence and domination driven by a priest–shaman–sorcerer, linked to ideas of other worlds and the oracular; and the embodied, dancing, Dionysian or Śivaist ecstasy, where the connection to the divine and to nature through sacred ecstatic dances was also related to the orgiastic, the senses, food and pleasure, while being a collective experience for the oppressed, where everyone reunited, embodying the divine madness, becoming Dionysus or Śiva? In the Dionysian mysteries, the sacred dance was the means for all participants and initiates to partake *commonly and chorally* in the divine by sharing the dances and celebrations. Maenads arguably became possessed by such powers in their ecstatic dance, which according to Rohde

(2000) happened in the mountains at night, unleashing furious frenzy ending in sacrifice (of the latter we dispense!).

Abandoning the body and affirming the body as two opposing tendencies? It seems like many if not all ideas of transcendence, of heaven and hell visions, perhaps the sacred itself, or even the conception of the "soul" and of the spiritual, could have come from the former, from certain ecstatic practices, and hence the idea of a mind–body division? When did this idea of "out-of-body" experiences become thinkable at all, did it stem from hallucinatory practices? Or did it precede them? Could it be that all fantasies of mind–body dualism in antiquity are later evolutions grounded in ecstatic hallucinations? We will come back to this later.

Rohde (2000) instead affirms that it is through the Dionysian that the cult to the immortality of the soul entered in Greece. Eliade (2004), in turn, claims that the Dionysian cults had no relation to shamanism, Apollo instead being closer to it than Dionysus, an argument we will reinforce later. The field is complex and obscure,[40] and our purpose is not to offer a full historical survey. Rather, it is about exposing a variety of conflicting forces in fight in the period of maturity and consolidation of agrarian societies.

Healers, sorcerers, shamans, prophets, and visionaries seem to have partly evolved into power figures of priests, popes, and kings. Animals with leaders already prefigure some tendencies in human cultures… but there is always also the flock without leader. And gatherer cultures seem to be egalitarian: hierarchy and oppression come from accumulation.

40 Rohde (2000) associates the trance of the Delphic sybils to an effect of the Dionysian cult merging with the Apollonian, since both coinhabited in Delphi more closely than anywhere else. Rhode claims the Thracian origin of the Dionysian cult, where it was originally a wild furious ecstasy, through wild whirling dances in the mountain at night, ending in orgiastic animal sacrifice. Rhode even claims that the idea of the immortality of the soul came into Greece through the Dionysian cult, as associated to the wild ecstasy, in which trance is equivalent to an out-of-body experience of communion with divinity, due to apparent absence of such ecstatic cults in previous Greek religion and to how Thracians seem to have believed in the superiority of life after death.

However, Rhode himself claims the almost ubiquity of ecstatic cults in early human cultures. There seems to be also evidence of other kinds of ecstatic cults in the region, quite diverse from the Dionysian, as the incubations mentioned in relation to Apollo, achieved by contrary means: sensory deprivation and immobility. Though whirling dances associated to mystical experience of communion with divinity can be found in various places, for instance the Sufi dervishes, who have a very specific and controlled mode of ritual and spiraling dance, I find it difficult to associate a transcendent ideal of the soul to the wild Dionysian frenzy where every maenad would whirl around in her own mad way within their common, wild nocturnal festivities across the mountains. This is because such a movement roots you in proprioception, which is the reverse of transcendence. But there is another reason: at that time, before Parmenides and Plato, the idea of a separation between body and soul had not been clearly made. The soul was in fact equivalent with movement and life. We should be careful in assigning to earlier periods concepts that were perhaps yet unthinkable. The Dionysian and Śivaist communion with the god, where the initiated becomes the god in the ecstatic dance, is more of a life-affirming than transcendental turn. It may be more plausible that different types of ecstatic rituals existed in Greece and that some of them led more into the idea of an immobile transcendent truth, while others were more affirmative of life as transformative becoming. It may also be that syncretism of different sources happened in Greece and that one cult gave birth to opposing tendencies, while other cults integrated other sources. And it seems anyway that the wild cults of the Thracians were partly tamed in Greece, as they combined with other sensitivities, keeping still some of their orgiastic originary madness, considered divine.

6.3.9.1 The Altered Perception Hypothesis

To recapitulate, the *ecstatic* is one major *archē*-mode in human dance (and religion). Ecstatic practices emerged perhaps in the Upper Palaeolithic, around 40,000 years ago (Garfinkel 2018), and its visions perhaps form the foundations of the later religious experience in all human cultures. The other early *archē*-mode in dance (and religion) is the *mimetic,* possibly linked to sympathetic magic, which can be seen as a first mode of reductive thinking searching for causality, by attempting to understand the movements of the world and mimicking them for propitiatory purposes. Eventually, this branch developed into rationalism, philosophy, and scientific thinking, though not without links to the ecstatic: the weight of Pythagorean "shamanism," presumably associated to the cult of Apollo, both through Pythagoras and Parmenides, is acknowledged in Plato but still to be more fully studied. The Parmenidean doctrines of immobile being leading to the Platonic doctrine of forms and the Pythagorean doctrine of the soul that Plato also incorporates stem quite possibly from visionary experiences of ecstatic character, as we will see later.

Other mystery cults from ancient Greece may have been influential in this and the history and interpretation is so complex and obscure that it will perhaps never be fully clear: the cults of Dionysus, Artemis, Apollo, Demeter (the Eleusinian mysteries combining elements of the Dionysian and Apollonian), and Orphism, to name a few, are a complex field of traditions, cross-fertilizations, and colonial appropriations bringing together elements of Pontic–Caspian nomads, Egypt, Crete, and other places, involving different and even opposing kinds of trance or ecstasy (the orgiastic frenzy of the Dionysian and the immobility of the Apollonian, which may have converged and hybridized in Delphi), associated to mystery cults which may be at the very roots of the core assumptions driving Western metaphysics for 2,500 years: the immortal soul and being as immobile and eternal.

Plato erased the mystical origin of Parmenides's and Pythagoras's revelations, presenting the doctrines of being and the soul as effects of a pure reason. But what is perhaps even more important is that this pure reason (which through Plato and Aristotle, and later Descartes or Spinoza, became associated to god) and its underlying, unquestioned assumption of an immobile being, is perhaps itself the offspring of another kind of altered perception: the generalized immobility and alignment of bodies in increasingly technical, urban, and geometric environments, sharing the chimera of objectivity, which was only the effect of a sensorimotor reduction and homogenization, projecting on the world their own fixity.

…

The different techniques of ecstasy most likely imply very different types of trance. I focus in particular on the difference between those involving movement and those involving immobility (as in deep meditation and so-called incubations). In the former there are also differences between repetitive movements techniques and convulsive, vortical, varying movements of frenzy. I suggest that those involving immobility are perhaps more prone to induce a thrust to transcendence and denial of movement, becoming, and the senses, while those involving movement, especially varying, vortical, animal movement *anchor the actant more in proprioception* and the body and it seems to me that they are less prone to transcendence and to a denial of movement and the senses. But, strangely enough, both could lead to ideas of immortality. One through movement as we become again part of the flux of cosmic change, dissolving the individual, the other through the denial of movement, affirming a transcenden-

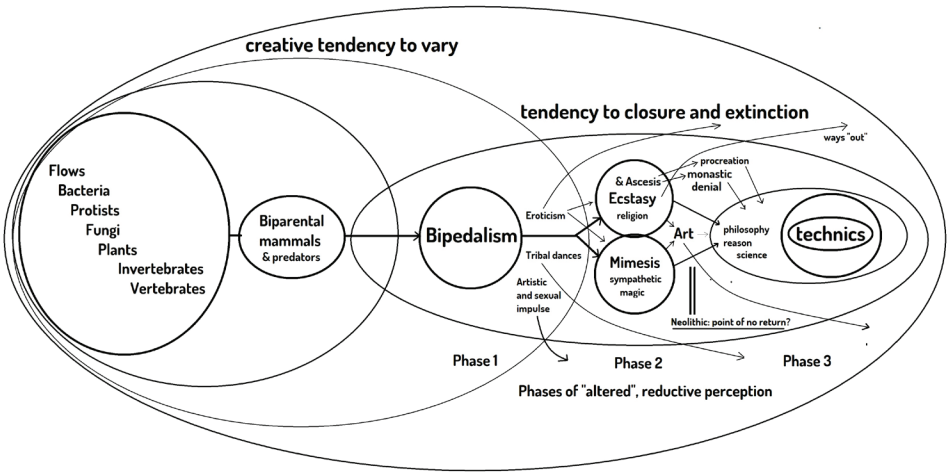


Fig. 74. Ecstatic and mimetic modes diagram exposing the way in which both interplay in the foundations of "human" arts, religion, science, and philosophy.

tal individual. It is important to note, however, that techniques of immobility and deprivation (perhaps involving fasting) and deep meditation can be a source for attaining visions or altered states that exceed thought (the emptiness of Zen). These relate more to ascesis.

Trance techniques thus cover the whole range from the orgiastic to the ascetic.

Both, especially the latter, have become institutionalized. The ascetic has led to the monastic, while frantic ecstasy is more linked to the shamanistic and other related practices of healing, oracular, or death and psychopomp rituals. These two are perhaps the major branches on which the spiritual and religious have unfolded over millennia in human cultures. The ascetic is maybe more recent and could be partly a reply to the orgiastic, especially in the Christian reply to paganism, whereas in India it may be rooted to the earlier arrival of casts and poverty in the overpopulated agrarian Indus valley cultures already in times of Aryan invasions around 1400 BCE.

I thus present the following "altered perception" hypothesis: from the multiplicity of modes of thought in animals associated to Body Intelligence as plastic proprioception and multisensory integration, unfolding from the movements or dances of flows, bacterial swarms, protist fusions, fungi, plants, invertebrates, and vertebrates (fig. 74), we find

— *a first phase of reduction and separation,* creating a particular mode of (altered) perception, arguably from the appearance of bipeds in the savannah nearly three million years ago, initiating a tendency to abstraction, reduction of plastic sensorimotor variation, dominance of vision and articulate motions, while dances in tribal cultures may have sustained variation and diversification, following the preexisting impetus in animal dances (but also taking further their incipient tendencies to reduction–domination, as in mating and fight rituals etc., emerging in biparental mammals);

— *a second phase of reduction and separation,* creating a particular mode of (altered) perception in the upper Palaeolithic through the elaboration of techniques of ecstasy and trance, as well as dream or meditation, underlying the religious and its two strands of shamanism and ascesis, which gradually become institutionalized, while *sympathetic magic elaborated a mimetic, proto-causal thinking.* Here one can see several forces operating, some toward reduction and tran-

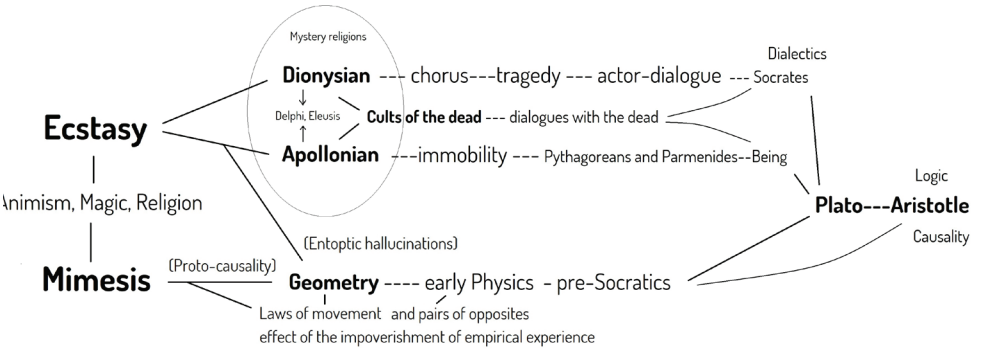


Fig. 75: Origins of philosophy diagram. Here one can see that the thesis of a duality-in-tension between Apollo and Dionysus stemming from Nietzsche is not properly describing the reality of what was going on in pre-Socratic Greece, nor is defendible the idea to which many hold today that one needs to have both Apollo and Dionysus (an idea that reinstates wrong accounts of disorderly chaos associated to the Dionysian). Instead the picture was different and more complex: both Apollo and Dionysus were related to ecstatic practices of different kinds, staging if anything the duality between movement (Dionysus) and immobility (Apollo). Along with them was mimesis, taking new turns in geometry and in the Ionian philosophers of motion; and all lead via Parmenides, Socrates, Plato and Aristotle to a rational culture that was denying movement, or trying to control it.

scendence — which eventually took over — others to regaining of movement and symbiosis, as expressed in the types of dance and arts in tribal cultures of gatherer–hunters from the Palaeolithic to today;

— *a third phase of reduction and separation,* creating a particular mode of (altered) perception with the technical alignment of societies where both trance–ascesis and mimetic practices converge in rational philosophical thinking, still identified with religion where trance disappears in the institutionalization of the Church grounded in inherited ecstatic revelations, up to Descartes and Spinoza, and more recently taking over, as the purely technical (industrial and digital) becomes the cult and dogma of the new religion without gods: of addiction to consumerism, drugs, and media, orienting bodies in a teleology of eternal dissatisfaction and endless desire for more, which is the teleology of extinction underlying transcendence, as we destroy the planetary ecosystem.

6.3.9.2 Philosophy as Effect of an "Altered State of Consciousness"?

Was philosophy the fruit of the altered perception of bodies no longer capable of moving with the world who started reflecting, explaining themselves their own condition of reduction, alienated in their homogeneous geometric perceptions, and building upon ecstatic visions and religious revelations? How much of Greek philosophy was grounded in trance and ecstasy as in Parmenides, Pythagoreans, Orphism, and Platonism?

Guthrie (1965, 26) associates the opening of Parmenides's book to a shamanistic trip, while Dodds (1962) defends the possibility of a relation between Greece and Siberian shamanism at the time, which may well have been transmitted through Pontic–Caspian nomads.[41] Kingsley (1999) elaborates more on this. The Pythagorean

41 On Parmenides and the origins of philosophy in irrational ecstasy, and the premature turn of philosophy into a self-referential and dead practice that needs to be rescued into a practice of wonder and wandering, see also Ortega y Gasset (2009).

Ameinias is reported to have taught Parmenides an Apollonian trance technique that Romans call incubation, based on total immobility, darkness, silence, sensory deprivation, possibly in subterranean caves, a chthonic cult of Apollo. Parmenides was himself arguably a *iatromantis* (healer), *pholarkos* (guardian), and *ouliades* (knower of the way to the underworld). Stillness, says Kingsley, was considered a divine quality, in contrast with the restlessness of humans and the movements of the world. But Plato hid the "shamanistic" origin of the theory of being, keeping only the rational aspect of Parmenides's book. According to Kingsley, Plato betrayed Parmenides, "killed the father" by neglecting the true origin of the doctrine. And yet the link to Apollo does remain in Plato, including as source for legislation. Apollo was the god of healing and prophecy, also called *iatros* (healer) and his cult had a chthonic nature intimately related to the cult of the dead. Empedocles from Sicily, who was also healer, prophet, and sorcerer, may have also been an Apollonian *iatromantis*.

Here, in my opinion, is the key to the difference between the Dionysian and Apollonian ways, the former based on the immanent ecstasy of movement and becoming and the latter on the transcendent ecstasy of immobility, being, and individuation. This key question, relative to movement (or its absence), to two opposed ecstasy techniques, and to two modes of perception, is the unrecognized origin of metaphysics and of all the philosophy that is based on it.

The supposed duality between a rational Apollo and an irrational Dionysus is wrong, as both were profoundly irrational. The real duality is between two kinds of ecstatic cults, one associated with immobility and the other with dance. "Reason" emerged as the former became established as norm, in bodies aligned to geometric fields in built environments, where the abstract thoughts of immobile bodies took over.

The Egyptian influences on Greek philosophy, especially in relation to the conception of the soul, immortality, and the cult of the dead, are also to be further studied. As is the case of the Dionysian mysteries, Greek philosophy, and their related Apollonian cults, this could be the result of a synthesis of, at least, northern ecstatic practices and Egyptian cults, elaborated through abstract verbal chains of logic, whose internal consistency point to a monotheistic *telos*.

...

Mimetic movement and its associated knowledge eventually led to the pre-Socratics who tried to think the reality of movement. Plato, instead, built upon a dogmatic wisdom coming from Apollonian ecstasy based on immobility, which in Parmenides had become pure logic. This logic became the normative mode of thinking, as the solipsistic self-referential field of bodies who had lost their sense of movement.

Through Parmenidean and Pythagorean ecstasy techniques of immobility linked to the cult of Apollo, the interpretations that priests made of Apollonian prophecy, as well as the funerary dialogues with the dead in mystery religions, which later evolved into the agonistic dialogues in tragedy gradually stemming from originary Dionysian rituals with Socrates as defender of such dialectics (Nietzsche 1999; Colli 1975), dialectical reasoning became the predominant activity of "minds without a body," taking over the earlier expressions based on movement from which dialogue emerged.

A partly similar process can be seen in China where ancient divinatory practices embodied in the *Yijing* hexagrams, which tried to identify mutations of the world in order to see how best to move with them, became subjected to the ternary *yin–yang*

logic and its pairs of opposite terms. In Greece, the process led to a closed loop of self-reflection that lost a will to move with the world and imposed on it a linear reduction.

Converging with mimetic understandings of movement in early philosophers, which had crucially created sophisticated geometric understandings of the world that in turn eventually determined the entire living and thinking environments, this self-reflection ended up subjecting movement itself to logic, a process that reaches its culmination in Aristotle. This is the foundation of metaphysical and ontological philosophy, of being, identity, causality, and teleology: an altered perception that became the normative neurotypical condition in aligned societies. The true generalized madness was the new normative sensorimotor and cognitive condition, with deep roots in bipedalism.

Reasoning assumes as starting point of its logical chains unquestioned dogmatic truths stemming from ecstatic revelations, such as the notion of "being," which became associated to increasingly immobile and split bodies who assume an individuation. This actually created or enacted the unquestioned source of the dogma as actual movement modes of relation, an effect of movement alignments that underlie the very fiction of a bounded being. Soon after its onset, philosophy became an activity, not of moving with the world, but of immobile self-reflection of bodies who wonder at their own atrophied condition and their fears, abstracting themselves more and more from their movement. This alien and devastating mode of altered perception and dissociation has been, alas, the globally dominant one, till today, growing exponentially. Can we reinvent philosophy as movement instead, or is its purpose only to overcome itself and regain movement altogether?

6.3.9.3 Ecstatic Lives

The ecstatic can only be considered an altered perception with regard to an already dominant frame of "normal" perception, but I suggest that this "normal" perception was already the anomaly emerging with the cortical capacity of certain hominids tending to abstractions from their bipedal posture and their predominance of vision at a distance. The mimetic is perhaps its predominant expression, though it may have also had the purpose of regaining a lost movement by learning the movements of the world. Equally, the ecstatic may have been partly a regaining of a lost intensity and plurality of modes of existence, intensity, perception, and reality, pressing against the line of an increasingly dominant neuronormative mode that only acquired full maturity afterward in the geometric environments of Greece and the Renaissance achieving full autonomy (as self-referential technical movements) in the industrial and digital revolutions.

Indeed, the "wild mysticism" described by Hulin (1993) as spontaneous ecstatic experiences that occur often in hypersensitive, synaesthetic people (like me), which could nowadays count as neurodiversity, but which anyone can have, may well have been a primordial source of the ecstatic in its various forms, besides the diverse mentioned techniques for cultivating trance. This points to such states of intensity and "altered perception" as being inherently part of our embodied multiplicity. Again, the anomaly is the flattening of experience in geometric environments, which in turn ushers in extreme disalignments, ensuing in a pendulum and escape dynamics. I call instead for sustaining openness all the way through, like nonhuman animals seem to do, and we probably did long ago.

Life can thus be seen as a mesh of intertwined "altered states," between species coinhabiting an ecosystem — each one with different modes of perception, each one inhabiting different realities — and within a same body and life. Some of us live in semipermanent ecstasy: of impressions (such as sunsets), of creative rush, of love, of sexual ecstasy, of joy, of pain and mourning, of collective celebration, of affective bonds, of dancing, music making, dramatic or poetic ecstasy, of spatial experiences, of sheer muscular joy of moving, and of moving with others (muscular bonding) in work, exercise, walking, and enjoying multisensory experiences. When one is anchored in proprioception, world-sensing comes in the same act of self-sensing. *This is the primordial symbiotic ecstasy that we need to cultivate.* Since we need to undo an unprecedented atrophy, we need to invent unheard of richness of sensorimotor experiences drawing on all "human" experiments done in the arts and beyond, for thus regaining symbiotic variation, a subtle, ongoing ecstasy, far from the excesses of the ancients, which are difficult to sustain and entertain a bipolar logic with the normative.

There are spontaneous ecstasies which can get cultivated and unfold in ongoing variation and creativity, like the artistic impulse, partly also the sexual. Others, like induced trance, can be trained, and eventually develop less into a sustained practice of variation and growth, hence the idea of rather immobile "states of enlightenment" that one finds associated to some of these practices. The latter can get more easily associated to domination via oracular and initiatory practices centered on the figure of priest, shaman, guru, or wizard. The artistic itself can be vehicle for healing, for visions that are nondogmatic, for growth, or for open-ended social cohesion. But perhaps the most important to cultivate, as the most sustainable, are the small ecstasies related to the daily. It is a question of opening up our atrophied sensibility and sensitivity!

…

The ecstatic (orgiastic and ascetic) that is foundational to religion and the mimetic of sympathetic magic both converge in philosophy, science, and reason, with causal logic stemming both from mimetism and from dogmatic revelation as the mode of thought of aligned perceptions in technical societies, leading to the autonomy of technics as principle or tendency of world reduction unleashing a teleology of extinction.

The ecstatic and mimetic are possibly also the two major modes in the arts, often merging one with the other, unfolding along with religious ritual and magic, but possibly exceeding them, as a deeper remnant of a cosmic creative force. In times of technical dominion, art liberates itself from the religious, but like the religious it can have a double face: one serving the powers of repetition (representation) and reduction, another reinvigorating the spirit of symbiotic mutation for a renewal of becoming. Haven't artists in modernity become new kinds of shamans and gods? But their empire lasted only briefly, soon taken over by technics itself.

…

The process goes from pure reliance on body techniques, with full richness of sensorimotor experience, to increasing exosomatization, which grows along the impoverishment of embodied experience.

body techniques <——————————> exotechniques

This impoverishment is what needs to be reversed, with a return to the body. But living in ecstasy implies cultivating a symbiotic and mutant sensibility, which in turn allows one to understand the concealed violence and poverty of certain ways of living, so as to disalign from them. Undoing the Planetary Holocaust is not a question of compassion and morality, but of sensitivity for becoming with all life forms in enriching our worlds!

6.3.9.4 Affirmative and Reductive Impulses: Artistic–Sexual and Religious–Scientific Impulses

One can identify at first two major impulses in tension since the Neolithic:

— the primordial one is the affirmative, creative, and diversifying, the impulse to move, and symbiotically vary. It is associated to the artistic and the sexual, self-organizing or anarchic, cosmic;
— the one emerging with agrarian cultures is the tendency to reduce and dominate, to transcendence, alignments, homogeneity, and immobility. It is more associated to the religious, the scientific, and to hierarchy, structural organization, state politics, and rationalization;

Many of these tendencies can flip into their opposite, as when art or sex become tools for domination, or in early affirmative naturalistic religions, and more recently in sciences of complexity and indeterminacy. The philosophical started between both, but has been too long at the service of world reduction and should be used against itself to reverse the dominant state of things.

The tendency to develop arts, erotic arts, and body technics in therapy, training, or other fields that one finds in ancient societies (including their corresponding treatises), can be both a sign of richness (as Foucault would say of *ars erotica* in contrast with *scientia sexualis,* the scientific classification and pathologization of diversity) and as symptom of normativization. But we need far more than techniques of the self: *we need* technēs *of the symbiotic, mutant body, for affording the proliferation and diversification of all forms of life! And these will not be written, they will be danced out!*

…

This also poses the question as to whether the arts really come from religious cult or whether the artistic impulse to enrich and renew the rhythms of life is actually the deeper impulse of which the religious was only a reductive phase.

The artistic impulse of life at large is what underlies dance, music, poetry, plastic, and spatial expression. This impulse may be entangled with life at large as in animals and tribal cultures. In some Palaeolithic and Neolithic societies it became ritualized, associated to sacred cults that addressed the new fears and preoccupations. In later times, it became independent from these while other practices and technics emerged that took the role of dance and the arts in defining the rhythms of life. Art, religion, rationality, and technics are modes or strata of movement, or perhaps just different kinds of dance. Art as life, not as discipline, is the primordial expression of creativity, a mode which can also imply healing and catharsis, cohesion, education, communication, and vital growth, perhaps the deepest expression of these, beyond the religious and preceding the technical belief in rationalization and universal control.

The revival of dancing, [...] *is imperatively needed.*
— Stanley Hall, quoted in Ellis (1923, 65)

6.3.10 *Mutatio Aeterna,* Undoing the Splits. The Challenge: That All Life Be Danced Again

Dance needs to be regained. Not a radical frenzy that cannot but be a momentary escape, but an ongoing openness cultivated in movement, as rhythmic unfolding of life... for a fundamentally disabled and antiableist, mad, neurodiverse, tribal, nonhegemonic, nonhuman, and more-than-human dance of life.

My claims here are:

- Nonreductive, nonaligning movement practices need to be activated,
  - which are immanent, lived, improvisatory, and embodied knowledge
  - in minimal ongoing variation, avoiding repetitive learning in all aspects of life,
  - for a common body and for moving with all life forms, growing symbiotically.
- The power and richness of what a moving–sounding body can do (without other reductive technics) needs to be reclaimed.
- The power and richness of the creative practices of Aboriginal tribal cultures, ancient and still existing, needs to be claimed and defended, of that which is not only "oral" tradition but also kinaesthetic, dancing, embodied, rhythmic,
  - reversing the devastating anomaly of colonial dominion that puts the verbal and written on a pedestal of supremacism,
  - claiming the prevalence, antiquity, freshness, variation, sustainability, and richness of oral–kinaesthetic traditions,
  - and reclaiming the richness and power of nonhuman arts of life.

Choral dance can be reinvented as neither individual nor collective, but as a differential field activity, *a differential flocking.* For millennia dominant civilizations have been based on rhythmic synchrony of bodies, an *archē*-fascist paradigm unleashing a mass extinction and Planetary Holocaust. Here we propose to regain a mode of cohesion not based on synchrony, a flocking closer to what nonhumans do, where there is no imitation. A quality of movement coming from someone else spreads in me becoming something different. Proprioceptive focus and attunement are crucial for this, undoing the predominance of distant vision.

6.3.10.1 *Onto-Aesthetico-Politics of* Enphereia*: Symbiotic Ecstasy for Undoing Extinction; the Qualitative Richness Theory*

Life not only needs to be danced, but danced fully, chorally, and in nonaligned ways: a new mode of differential cohesion needs to be enacted through choral dances that are neither unison, nor choreographed, nor a collective of disconnected individuals. Relational variation is the new evolutionary challenge, where the Dionysian is but a step toward becoming flock again: *unheard of flocks for a planetary dance.* This argument is far from merely aesthetic and should be taken seriously as core ontological and political question, for cultures that erase the life-affirming and differential power of nonaligned dancing are doomed to extinction by the very homogeniza-

tion they create. An ontopolitics of movement as variation needs to be (re)enacted. Ontology and politics cannot but be an aesthetics as well: *an ontoaestheticopolitics* with the following shifts:

— politics: anthropocentric, split, or dominion (extinction) → all life/symbiosis (evolution);
— ontology: being, individual, or closure → fields, swarms, openness, relations, or variation;
— aesthetics: distant vision or control → plastic proprioception and multisensory integration.

For an art of immanent–ecstatic becomings and against all spectacular consumerism and imitation. For an immanent–ecstatic variation–action and against a culture that dissects, archives, analyzes, and reproduces. The more life and dance converge, the less we need specific dance practices, as in the ongoing semidancing of my cat and dog friends.

From dance everything came and to it everything needs to return.

…

What new, unimaginable movements can we set forth if we put our inventiveness in tune with the Earth's flows and not against them?

This demands an irreducible sensitivity and sensibility that resists any reduction.

If *bakkheia* and *enthousiasmos* were the names of the particular quality of the Dionysian frenzy, what could be the new name for the quality of openness, and ongoing symbiotic variation I propose? Maybe… *enphereia*![42]

6.3.10.2 The Return of the Technics of the Body: Claiming What a Body Can Do

After more than twenty years of practising nearly all arts with nearly all kinds of technics, with a focus on new media, I can assert that the deepest, most powerful, richest is what a body can do by itself.[43] This is a core claim not only for sustainable futures, but for mutating and transforming life, by enriching it again, undoing the fallacies that reductive technics are necessary or unavoidable. The arts we create with them tend to be more like palliative acrobatics to try to bridge the abyss without ever resolving it. The qualitative unfolding of irregular polyrhythms of life is where the infinite richness can be cultivated.

Given that the richness of what only bodies can do has been demonstrated and that the unsustainability of digital and mechanical technologies has been shown as well, this premise is core for liveable futures. The techniques of the body have to be claimed beyond the recurrent idea that every technique is a technique of the body. We need to distinguish reductive from nonreductive technics. The techniques of the body are described by Marcel Mauss (2006) as the ensemble of habits involving only the body without tools, instruments, or machines. From giving birth and raising children, to sleeping, breathing, sex, walking, running, swimming, and all bodily movements, strength, finger movements, gymnastics, hygiene, employment of time, and — I add — space, dancing and singing, or oral language.

42 See Book 3 on enferance theory.

43 See Spatz (2015), which more oriented to theater and performance practices and to the pragmatics of what it can do than the Spinozist "we don't know what it can do." The importance of what bodies can do is this openness and capacity to vary: the essence I claim of what bodies can do is variation itself.

Writing, painting, or sculpting, just like hunting, mainly involve tools or instruments, though they could happen without them, just handling materials. But building can also be done only with the body and digging or putting together materials with the hands, like nonhuman animals do. Nonhuman animals rely only on body techniques and the body architecture itself for all movements, hunting, foraging, sex, mating, or building. This is what I propose to return to in novel, inventive ways. The qualitative potentials and variation of body technologies are infinitely infinite: in the current variations of movements and relations, and in the longer term in the reciprocal mutations of bodies and ecosystems.

…

My proposal of metabody *technēs* and disalignments varies from yoga, *sāṃkhya,* and tantra in that there is no knowledge of the macro- and microcosmos as given or functioning in one particular way, nor therefore established practices. It is variation and openness, plasticity itself that needs to get cultivated through novel *technēs* of variation, that undo all separations and fixities. My techniques allow the achievement of states analogous to trance by different means: *not through repetitive movements nor extreme frenzy, but through minimal variation, unlocking our flock of joints.* In nomadic disalignments of bodies, chorus–orgies that may spread and unconquer the world, in a new dance epidemic,[44] decolonizing it, like Dionysus did with its army of maenads, satyrs, intersex, transgenders, and animals. It is a trance never seen before that takes us beyond the sacred and ritualistic, back to being immanently part of the flows of the world, undoing the split.

Disalignment practices differ from others in that they propose:

1. no pattern, only subtle variation;
2. a noncontrolled, swarming body, self-organizing Body Intelligence;
3. a focus on proprioception and multisensory plasticity;
4. neither passive nor active, indeterminately fluctuating;
5. neither individual, nor collective, nor couple;
6. minimal fluctuation, unfolding to maximal;
7. voice and endlessly varied body sounds emerging from or with movement entanglement in proprioceptive variation;
8. as new ecstatic–symbiotic *technē* for affirming and transforming life;
9. anywhere anytime, outdoors, ongoing, reconnecting to everything… letting all life be danced again… through disalignments as a principle one can practice in relation to every alignment;
10. from movement to everything: Radical Movement Philosophy, the only movement doctrine, redefining movement, as formless fields of fluctuation.

44 I refer here to the so called "dance epidemics" in the Middle Ages where groups of people, often hundreds, mostly but not only peasants, would start dancing and go on for days, at times till dying of exhaustion, with many episodes registered in Europe between the 14th and 17th centuries. Their origin is still ground of much debate, whether mass hysteria in response to the pest, or derived from some poisoning (like the Italian *tarantella*). Rohde (2000) suggests that similar episodes might have happened in Greece following the introduction of the Dionysian cult. One can wonder if a new dance epidemic could be unleashed to cure the world from the pandemic of human dominion and its roots in sedentarism.

Nonimitative moving needs to be regained as means both for a nonrepetitive learning, education, and embodied knowledge, and for a nonhomogeneous social self-organization based on differential relations and variation, by regaining proprioception.

6.3.10.3 The Return of the Disaligned Chorus

We need an unprecedented and new Dionysian procession for all outcasts, deviants, and divergent, starting with nonhumans and their radical defenders, followed by queers, crips, mad, Indigenous, non-whites, and the precarious — a Metanysian chorgiastic festival–parade of disaligned, moving bodies.

The Dionysian chorus present in Greek and Roman worlds, as triumphant ecstatic procession of Dionysus returning from India, celebrating the divine gifts of wine and ecstasy, has survived in a number of expressions, including oriental, and through the Renaissance and Neoclassicism, till modern parades such as in the circus (Boardman 2014). While, as proposed by Edith Hall as well as Fiona Macintosh (Billings, Budelmann, and Macintosh. 2013), there were revolutionary revivals of the chorus in the Neoclassical period after the French Revolution, in poetry and politics as well as other less explicitly political expressions including in the *corps de ballet,* and in theatrical expressions it has continued to serve at times as sign for utopian communities, though sometimes with fascist derivations as in interwar Germany.

As Helen Bacon (1994, 8) points out, in spite of the apparent abyss between the ancient chorus and modern society, for whom the former seems alien to the point of being incomprehensible, there is a resemblance between the homogenous identity and movement of ancient choruses divided by sex, age, social status, or tribe, and current political movements speaking with one voice in fighting for a common cause, though in the latter this happens often across and against socially established identities, and in mobile alliances.

The link of the festive–orgiastic, the disguise, and the political, returns in the LGBTQIA+ pride. It had some reappearances in Occupy movements. More recently, Ukrainians have understood the politics of the orgy in proposing a massive open-air orgy in the case of Putin launching a nuclear attack (Steinbuch 2022; Žižek 2022). Radical faeries and ecosexuals should ally to Extinction Rebellion and Greenpeace in a planetary disalignment.

I argue both for a broader choral ontology and for understanding the emergence of an aligned planetary chorus, subdivided in endless disciplines, expressing the tendency to order and separation (a radical reversal of the planetary swarms of bacterial symbiogenesis dancing four billion years of enferant evolution). I further propose to reverse the chorus, not as civilizing power, but as undoing and healing of the split of "civilization," toward a becoming flock again: not for utopian communities but for metatopian becomings. The return of Dionysus as a *disaligned chorus*, not a homogenous one, a chorus that brings back variation and indeterminacy into movement, for a planetary regeneration.

Planetary cruising[45] and dispersed orgy: not the intensive and human orgy of escapism, but a dispersed, Dionysian one of coexistence with all forms of life, of planetary celebration, of abolition of all separations, of reunification in the indeterminate movement of never-ending variation: a metasexual and metahuman nomadic

45 Cruising is the practice of mostly outdoors and anonymous casual sexual encounters in globalized gay subcultures.

chorus–flock for a triumphant return of Dionysus and hir ecstatic and nomadic retinue, of planetary liberation.

...

The following are aspects of the ancient Greek (and other) choruses that I propose to recover and take further:

1. as immanent field, anti-spectacular, nomadic, creating its dynamic spacetime;
2. as corporeal and collective richness, just through what a body can do, multisensory and kinaesthetic, relational, and open;
3. as transdisciplinary multisensory field of rich and plastic perceptions, where all possible arts are inseparable;
4. as common body or metabody, as open rhythmic field, as swarm, as open-ended social belonging;
5. as improvisation practices and experiential techniques;
6. as embodied knowledge in movement and variation: moving with the processes and not stopping them in order to know them, as embodied education and knowledge, as variant or enferant memory;
7. as open modal and metahuman societies, of movements without borders, without accumulation or blockage;
8. as orgiastic and dispersed ritual and healing, undoing separations, where the erotic is not split, instead it is claimed as "divine" ecstasy for a renewed symbiosis with the world;
9. as metahuman field of open reunification with all life forms, where vegan drinking and eating (fruits), dancing–singing (without verbocentrism), eroticism, nudity, and sociality blend;
10. as geopolitics, toward becoming nomadic flocks of scattered foragers, moving with the flows and not against them.

As claimed in Book 2, embodied kinetic knowledge is irreducible to representationalism and semiosis. It implies an always already expanded and relational field of memories and knowledge which are in the rhythms themselves. But it is not an aligned field that foregrounds accumulation and repetition. It is always in variation. It is no less rich and deep than the knowledges of the age of accumulation: all our books, scores, choreographies and framed images. On the contrary, embodied kinetic knowledge is deeper, as it mobilizes all aspects of the body, connecting it to a lively expanded field of symbiotic mutation.

...

6.3.10.4 A Planet of Choruses as Flocks for Undoing Every Boundary That Blocks

Just like the chorus had a fundamental importance for Greek culture as educational, social, and political institution based on movement, in my proposal the chorus is presented as core trope for a planetary politics of regeneration that undoes the reductive inflection of the age of algorithms and extinctions: a Dionysian politics of moving bodies where the chorus is transitional step toward moving immanently and creatively with the flows of the Earth and not against them, implying a deep transformation of our ways of living.

But this will require an unprecedented inventiveness in movement variation that we can derive both from our arts and from our 4 billion years of symbiogenetic

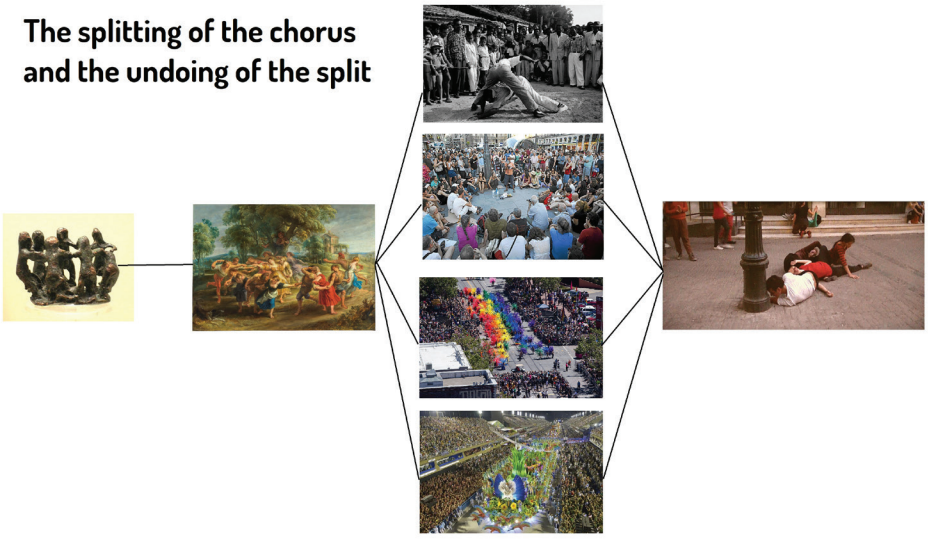


Fig. 76. The splitting of the chorus and the undoing of the split. The ancient chorus (bronze from Olympia, 8th century BCE and Painting by Rubens), splits into social–educational–defensive, political, festive politics, orgiastic–festive, and other manifestations (top-down: capoeira in the streets of Salvador de Bahia, assembly of the 15M/Indignados movement in Madrid in 2011, LGTBQIA+ Pride in San Francisco, Carnival in Rio). Can we reunite these aspects again in a disaligned planetary chorus?

heritage: a variation so subtle and deep that it allows us to exit the extinction loop. Is a *Bodynet* possible, a sustainable embodied internet that is not part of the extinction system?... Or do we need to undo the fallacy of technodeterminism by claiming movement's indeterminacy, back to a chorus of only bodies, albeit an unprecedented one?

A politics of choruses, instead of assemblies! Arguably there can neither be a politics without dance, nor an ecology.[46] Since life as diversification is the very process of enrichment of its own expressions, aesthetics is at the core of the politics of life. Choruses against the spectacular in all its forms! Choruses of immanent, lived experience, without spectator, only chorus! The chorus as the ground for a nonverbal revolution, a General Disalignment, a metahuman R/evolution.[47]

The chorus I propose is a disaligned, nomadic, orgiastic, ecstatic–symbiotic, enferant–mutant group of moving–sounding bodies, moving in a dispersed manner across spaces, creating spaces, enacting behavioral indeterminacy, whether as Dionysian activism inside cities, or as actual nomadic gatherer cultures dispersedly inhabiting the wild land or regenerating it.

Yet it is not the occasional intensive orgy as escape valve of agricultural societies, rather, it the ongoing dispersed movement that is practised all the time, the sustained and ongoing disalignment and intensity, the plateaux... looking already beyond the chorus into a becoming-flock: again, immanent part of the flows of the Earth, but also aware of the huge planetary disalignment that is needed, gradually activating it.

46 See Bigé (2023) on an ecopolitics of dance resonant with my proposal which explores the way the body is moved as part of more than human relations.

47 My use of the term r/evolution is partly ironic because revolutions so far were humanist and biased by a static perceptions of things, that's why they always failed, therefore revolution cannot but be an evolution. See also Hanna (1985).

The chorus was and will always be a politics. Peter Wilson (2003) and Richard Seaford (2013), amongst others, analyze its political significance in ancient Greece. Stephan Donath (2018) analyzes the new aesthetics of assembly movements such as Occupy from a perspective of theater studies and the chorus. In contemporary assembly movements, Donath argues, all are part of *a movement and affect politics of the event that mobilizes openness.*

But we need to take the chorus further, as Dionysian politics of movement–perception, of swarming bodies cosensing beyond the narrow scope of verbal–rational consensus. What we need is not parliaments or assemblies: choruses, *metakhoros,* are the ground for unfurling a common body that takes us into new evolutionary symbiosis and mutations. Every chorus a mode of mutation, of common body, of metabody. Every chorus is an *orgy,* a *metaorgy,* a *chorgy* of sensory mutation, where infinitely varied bodily affordances and compositions unfold. The ground for this metabodying is the proprioceptive swarm. It is from there that we can regain a lost richness. Not in escaping in lines of flight, not in mere decelerating, but in *re-enriching experience as variation.* We have the chance to undo a millennia-long tendency to impoverish our worlds, as condition for a *planetary health.*

> [*W*]*e have to think about something which is neither sameness nor difference.*
> — Sandy Stone (1987)

> [*T*]*o open oneself up to indeterminacy in moving toward what is to come.*
> — Karen Barad (2010, 264)

> *Water favors all things as it doesn't look for power. It stays in places that others disdain. In this it is similar to Tao.*
> — *Daodejing* (Laozi 1977, translation modified)

> *The greater the mystery in which the work of art is involved, the more imprecise things it suggests to us, the more it will have achieved its goal.* [...] *Today we attach excessive value to the rigid ideas that the word provides us.* [...] *Everything suggests that until the spread of the printing press, the capacity for direct perception was far superior to what we now have.*
> — Maria Laffitte (1953, 45–47, my translation)

6.4 Metaformance Aesthetics: Arts and *Technēs* of Becoming

In current, global, and normative society it seems that artists have the crucial role in undoing the evolutionary paralysis of the Algoricene. But we can no longer afford just a palliative art of spectators watching YouTube or feeling cool because they see transgressive performances in a museum, and go home satisfied for having acknowledged some problems of this human world, only to continue living in the same way as before, or even going to see a tragic opera or clubbing for a temporary catharsis that allows us to continue aligned with a shitty life on the following day... What we need is a transformative art of living, and one in which everyone can take part!

Metaformance is the art of sensorimotor plasticity. As such it is a life *technē*, transversal to all aspects of the living. It is an art of proprioception and multisensory integration, an art of creating metabodies and their endless modes of thinking–feel-

ing–moving–relating. It is an art and *technē* of movement that foregrounds the possibility to ontohack any alignment through the smallest variations.

Metaformance is an ontological therapy–activism that undoes reductive alignments, healing dualist splits.

Metaformance as artistic and perceptual practice is about undoing the spectacular, and the spectator as fixed observer, and involving the participant in the aesthetic process (intra-actor) in a deep perceptual shift, first by disaligning perception from perspective and at the same time by mobilizing richer spectrums of proprioception and multisensory integration.

Metaformance highlights the importance of improvisatory, embodied practices that resist homogenization and passive consumption, of composition as sustained improvisation, of practices that cultivate plasticity in movement and the rhythms of life.

Metaformance undoes the prevailing Western divides between senses and between artistic disciplines.

In Metaformance there is mostly no audience in a strict sense: no one sitting, standing, or holding anything in gestures of observation, distance, fixation, and control. It is about creating a collective, choral, amorphous, vibratory body–space *together with* the "audience." This is difficult as we have to work against myriads of deeply embedded alignments.

Metaformance aesthetics is metamodal,[48] not only in terms of sensory modalities (as defined in Book 2). The modes that may come up in it through improvisation *technēs* involving proprioception and multisensory integration avoid excessively alignment with disciplines, repertoires, sensory distinctions, or architectures, congealing in sensory hierarchies, or establishing sensory splits as in spectacular society. At stake is to sustain openness in the endless modes that can be cultivated through choral improvisations (which include individuals with their field!), creating the field in the process, avoiding considering the context as a separate category. If anything, one works through given alignments of a context in order to open them up.

Metaformance points to an allogenesis and an alloaesthetics, as proposed by Novak (2002; 2010), as an aesthetics of the alien, of the radically unthinkable. Such an aesthetics should operate primarily to open up perceptual structures, rather than inside the content of a given structure. Metaformance mobilizes an *alloceptive body*, opening up proprioception to the alien, as becoming-with the alien. This alien is a yet unthinkable otherness in oneself, an opening in oneself and in becoming with others, uncanny in that it acknowledges that there are many worlds, so it is about opening up to modes of existence diverse from those we can now imagine or perceive. This otherness is an indeterminate one. It is about a "politics of discomfort" (Butler 1997, 161) that introduces an open sense of futurity as constitutive force of opening in the present.

Metaformance is an art of autistic perception in the sense proposed by Manning (2016), as the capacity to keep opening up to the noncategorized.

Metaformance resonates with or has precursors in artists, works, projects, and practices old and new that focus on perceptual transformations and openings beyond the frames of content and linear orientation, including: Hélio Oiticica's

48 Claramonte (2016) proposes a different approach to a modal aesthetics where modes of relation are dynamic equilibriums between repertoires, variations, and contexts, between necessity, possibility, and fact, partly inspired by the ancient Greek philosophical school of Megara.

Parangolés as emergent sensory experiences through textile body extensions[49]; Loïe Fuller's kinetic, spiraling, extended bodies that resist becoming form, enacted as multisensory experiences that she refused to record; Mary Wigman as a pioneer in proposing improvisatory practices for emergent movement, challenging formalist aesthetics, focusing on sensation, and promoting the idea of space as a projection of movement, not as a container for it; Steve Paxton's "Small Dance" from 1967, where the microfluctuations of the body are the dance; Iannis Xenakis's dynamic, multisensory, and stochastic architectural–musical compositions–events of the Diatope and the Polytopes; the experiential art of Lygia Clark and her sculptures for body extensions as tensional relations; Pedro Garhel's *Prosthesis* performance as tensional–elastic relational kinesthetics; Philippe Petit walking on a wire between the Twin Towers in NY, making the towers the mere support for lightness, the most radical subversion ever performed; Stelarc's alternate anatomies, extensions, and suspensions that create a poetics of body transformation as it extrudes, pushed away from the planet by informational flows, nonlinearly transposing movements in the body (stomach muscles activating the third arm); Janet Echelman's suspended metasculptures as watery metabodies transforming urban space; Theo Jansen's *Strandbeests,* as giant, moving, light, and alien creatures of analogue artificial intelligence caring for the environment; Tomás Saraceno's suspended, multidimensional, membranous, elastic, intra-active architectures of the *Space Time Foam* project and his posthumanistic collaborations with spiders; Char Davies's blurry virtual reality worlds *Osmose* and *Éphémère* interfacing through breathing and tilting; Stanley Kubrick's *2001: A Space Odyssey,* a metaphilosophical sensory experience enacted though radical movements in film that take us on a posthuman journey beyond the vanishing point of perspective, beyond the failed rational evolution epitomised by AI, toward a new sensibility and intelligence, and back to the body and the Earth; Richard Serra's *Matter of Time* as immersive curving of spacetime perceptions; Joseph Beuys's *I like America and America likes me* and the intensive field of posthuman symbiosis it creates with the coyote; Street *butō*; Situationist *dérives*; the ancient Dionysian chorus as nomadic, ecstatic, and orgiastic group of dancing and singing bodies from which the tragedy arose, before there was a split between spectator, audience, actor, chorus, and author; Federico García Lorca's nomad theater of La Barraca; Artaud's Theatre of Cruelty; the musical architecture of Luigi Nono's *Prometeo*, *tragedia dell'ascolto* or Karlheinz Stockhausen's Osaka pavilion, and the latter's approach to feeling the rhythms of other beings, nonhuman or even inorganic, through music; the sounding cities of Llorenç Barber; John Cage's take on indeterminacy, and much of 20th-century avantgarde music and its experimentation with irregular rhythms, sound spatialization, timbre, microtonality, modes of writing, improvisation, aleatory or intuitive music; life electroacoustics and hyperinstruments[50]; Robert Irwin's visual works of perceptual emergence; Cerith Wyn Evans's spatialized choreographic notations; J.M.W. Turner's pictorial deobjectivations; Umberto Boccioni's field paintings

49 *Parangolés* are amorphous, multi-layered, and often colorful wearable textiles which Oitica activated in actions happening between 1964 and 1978 and which aimed at heightening an open-ended, indeterminate (he would call it "supra-sensorial") experience, with a political as well as ecstatic dimension that seems to resonate with my proposal for a Dionysian politics. Inge Hinterwaldner (2016) analyzes many of these aspects as well as the relation of my work to Oiticica's.

50 Hyperinstruments are acoustic musical instruments in which the performers gestures are extended in digital systems that process the instrument's sound thus changing the proprioceptive awareness of playing, for instance the hypercello, made for Yo-Yo Ma.

of pure plastic rhythm; Fernando Zobel's paintings as concrete spatialization of vague movement and light sensations; the amorphous bodily affordances of Maria Donata D'Urso and photographers Laurent Goldring, Hannah Villiger, and John Coplans; Étienne-Jules Marey's movement pictures creating architectures of motion; Kenneth Snelson's and Buckminster Fuller's tensegrity sculptures and architectures as fields of tensional distribution and suspension; Kas Oosterhuis's interactive architecture and the Hyperbody project; Markos Novak's alien transarchitectures; Sandy Stone's Near Legibility project and Public Genitals project; The *Yeguas del Apocalipsis* (Mares of the Apocalypse) of Pedro Lemebel and Francisco Casas; Guerrilla Girls; queer street guerrillas; Stonewall riots; Zach Blas's queer illegibility masks of facial weaponization; Shu Lea Cheang's alien queer postporn cyborg couplings in hybrid films-workshop–performances in UKI and IKU; KXKM's "Les Immobiles"; Theresa Schubert's "mEat me" (2020); traditional African mask dances; carnivals; Easter processions; Medieval Dances of Death; Occupy street assemblies; capoeira; break dance; parkour; numerous improvisatory practices; shamanism; BDSM communities; orgies, sex magic and voluntary sex work, public nudity, cruising and public sex actions; the perceptions of homeless, nomads, Aboriginals, neurodiverse people, children.... all those who cultivate minor perceptions, diverse from the Algoricene's geometries.

Metaformance arts can be analyzed in terms of mode of field and movement and openness of field.

Mode of field and movement:

- — mode of extended body and emergent spacing: suspended, on floor, floating, wearable, architectural (fig. 77);
  - — degree and mode of extension;
  - — embeddedness in proprioception;
  - — relation to weight/lightness and suspension;
- — relational mode;
- — mode of perception and multisensory integration, quality of movement–sensation;
- — rhythmic modes composing the field and its temporalities;
- — modes of internal variation and relational variation.

Openness of field:

- — indeterminacy;
- — variation;
- — degree and mode of alignment;
- — embeddedness in or relation to other fields;
- — degree of plasticity it affords.

Some characteristics of metaformance:

1. It implies the absence of division between spectator and audience, proposing an immanent experience. It favors perceptions without perspective or fixed points of view. It is radically antispectacular.
2. It mobilizes plasticity, variation, and sensorial and experiential indeterminacy, perceptions that are formless or on the border of the legible.
3. It has a relational and symbiotic, choral character. It creates new, diffuse intimacies and an orgiastic reconnection with the world.

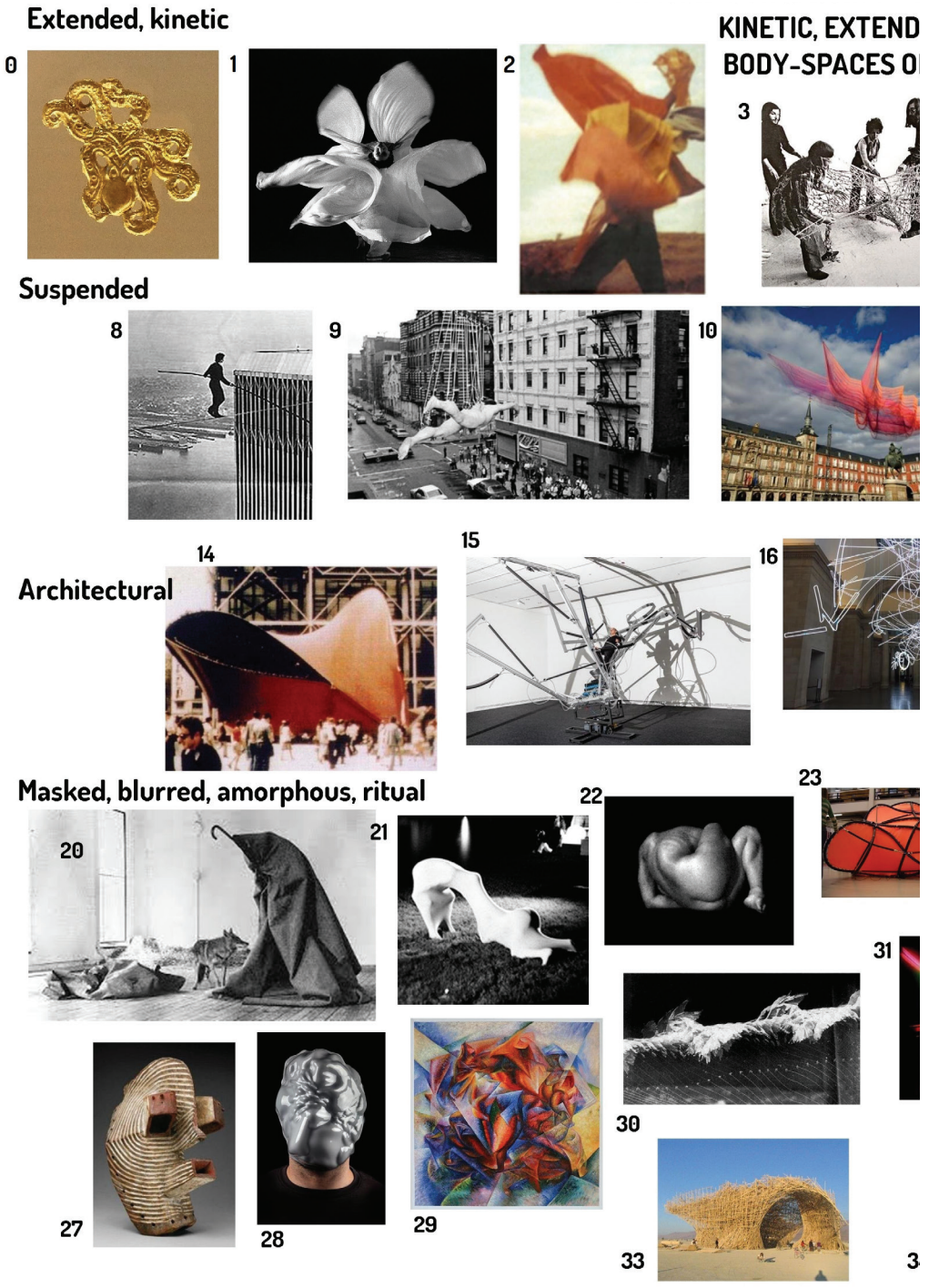
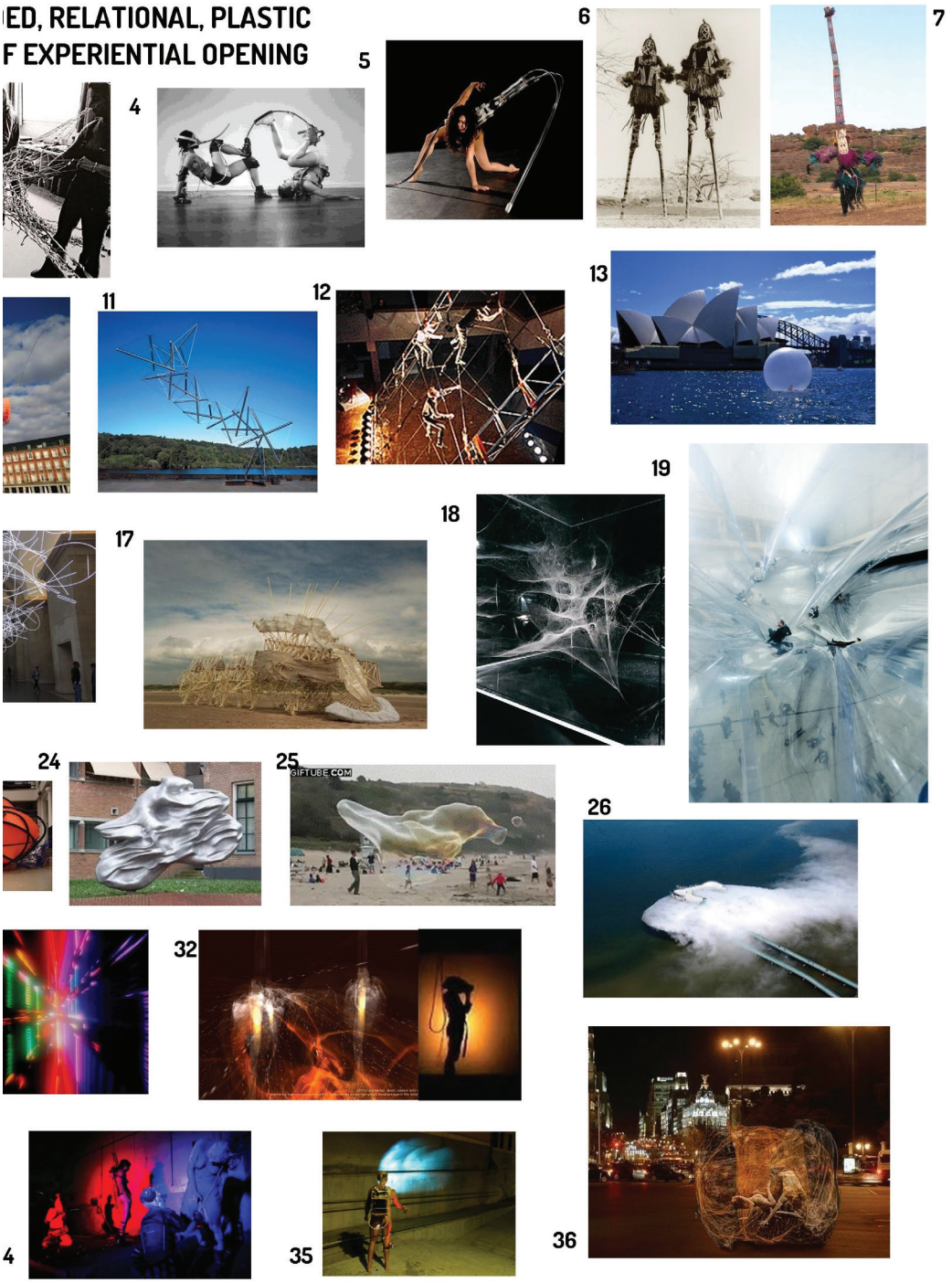


Fig. 77. Metaformance diagram of precursors, along modes of composition of extended metabodies, suspended metabodies, architectural metabodies, and masked, blurred, amorphous, and ritual metabodies: (0) Golden octopus ornament of ancient Mycenaean culture (~16th c. BCE); (1) Loïe Fuller, Serpentine dance, ~1896; (2) Hélio Oiticica, *Parangolé*; (3) Lygia Clark, installation; (4) Michel Groisman, performance; (5) Louis Philippe Demers, robotics; (6) and (7) Dogon masks; (8) Philippe Petit, walking across the Twin Towers, 1974; (9) Stelarc, suspension in New York, 1984; (10) Janet Echelman, *1.78 Madrid*, 2018; (11) Keneth Snelson, Tensegrity scupture; (12) Soundnet; (13) Zhu Ming, performance in Sydney; (14) Iannis Xenakis, *Diatope*, 1978; (15) Stelarc, *Lying Stickman*, 2021; (16) Cerith Wyn Evans, installation at the Tate Gallery, London; (17) Theo Jansen, *Strandbeest*; (18) Spiders and Tomás Saraceno: spider



architecture; (19) Tomás Saraceno, *Space Time Foam,* installation in Milan, 2013; (20) Joseph Beuys, *I like America and America likes me,* performance, 1974; (21) Pedro Garhel, performance; (22) Laurent Goldring, nude photography; (23) Hyperbody group, interactive architecture prototype; (24) Kas Oosterhuis, parametric architecture prototype; (25) giant bubbles; (26) Diller and Scofidio, Blur building; (27) Songye mask from Congo; (28) Zach Blas, from the facial weaponization suite; (29) Umberto Boccioni, *Dinamismo di un footballer,* painting, 1913; (30) Étienne-Jules Marey, chronophotography of a bird; (31) Stanley Kubrick, *2001: A Space Odyssey,* 1968; (32) Char Davies, *Osmose,* 1995; (33) Arne Quinz, scupture for Burning Man festival; (34) Shu Lea Cheang, UKI performance, 2011; (35) Jaime del Val, pangender cyborg; (36) Jaime del Val, Metabody project, 2013.

4. It favors improvisational practices and unrepeatable complexity, not writing, choreography, or composition.
5. It activates proprioception and multisensory experience (as irreducible to representation) and thus a postanatomical body.
6. It favors the elaboration of Body Intelligence and Body Techniques.
7. It is antithetical to the aesthetics of control, favoring nonlinear, noncausal, and noncontrollable relations in interaction design.
8. It mobilizes disalignments as a sense of openness and variation and as a way of moving away from patterns and aligned perceptions. It favors slowness, variation, and temporal–rhythmic disalignment.
9. It favors lightness and suspension against gravity and heaviness.
10. The body becomes architectural, extended, symbiotic, and environmental.
11. It has a nomadic character and creates its own spacetime. It infuses indeterminacy into spaces (metatopias) and behaviors and creates spatial indeterminacy and spaces in motion.
12. It creates diffuse fields and processes of movement and relationship; it has an environmental–processual character. It is ideally enacted in week-long workshops or as an ongoing practice.
13. It exposes hidden alignments from the era of Planetary Holocaust, extinctions, and dystopian algorithms. It is a process and tool of ontohacking and ontotherapy as a challenge to the habits, dogmas, and beliefs of human supremacism.
14. It is transformative for those who participate in it: in their own perception, their sense of self and the world. It can prepare for a profound systemic transformation and toward nomadic outdoor living practices.
15. It is not just for humans, nor self-referential, nor palliative. It aims to transform life completely, reconnecting us with the rest of the living.

This modal or trans- or metamodal approach looks into what types of movement and plasticity, indeterminacy, relationality, emergence, degree of improvisation (hot or cold medium), spacing and temporization, plasticity of rhythm, what type of common body it activates, what kinds of common repertoires or embodied knowledge it enacts or appeals to, what alignments it challenges or reproduces.

I only tentatively suggest this approach, as it exceeds the scope of this book to do a full survey of the arts, or even of the more recent ones, under this new paradigm. This approach can be expanded to ethnography more generally.

...

One can find experiential analogies (and differences) across the most seemingly disparate practices and works. One can also trace the crucial differences between, for instance, a control experience in a video game or an aligned sensory overflow in a dance club, and a less aligned sensory orgy when one allows oneself to explore new sensations in motion with the surroundings and with others. This is perhaps not unlike the way in which molecules have been improvising over eons in creating the intricate but open architectures of our bodies.

In my peculiar approach, I place the chorus and the orgy (chorgy) as matrix from which all art forms and sociality evolve. This can be traced back to bacterial and molecular swarms. In any case many of the works I mention involve a sense of sus-

pension, tensional distribution, elasticity, relationality, a working against gravity, away from heaviness, opening experience up to indeterminacy.

6.4.1 Toward a Metamodal Meta-art of Choral Improvisation

In the theory of the Algoricene and the panchoreographic, I have exposed part of the history of how senses became split and movements became framed, which also underlies the history of the art disciplines. Metaformance proposes a reversal of many of those splits and of their complex unfolding as sensory architectures. What is mobilized instead is the plasticity of multisensory integration and movement in endlessly varied ways. But this can also allow a renewal of our involvement in practices that have emerged within highly normative disciplinary divisions of the senses and relations: music, visual arts, dance, architecture, writing, talking, and many more.

A new history of the arts needs to be written from the point of view of movement, a history that doesn't hold onto the traditional divisions between disciplines, techniques, styles, and epochs and which looks instead *only at the movements.*

Art historian Maria Luisa Caturla proposed around 1944 a significant attempt in this direction, which has been however largely ignored. In *Art from Uncertain Epochs* (2021), she diagrams expressions of movement, ambiguity, the unstable or decentralized in the arts ranging across all art forms and disciplines, and beyond: from sculpture and architecture to ornament and design, or even expressions one finds in daily environments, connecting arts from antiquity to her time, where the spiraling movements of Cycladic art from around 3.600 years ago somehow resonate with Loïe Fuller's *Serpentine Dance* from around 1896. Qualities and modes are outlined, in excess of the deadening categories that have proliferated in a culture obsessed with splitting. We need instead ways of thinking that allow us to connect and set in motion. From such a standpoint, many expressions that have been wrongly categorized according to discipline, technique, epoch, or even style can be reviewed in terms of the relational movement qualities and the tendencies they are enacting, the field they enact, or which they are reiterating.

If we relate, without hierarchies, the movements of a traditional African dance, an autistic person's attunement to the environment, designs in weaving and decoration, architectural design, use of public space in a city, and so forth, questions of *indeterminacy, relationality, emergence, multisensory richness,* and *proprioceptive richness* can be studied in how we create common bodies: fields–bodies–spacings. This should also prevent colonial appropriations, since we can diagram the reverse influences and the alignments, the impositions, the ways in which abstracting something from its emergent milieu implies eliminating its force, domesticating it into a market niche.

It is not a question of idealizing nonimperial cultures but of understanding the multiplicity of less-aligned expressions that have come about before and around, or even inside the more aligned ones, renewing ethnographic studies through focus on proprioception, sensorimotor plasticity and richness.

…

Expanded to an analysis of creativity in culture at large, we return to the issue of hot and cold media proposed by McLuhan (1964): which media allow improvisation and creativity and which ones narrow them down? We seem to live in times of democratization of creativity, where billions of people have powerful tools to create audiovisuals and communicate on the spot with "all of humanity." But isn't this hid-

ing a poverty and a wrong pretension, a homogenization of expressions due to the reliance upon algorithmic systems in whose design people hardly ever participate, where we connect to the internet at the expense of impoverishing our movements and senses, assuming a homogenization of sensibility which underlies the pretention of connecting to "everyone"?

Is this any better than the way people in most cultures have participated in their multimodal art forms? *Choral artforms* are the core technology: collective dancing–singing, creating a space from the bodies, nomadically, bodies that explore rich transformations and extensions with dresses, paintings, masks, and multiple prostheses, true extended bodies enacting together an intensive, rhythmic, ecstatic field, a nomadic architecture, a common body, perhaps including drama, storytelling, and ritual, with political as well as educational, therapeutic, and healing dimensions, with crucial significance for social bonds, affective bonds, and kinship, based on multisensory richness rather than distancing and controlled recollection, also a fundamental means of education, at times also sexual, orgiastic: a field of mutation.

The excessive reliance on verbality in dominant human societies has created a radical impoverishment of our capacities to cosense with others, human, nonhuman, and inorganic. When we practice nonverbal, collective, proprioceptive, and disaligned attunements with a space, mobilizing it in the process, a deep, invisible bond is established that exceeds anything that words can do, like a shared resonance which is both profoundly open and full of reciprocal trust.

Think of the difference between people sitting in a theater or parliament, or immobile in homes in the internet panchoreographic versus a culture where all people partake in an orgiastic chorus of sensory experimentation and a cosensing ethico-ecopolitics. Can we invent in our postglobal times a new kind of meta-artform, a nomadic metaformance practice, *technē*, and spacing for collective mutation where bodies cosense and cocompose instead of splitting and relating from fixed points of visions assuming a status of disembodied rational minds?

Such a meta-art form would address body technologies of movement, spacing, multisensory plasticity, rhythmic plasticity, and breadth of attention spans. It would be a laboratory for collective architectures and modes of living, for new kinds of memory, *technē*, BI, for education, social space, sex, affect, therapy, politics: a guerrilla of cosensing for new kinds of sociality where we heal the millennia-long split.

6.5 Untrainment *Technēs* for Behavioral Disautomation

Metaformance works against any dominant scopic regime. Building upon Metz (1982), Jay (2008, 4515) defines *scopic regime* as "a nonnatural visual order operating on a prereflective level to determine the dominant protocols of seeing." This strictly applies to perspective as regime of vision underlying cinema, photography, painting, theater, or stage dance, as well as screen-based media culture. But its deep operation can only be understood in terms of the narrow alignments it enacts, minimizing multisensory integration and motion by imposing a fixed hierarchy.

The practices here discussed are both techniques, artistic projects, and body–movement–perception experimentation. They are more like instruments–processes or expanded bodies than artworks. The economy they propose is the improvisation practice as ongoing variation. The commons they refer to is proprioception as mode of entanglement that defines bodies as fields entangled with other fields. Perspective has alienated this primordial or *archē*-commons which metaformance seeks to

restore and take beyond in its plastic dynamism. This implies being able to disalign from economies of repetition, homogenization, and consumption.

Ontohacking (as the opening up of any fixity to movement) and metaformance (as the aesthetics of mobilizing sensorimotor plasticity) can be unfolded as improvisation practices and taken to any domain of life, across existing disciplines or behavioral repertoires (painting, musical performance, improvisation or composition, dance, writing or conversation, walking or sexing…) across old and new technologies (acoustic instruments or electronics, mechanical and digital media, writing, dancing, and so forth). Architecture also needs to be reinvented as improvisatory practice of creating space through movement.

…

These practices are techniques of *untrainment* or *n-trainment, behavioral disautomation, indetermination,* and *proprioceptive disalignment.*

As different from entrainment, a popular term in AI and machine learning that speaks about synchronization and automation in empathy and learning processes, *n*-trainment or untrainment implies that there has to be an ongoing mutation and disalignment in the attunement between bodies, including between a human and technical body, if the resulting metabody is to be alive, emergent, sustaining openness in its ongoing recomposition. Behavior is the capacity to untrain, to relate, and to resonate while sustaining indeterminacy, emerging from proprioception understood as swarming movement field. Untrainment implies the intrinsic variation at the core of relations, where internal variation and relational variation create a field of resonance without ever implying synchronicity. It is in this *differant* or *enferant* field, in the sharing of differences coming in contact, affecting each other, creating a new relational variation, where deep relationality can be found, rather than in homogeneous consonance.

Each technique or layer invites the intra-actor to explore different kinds of behavioral untrainment or disalignment, developing improvisation and perception techniques that mobilize an irreducibly complex body that also mutates in every site-specific instantiation, in every metatopia.

They could be called counter-shamanistic techniques in that they deeply transform perceptions and realities. Just like Parmenides might have arrived at the notion of fixity through shamanistic techniques of immobilization, I propose movement techniques to mobilize again our proprioception, awakening them from millennia of Parmenidean atrophy. Our culture has been sleeping for 2,500 years in Parmenides's cavern. Away with the subterranean sleep! Dance and laughter, orgiastic choruses under the bright sun are what follows.

6.5.1 Ontohacking Pragmatics

We urgently need counter-practices that focus on perceptual design and perceptual logistics as the core of new and older regimes of power, acting upon their totalizing ecologies by disaligning their geometries.

Ontohacking, as ontological politics, is the hacking of ontology itself as the tradition of being, by hacking the geometries that have enacted that very fixity, while enacting ecologies of greater plasticity. It is about creating exploits or openings (Galloway and Thacker 2007) in ontology and the metaphysics of being and resonates with and takes further a number of ontological activisms, including Rimbaud's and

May '68's proposal to break clocks, Hakim Bey's (1991) *ontological activism* and *temporary autonomous zones*, Annemarie Mol's (1999) *ontological politics*, the Invisible Committee's (2015) war on the "smart" and of "techniques against technology," or Tiqqun's (2010) diffuse guerrilla of *clinamens*, of slowing down, of introducing *other rhythms*, (I'd say *more plastic* rhythms), of short circuits, of perceptual fog and of Zones of Offensive Opacity (ZOOs). Ontohacking is a rigorous articulation of that opacity as a fully positive force of indetermination, related to subtle movement *technēs* that unfold our proprioceptive field as BI.

William Connolly's *neuropolitics*, calling to "redefine the 'sensibility' in which 'perception, thinking identity, beliefs, and judgement are set'" (2002, 20), Rosalyn Diprose's (2003) idea of a corporeal generosity, David Michael Levin's (1999, 123) idea that "a more developed awareness of our gestures would contribute to an ontological critique of technology," or Manuel De Landa's (1992) suggestion for an ethics of finding the correct mode of consistency in our flows also resonate in ontohacking.

Ontohacking is about becoming-with, resonating with Donna Haraway's (2016) account of the Chthulucene, but shifting it from *performativity, narrative,* and *content* to *metaformance, perception,* and *indetermination.* And since improvisations are always relational (even if one is alone, one is a swarming multiplicity), and since collective improvisation practices are also at stake, I will be talking about *choral practices.*

In times of massive consumption of standardized cultural products (that seem to expand Plato's quest for orderly movement), I propose to recover choral improvisatory practices as nomadic and multisensory experiences in which all participants are improvisers. There are no spectator, work, or author divisions, but it is about creating a nomadic collective space and about collectively reinventing perceptions and relations.

6.5.2 Ontohacker Manual

Metaprograms of the panchoreographic are underlying alignments which are transversal to many others. An ontohacker will look at these underlying choreographies and their narrow orientations, seeking to open them up following these cues:

1. Propriocept rather than see from a fixed distance, moving with things like a cat or child, integrating all senses in always new ways, avoiding assuming too many fixed points of vision and reductive gestures of clicking, and enjoying multisensory integration, feeling yourself, your muscular fluctuations.
2. Get lost in your proprioceptive ocean, forget about Google Maps for a while.
3. Cultivate the minimal variation, cultivate it every day, even all the time.
4. Resist homogenous contagion of gestures (selfies, music video choreographies, commercial porn, Hollywood romanticism, Trumpish neofascism, emoticons, clicking on "Like" on Facebook), and let whatever comes to you mutate, vary. Become a diffractive node.
5. Search for the hidden choreographies underlying apparent structures, the hidden architectures of media and relations.
6. Feel the narrowness of alignments (sadly it took the confinement in the COVID-19 pandemic for many people to realize some of them) and develop sensibility and resistance to them by exploring fluctuations.
7. Elaborate fluctuation into plastic rhythms and illegible affects.
8. Disalign from linear movements and linear spacetime, fluctuating.

9. Disalign from binary sex–gender by propriocepting others and yourself in excess of any framing, anatomical reduction, or categorization.
10. Promote behavioral indeterminacy, become illegible, irreducible to racial profiling and Big Data, become *mestiza* and vampire moving across worlds and seeing things that others don't see. Elaborate that moment when perception opens up.
11. Attune yourself to the minimal variations of your environment, becoming autistic, metahuman, metaspecies, disdaining rationality and humanity as distinct species.
12. Disdain domination as inferior.
13. Counteract any reduction with new richness, disalign.
14. Become molecular swarm.
15. Do all this in a never-ending movement of chaosmic variation.

6.6 In Search of Lost Movement: Metabody or Ontohacking *Technēs* for Symbiotic Untrainment

As I previously mentioned, I defend, and practice on a daily basis, different kinds of improvisations including disciplines that have been split and defined as "dance," "music," "visual arts," and so forth. Drawing, playing the piano, or dancing can be reconceptualized as improvisatory metabody *technēs*. To me, these are important because of my particular background, but at stake is how one can reinvent the relation to existing traditions which might be worth discussing in more detail elsewhere.

In what follows, I will focus on the set of techniques emerging in the Metabody project as consistent and ongoing practices that elaborate peculiar modes of proprioceptive plasticity, and whose applications in diverse situations I have already been exploring to some extent. I will expand on four techniques or practices which I have been developing since around 2001, which expose four complementary approaches or layers that may come together into a more complex ecosystem or environments: *disalignments or microdances, flexinamics, microsexes,* and *amorphogenesis or metagaming,* transmerging in the *metatopia* environments. The projects I will expose are long-term evolutions. They are both the building of an instrument and the development of its improvisation practices along the way, as the instrument unfolds and tunes. Instrument here always means metabody, including ourselves. It is about crafting ourselves metabodies as sustained improvisation practices. These projects expose potential variations and the complexity of what I call ontohacking and metaformance as *technēs* for unfolding our plasticity. All of them take movement and its variation as starting point and as means for reinventing technologies of the body.

The projects expose very different *technēs*, from a focus on proprioception and the movement of the body to building dynamic physical architectures and wearables, as well as reappropriating the technology of perspective (as surveillance camera) and digital technology, VR, and interaction design.

...

These practices need to be understood as part of a broader landscape, as experiential *technēs* which acquire full meaning only as they come together with survival *technēs*, such as foraging and nomadic dwelling within environments for a deep transformation of our ways of living. They are not meant as mere palliative techniques that help us continue with our unbearable lives.

Metaformance is the metahuman aesthetics of perceptual openness–indeterminacy, plasticity, and variation. I propose metaformance as means to mobilize a diverse and more open perception, where there can be no split between an observer and an observed, but an ongoing and multiple affection between formless fluctuating fields. Metaformance is against the spectacular in all its forms!

Our metahuman evolutionary challenge is to regain and take further the capacity for *indeterminate variation,* with unprecedented *technēs* of indeterminable movement, for a mutation of the species: not through increasing technological control and domination (that only accelerates extinction) but by embracing indeterminacy.

Only with body movement and voice can improvisation–collective practices be created as powerful as any other if not more so. And, arguably, the more technical layers are added, the more unsustainable the process is. All of this must be considered in a gradual disalignment, until we are left alone with the body in motion and its voice or sounds.

…

Metabody *technēs* propose varied ways of unleashing variation in movement. It is time to develop variation-based movement *technēs* rather than pattern-based techniques. The main underlying *technē* is thus the disalignment. Disalignment is a movement improvisation practice which is not simply about deviating from one line onto another, but rather about blurring reductive linearity back into a more swarm-like movement. Our proprioceptive field is not in trajectories of joints but in the tensional and torsional tissues in between, in constant fluctuation. The body is always fluctuating even as we walk or displace, even when we pretend to be still, and in excess of the narrow spectrum of decision-based movements. It fluctuates in itself and in relation to everything else, recomposing. At stake is to develop a plastic capacity to recompose with the world in always new ways, in relation to any technology, architecture, body, or situation.

It is about "reappropriating" or hacking technologies of existence at the level of the movements they impose, the choreographies. Wherever an alignment is imposing itself on you, reproducing itself through you, twist it in unexpected torsions, become a diffractive node for unheard-of deviations, open it up to something less aligned, less reductive, and therefore richer. Disalignments are about counteracting reduction and the impoverishment of life that is associated to domination.

Since we live in a multifaceted world, our multiple disalignment strategies must extend to any geometries that reduce perception, to their instantiations in daily gestures, architectures, affordances, and interactions. We need to look at how perspective formats our conversations, proxemics, architectures, and normativities. And now the spectrum opens up from static and gridded geometries to dynamic curvilinear, topological, and other non-Euclidean geometries of control (Parisi 2013, xi).

At stake is to regain, and take beyond, a sense of entanglement with the world in which we propriocept ourselves and the word in the same act of moving and in excess of rational awareness and control. This doesn't necessarily imply a collapse of rationality or subjectivity but its resituation in a less central and dominant position.

…

Resonating with numerous movement practices emerging over the last century,[51] metabody techniques differ from many of them in that they are not only dynamic, improvisatory, and choral, artistic as well as individual and therapeutical, but also based on proprioception conceived as indeterminate swarm, and on continuous subtle variation from previous movements. They question the idea of a body as something defined, composing instead the body as transmodal field of fields, whose energetic zones can be reinvented, avoiding the idea of learning patterns of alignments, instead openness, variation, and plasticity is the focus.

Ontohacking is beyond bodyhacking, genderhacking, or biohacking, because it doesn't assume a given perception of the body, gender, or genetics. Ontohacking is about undoing any reductive perception that fixes, mobilizing a plastic perception instead, letting the proprioceptive matrix fluctuate, swarm, and vary unstoppably. This allows us to move with things in always new ways, avoiding the establishment of reductions in perception. The power of ontohacking is in the subtlest variation within movement that any body, no matter how apparently immobile, can unfold, including nonhuman and even inorganic bodies. It is the primordial *technē* of nature and evolution as variation. It is not about spectacular interventions with cyborg prostheses, chemical treatments, or neuro- or bioengineering. Of course, all these fields need to be reappropriated as well, but in movement we have a far more powerful tool at everyone's disposal for modulating our metabolism, hormones, neurons, emotions, or gene expressions. A tool for indetermining. Ontohackers are indeterminators that work against any reductive tendency or alignment, reinfusing sustained variation, richness, openness.

...

In the following section you will see how some of the concepts previously elaborated such as disalignments, microsexes, amorphogenesis, metatopias, or metabody, are also (and were firstly) ongoing projects of artistic, bodily, sensory, and kinetic experimentation.[52] It is important to note that the gradual emergence of these practices has never been programmatic as the response to certain concepts, nor vice versa, with the concepts as explanation of practices. They emerge entangled from the start.

When I started working on these projects, the concepts were not yet there, they came along the way, and fed back into the practice, as two resonant modes of thinking of the body, one still aligned with the *logos* and the other moving forth elsewhere.

51 A plethora of somatics and movement practices across dance and therapy (as well as daily exercise, leisure, and other domains of life) have flourished over the past century and beyond, in the experiential kinesomatic approaches of Mabel Todd's Ideokinesis, Moshe Feldenkreis's functional integration techniques for stimulating neural plasticity, Thomas Hanna's somatic education, and more recently Body Mind Centering, Authentic Movement Practices, Katsugen Undo, Gaga method, or Antigym; in dance practices such as contact improvisation and Steve Paxton's slow dance, *butō,* or Body Weather; in other embodied practices with a focus in "inner" lived experience, trance methods of various kinds, martial arts, shamanism, performance arts, and sexual practices including BDSM amongst others; and in numerous, often ancient somatic practices, particularly eastern, including yoga, tantra, and many others. All of these and more can be seen as partial precursors for a more radical mutation of our movement plasticity, a mutation needed to restore and take further creative evolution in times of autonomous algorithms. Let's cleanse all these proposals from preconceptions of functionality, mind, consciousness or awareness, authenticity, identity, and shape of a body. We need to jump over millennia of atrophy imposed by fixed points of vision, endless geometries and chimeras of autonomous subjects directing their movement trajectories as centers of desire.

52 Since the following concerns mostly ongoing projects, of which there are many, a directory may be found in the extended materials for the book at https://metabody.eu/ontohackers.

Like the projects, the concepts are also provisional and always in the works. Through them, one can see how ontohacking practices can evolve over the years.

The practices here presented are some amongst a trillion of other ontohacking practices that may be elaborated. They are also the ones conforming the Ontohacklab (recently, Metahuman Lab) workshops that I organize in Metabody Forums in different countries every year. They are sustained modes for metabody DIY and DIWO, "crafting oneself a metabody" and "crafting it with others." These projects are not performances, spectacles, or installations to watch, but metaformances: experiences of perceptual–bodily transformation for myself and every participant or audience to experiment from within, by themselves, or together with me as performer or metaformer. They are about enriching and transforming proprioception as internal sense of movement of the body. They are not in space, but a spacing of proprioceptive fields. They create new kinds of bodies through new kinds of proprioception and multisensory integration. They are about transforming our most deeply rooted conceptions of space, time, subject, and object toward a blurrier autistic-like world in which no such separations are possible.

These practices are about opening ourselves up to fluctuation, variation, and indeterminacy. They are processes of behavioral indetermination. They are site-specific and body-specific indeterminations, working with communities and sites to create techniques and concepts, but they work for *indetermining* spaces and bodies. They are about mobilizing alien intimacy and *symbiotic untrainment:* modes of resonance and relation in continuous disalignment. They are meant as daily antichoreographic practices. They propose modes of attention that are deep and open at the same time. Neither the rigid attention capture of fixed perspectival frames (as in books), nor the disperse attention of smartphones. Such improvisation practices affording variation create a plastic memory, indeed memory as a means to deepen our plasticity.

6.6.1 Disalignments: Mobilizing BI for a Radical Movement Freedom

Disalignments are movement techniques focusing on proprioception, multisensory integration, and the body's capacity to move in swarm-like, self-organizing manners. They are antichoreographic improvisational practices that prevent segmentation of movement, patterning, and repetition, mobilizing the body in excess of choreography in a proprioceptive and fluctuating complexity that cannot be reproduced. They work on what Bergson calls absolute movement as movement from within, irreducible to cuts, indivisible.

Disalignments operate from two angles:

1. Listening into proprioception as it escapes conscious prehension and location, letting it unfold in swarms of microperceptions and micromovements that mobilize the body beyond the centralized control of a subject.
2. Listening into reflexive awareness as epiphenomenon in order to identify the already known alignments, postures, movements, and sensations, so as to disalign from them.

We tend to minimize proprioception and the plasticity of transmodal sensory relations, because we tend to align to fixed points of vision on a vertical straight axis. The sense of a controlling subject is an effect of this alignment that creates a rigid hierarchy of the senses in almost immobility. This immobility is mostly within the

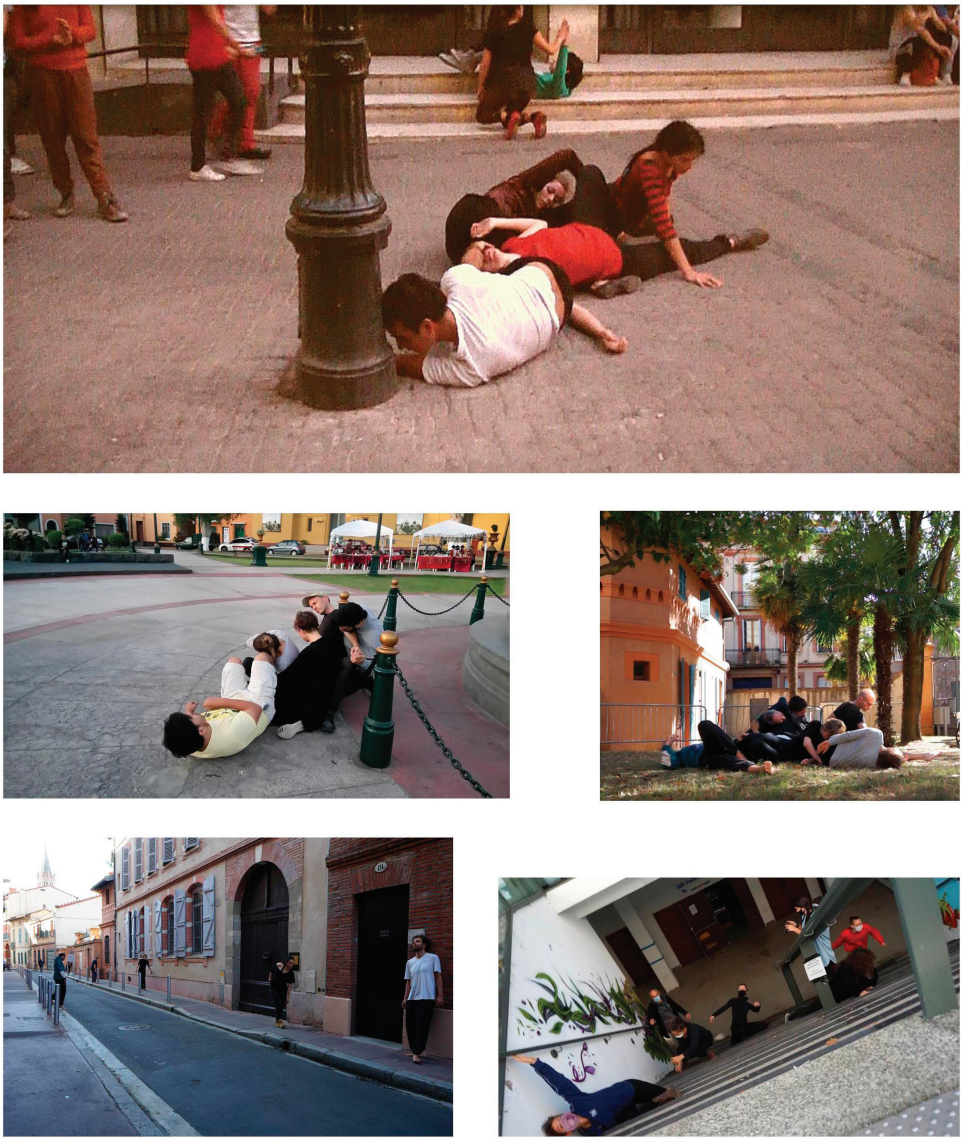


Fig. 78. Reverso/Jaime del Val. *Disalignments* workshops in Santiago de Chile (2010), Lima (2016), and Toulouse (2019 and 2020).

body, which becomes a rigid block even as it displaces. Within these alignments, movement becomes a sped-up trajectory of the body as a block. As soon as we subtly disalign some of these aspects (distance, fixity, speed, axis), the whole field of transmodal sensory relations shifts in plastic manners and the proprioceptive swarm becomes alive. But since it can unfold in endless ways, it will only do so by ongoing practice, evolving in peculiar and unpredictable manners as the body develops the capacity for more plastic movements–perceptions, richer and more plastic rhythms, developing a memory and knowledge of plasticity itself.

Disalignments are the primordial ontohacking technique. The more subtle the variation, the more powerful and sustainable it will be. Just by tilting the axis of the head, the predominance of vision starts to give way to more plastic reconfigurations of multisensory integration. Just by radically slowing down walking on the street the

Fig. 79. Reverso/Jaime del Val. *Disalignments* workshop in Montreal (2011), Buenos Aires (2016), Madrid in (2013 and 2014), and New York (2015).

space transforms from a directional and accelerated functional space to an emergent field of sensory exploration.

There is no space, there are fields. We create them by moving. A major ontohacking challenge is to stop believing in linear extensive space (as well as in linear time) and realize instead how we create spacings or fields according to how we move. Every movement field unfolds its fluctuating spatio-temporality. The subtlety of dis-

Fig. 80. Reverso/Jaime del Val. *Disalignments* workshops in Madrid (2013), Berlin (2016), Brasília (2016), Toulouse (2018), and Tarragona (2019).

alignments allows the swarming power of the body to awaken from millennia of atrophy and to unfold in unpredictable ways along sustained improvisations.

Any body can do this, as it's not a question of amount. A person with severe paralysis who can barely move according to compulsory ableness standards, or someone in a prison, or as we are confined in our planetary home and digital prisons during the pandemic, anyone may find an infinitely varied qualitative variation within the tiny motions of the neck or of a finger, in the microfluctuation of posture, in the subtle pressure relations with a chair, bed, object, wall, or clothes. A radical movement freedom of the body as proprioceptive field can be enacted, unleashing the more-than-human amoeba in us.

Disalignments assume that the fundamental state of a body is fluctuation. It is all about letting fluctuations unfold in variation while resisting alignments. This is a

very energizing practice, an energetics of fluctuation. It is alignments that are tiresome, exhausting, enforcing entropic dissipation.

The Exercises

Disalignments typically take the form of group improvisation exercises lasting several hours, that may be grouped into week-long workshops or, even better, performed daily, deepening and changing the focus every time.

(1) Fluctuating. Listening into fluctuations and letting them expand — Pressure, tension, caress, breathing, twisting.

In a workshop situation the exercises typically start with a listening into the fluctuations going on in the body and letting them unfold. It can start from presumed stillness, realizing the endless fluctuations that are going on and gradually developing an active but noncontrolled exploration. This can involve an initial collective flowing through the room, with a sudden radical deceleration to almost stillness, but not quite, walking at approximately 1 cm or inch per second, and inviting the participants to listen into the endless variations of sensations: the pressure of the feet on the ground, the subtle caress of clothes changing as you move, the muscular tensions in the legs and spreading throughout the body, the breathing which alters the posture and is felt within, inducing a new torsion of the field, gradually adding layers of multisensory integration, then going back to stillness and fluctuation, and over again to focusing on feet pressure, caress of clothes, muscular tensions, breathing, torsions, and again: pressure, caress, tension, breathing, torsion; and again: pressure, caress, tension, breathing, torsion… letting the process unfold in unexpected group dynamics.

These five elements (foot pressure, caress of clothes, tensions, breathing, and torsions) are a good starting point for an exercise, a "warmup" that can unfold in endless ways. Radical variations unfold as bodies diffract the rhythms and qualities they feel around, creating a swarming field that is not concerned with mimicking or following others. The challenge resides in letting the field unfold without controlling, cosensing with the floor, furniture, walls, clothes, muscles, tendons, and joints in the changing integration of the interoceptive, exteroceptive, and proprioceptive.

If you want to explore the varieties of qualities of pressure of the feet on the ground you will move the entire body, continually changing all the internal relations between joints. The more varied the movement, the richer the proprioceptive and crossmodal sensory landscape you create. It is a radically active and intra-active listening and exploration. You unfold a landscape that wasn't there before. You are not an external observer, rather *you are this landscape,* and its openness is your vitality and freedom of movement.

Exploring one's proprioception means moving, and in the process finding unprecedented microtorsions. Just by twisting the vertical axis of the body, the senses can reorganize without being subjected to fixed vision. One can focus on the micropolyphony of densities, the blurry counterpoints of sensations, their nebulous rhythms and dynamics, the changing densities, as tensions and torsions spread throughout the body as proprioceptive matrix, and how they reach out like a flock, with an open intentional arc. The body no longer follows a trajectory, it is above all a fluctuating flocking field, in itself but always reaching out, expanding, spacing, sensing itself through its tissue deformations as it relates to others, propriocepting, allocepting.

Deciding to take a step or go somewhere usually feels rather disruptive, almost violent. One can move across space but always fluctuating, changing all the internal relations of movement between joints like an amoeba.

(2) Swarming. The five swarm–bodies.

One can focus at times on different zones, scales, and layers of movement, zooming metafractally in and out, feeling relations across fields, scales, and modes, provisionally across five proprioceptive swarming levels.[53]

— **swarming level 1**: posture fluctuation — micropolyphony level 1 — molecular–cellular–bacterial, nonconscious and unconscious micromovements when pretending to be still.
  — molecular, bacterial, viral, cellular, interoceptive, gastrointestinal, gases, sensation of having a cold (felt bacterial or viral swarms), overall effects of molecular movements in cells, metabolic, hormonal fluctuations, etc.;
  — involuntary — in-conscious — breathing, heartbeat, arousal, eye movement, nose, mouth and throat, saliva, glands, etc.;
  — non-voluntary — non-conscious — reflex movements, muscular releases, microimbalances, and reflex readjustments, etc. (including during gait or sleep).
— **swarming level 2**: amoeba — tensional or torsional field — micropolyphony level 2 — barely conscious unfolding of internal tensions–torsions, without yet tending outward in microaccelerations — the proprioceptive field feeling itself and unfolding mostly endoreferentially as consistency field — stretching in bed, exploring ever-changing tensional zones across the 360 joints, where there are continuous changes between all the joints in the body, where limbs never assume fixed positions in relation to one another.
— **swarming level 3**: (proto)intentionalities and (micro)accelerations — counterpoint and polyphony (like a baroque fugue) not yet involving exteroceptive orientations, still as vectors of proprioceptive tension–torsion acquiring dynamics and rhythms from inside, multiple simultaneous counterpoints of small microaccelerations space out (create a spacing) more or less, from which vectors of displacement may emerge as dominant melody — (emergent extension, from within the body or being guided exteroceptively).
— **swarming level 4**: relation to all sorts of phenomena around you — exteroceptive orientations — in a continuum from gradually spacing outward to being strictly exoreferential (from mechanical displacement to quasi-immobile clicking), from larger dominant vectors of displacement to narrowing in alignments with exoreferential affordances that impose themselves — relation to an environment — flocking in a larger field — flocking with the others in a room or outdoors — in our daily ecosystems and affordances — exploring degrees of freedom with affordances from local relations to other bodies and architectures to planetary-scale digital affordances — the larger the field the narrower and more

53 Note the similarities and differences between these five levels and the "penta-musculature" concept proposed by the *butō* company Tanteatro from Brazil, which involves surface, internal, surrounding, psychic, and energetic levels (de Baiocchi and Pannek, 2011), while for me these are all aspects of the expanded proprioceptive matrix.

externalized (interface choreographies, clicking on screens, driving a motor vehicle, etc.). This includes:
  — *external movement from the surroundings* affecting the body by direct physical impact (proprioceptive–tactile) or through vision or hearing or smell, affecting all prior levels: posture fluctuation, tensions–torsions, microaccelerations and imbalances, orientations, contacts, rhythms–speeds, and in degrees of active or passive adaptation, reaction, action or in-between, always finding a new way to recompose;
  — *embeddedness in multiple larger flocks* of extremely diverse kinds that *impinge* upon you, or *orient you,* connecting to the previous when movement becomes exoreferentially guided as in mechanical machines and interface choreographies — but attention has to be paid to degrees of freedom and agency (emergence and fluctuation) in each case;
  — at this level, *"displacement" appears for the first time,* but understood as relations to the surroundings, as your field flocks around, fielding forth — displacement as effect of amoeboid movement and changes between joints.
— **swarming level 5**: complex fluctuation states, qualities, and intensities emerging in the entanglement of all the above and with memories and knowledges:
  — thoughts, ideas, memory, and imagination (neural movements–states emerging from movement, recomposing, and feeding back into it), echoes of emotions, memories, or known rhythms vaguely appearing;
  — emotions, affects, or other intensive states (particular intensive multimodal–neural–chemical bodily states emerging from movement, recomposing, and feeding back into it);
  — creative processes unfolding in or through motion as you move, singularities;
  — complex qualities and rhythms, etc.;
  — and the ongoing recomposition of these in collective intra-actions.

One can at first focus on some of the levels and later see how dynamics metaduct across scales and modes.

(3) Giving up control.

The difficulty at the beginning is not to take conscious decisions of movement, just letting the microfluctuations of posture evolve. Assuming that the body is never still, it is about letting fluctuations evolve rather than ignore them. The richer the movements the richer the field.

This process can gradually acquire more intense dynamics focusing on speed and spacing, how much the body expands and contracts, first focusing on its internal field then reaching out to the room, to objects, to others, like a flock. We use the residue of rational awareness just to recognize the known territories and let the body deviate from them in very subtle ways, a posture, a gesture, slowing down, tilting, suspending in the middle, letting a new torsion happen. Exploring proprioception invites microrotations, turns, torsions, and holding on to the pleasurable weirdness ("so weird but so good!" a participant said).

The body unfolds as a metafractal torsional field, of torsions within torsions, un- or infolding nonlinearly from quantum fluctuations and back, across scales and modes. One feels the body as tensional field, like a string figure. Imagine a lyre with endless twisting chords.

Reflexive consciousness (small reason) can always only capture an infinitesimal part of everything that happens in the body (great reason). It is not about becoming conscious or mindful! Rather it's about opening experience up to a blurrier, bodyful, overfull, irreducible field. *Not mindfulness: bodyfulness! Overfullness of proprioceptive experience.* One can never become consciously, reflexively aware of everything going on in a proprioceptive field. This would require narrowing the field, as rationalism has done over millennia. The motto is: don't block your proprioceptions! Body Intelligence as swarming fluctuating field is far more complex and it is irreducible to causalities. The body becomes a self-organizing fluctuation of densities. Each modality a dynamics, a mode of thinking, an intelligence: BI.

(4) Micropolyphonies, microrhythms, temporalizations.

Some sessions can focus entirely on counterpoint and temporization: the micropolyphony of sensations, the multiplicity of blurry counterpoints of tensions–torsions going on and their complex rhythmic spans, the ranges of dynamics and their spacings, from almost stillness to speed of light. The levels of counterpoint in movement go from blurry micropolyphony through a fuge-like polyphony of a few recognizable but changing voices, to a dominant melody of displacement vectors, which however nonintentionally arise from the larger flock or chorus.

The body is always already a chorus. Fractal torsions within torsions, endless kinetic chains simultaneously move across one another, changing and unfolding, sustained as tensional zones in fluctuations, neither passive nor active and both.

(5) Spacing.

Other sessions can focus on spacing: like birds in a flock elastically contract and expand the entire field, which sometimes is hovering around itself, sometimes reaching out to something. One can explore levels and modes of spacing, of expansion–contraction, and its rhythms, the degrees of relation or not to a surrounding (spacing of your joint-field, in relation to the room or as a group) opening up transmodal dynamics.

This kind of flocking is precisely the opposite to what is proposed in many dance improvisations where one imitates the cues coming from another. Here instead one infuses a continual variation of rhythms, orientations, and contacts across wildly varying dynamics. You may feel through your peripheral awareness a rhythmic accent happening near you and it transducts across you into a new variation. Someone's breathing becomes a new torsion across you. In this process, extremely intense field dynamics may take over the room. They will unfold their own spacetime, leaving a memory of plastic rhythms, a memory for future variations, memory as capacity to vary.

There is no classroom anymore as you propriocept space. Inside the same classroom there are endless spaces one can create as you move along its textures and lines, sometimes very close, touching, feeling the consistency in your tissues as you explore the space, others spacing out like a flock and feeling the room as a wild torsion that launches a new dynamics. You embody the room by activating proprioception so that instead of fixed vision you feel the classroom lines moving as they relate to shifting senses of tilting, torsion, and tension. You see proprioceptively! You propriocept!

You embody your surroundings entangled with an emergent field, you let it vibrate across you by incorporating it in your proprioception, by disaligning from the fixed point of vision. This kind of exercise can be a means for unleashing radical movement freedom while being prisoners, including in the confinement period of the COVID-19 pandemic, but also in regular prisons.

(6) Voicing–sounding. The (collective) voice emerges from movement.

Sessions can focus on vocal improvisations as part of the larger proprioceptive flocking, so that each breathing becomes sonorous. The voice emerges from movement and modifies it in return, humming, singing, screaming, speaking, mumbling, grumbling, producing unprecedented sounds which add a new twist to the field of movement, a new energetics and dynamics, a greater rhythmic complexity, including other sounds of the body, generated in contact with itself and its surroundings, percussive sounds or rubbing. This can involve a complex self-touching as the body becomes a percussive and rubbing instrument of textures and rhythms. The body then feels itself anew, as if it were another body.

The sound dynamics of each body can spread across the others in a differential way, as a quality or intensity that triggers a change in the group, with an immense power for choral improvisation dynamics. It can also be explored in contact with other bodies, where humming becomes a collective vibration across bodies, with an incredible healing power, as energies are loosened in this indeterminable contact.

(7) *N*-figurations.

One can focus entire sessions on particular configurations (or *n*-figurations), fluctuating around a posture with minimalist variations, a torsion as it unfolds back and forth hovering around a fluctuating field of variations, exploring myriads of fluctuations of the tensional field around that posture, or focusing maybe on a zone, maybe a part of the face or the hand and zooming into the endless variations of that part, or the movement of internal organs, saliva, the glands, or bringing in the multisensory integration of vision, hearing, smell, taste, and touch, temperature, humidity, equilibrium, activation of nerves through the skin or pressure, continuous deformations of the proprioceptive field. One can explore how the minutest matter fluctuations and deformations somewhere can unleash a transformation across your entire swarming field.

(8) Multisensory integration.

Sessions can focus on the changing modes of multisensory integration and the impossibility to fully differentiate sensing modalities, entangled as they are in every experience, but always differently: how do alliances of muscular tension, effort, touch, temperature, hearing, smell, taste, interoception, balance, etc., ally in a particular movement, and what memories are triggered and recomposed in this variation? What are the microaffects, the blurry and changing qualities of these compositions?

(9) Concrete vagueness (of proprioception and its rhythms)

Sessions can be devoted just to exploring the caress of clothes and their pressures, their invitation to explore endless torsions; or the endlessly varied pressures of the feet on the ground and their indistinguishability from muscular tensions in the lower leg spreading throughout the entire body; or just trying to focus on muscular sensations, their modes of elastic sensation, densities, rhythms, fluctuations, and realising the impossibility to localize them, blurry, shifting, vague, subtle, and ever-changing as they are… and yet they provide the most grabby sense of self, the most consistent one!

(10) Disalignments with objects.

Some sessions can focus entirely on disaligning from or with an object, for instance a chair, sofa, or bed, undoing the split from an external and fixed objectuality and rediscovering it through proprioception as an emergent and endless landscape, in a radical becoming-child. One can start by exploring the endless possible variations of pressure, by allowing the entire body to shift internal positions of all the joints in always new ways, feeling the chair and the body anew with every new microtorsion.

One can reinvent the contact with the ground, walls, or objects, coupling to the environment and other bodies in uncommon ways, deepening into the alien sensation, becoming with the objects, undoing their objectuality as they become part of the swarm of proprioceptions, where also vision becomes tactile, integrated in a much more plastic matrix.

These exercises can be done in relation to a camera. This pervasive fixed point of vision that is always around us. In preparing telematic performances with cameras, we do exercises first focusing on proprioception and the entire space of the room, then focusing on the relation to the pyramid of the camera's angle, exploring its limits and the relations of distance in five to seven levels of depth, feeling the tension between internal proprioceptive focus and the reference of the fixed external eye and the focus on the screen image.

(11) Co-senging. Alien couplings.

Other sessions may focus entirely on the relation to other moving bodies, exploring alien modes of cosensing. First it can be without touching. It is the dynamic elastic reference to the other mobile bodies that create the space of movement. Like birds in a flock, one feels the relations of distance, orientations, and speeds changing, and a flocking body–space is created. Then one can explore almost touching but not quite. Then the exploration is one of contact through touch, pressure, proprioception, and multisensory integration, while allowing modes of contact that are not codified and where reciprocal motion creates the sensation, avoiding the imposition of any movement on the other, letting the middle, the connecting sensation guide an open-ended exploration.

Contact is explored on different levels, from superficial, to deep, and letting it evolve in alien modes of cosensing. We explore all the different levels, from distance, through proximity, near-contact feeling the energetic aura or hair, superficial contact, deep contact, to ultra-deep contact almost to the bone. And humming in contact, feeling the vocal vibration and breathing of others spread across you.

It is important to gain confidence and let oneself feel the pressures of bodies, the fluctuations, the textures, the multisensory integration in constant change. Each

body changes its own internal relations, affording always new modes of possible alien contact or proximity with others.

One needs to disalign from typical explorations with the palm of the hand, associated to a controlling subject that keeps its internal relations intact. Instead, it is about recomposing our entire proprioceptive field in the relation to something or someone. Imagine you are a protein whose domains radically change, as affordances for other proteins to create compositions. The composition unfolds gradually in a process of cosensing with endless possible configurations or *n*-figurations, indeterminate and in variation. You rediscover yourself anew if you open up to new *n*-figurations, in feeling yourself with others. This is crucial for the question how violence always entails a lack of cosensing, the imposition of movement, the lack of recognition that movement can even emerge or be diverse from what a set of alignments has told us.

One can disalign from the rigid lines of proxemics, spatiality, distance, and trajectory that allow us to categorize others. One can let others vibrate and become part of one's proprioception in emergent modes of cosensing by disaligning from the fixed point of vision! Like amoebas recomposing together in unprecedented torsions, you feel yourself in the same act of feeling the other, in unprecedented ways, albeit in a cosensing movement that is neither passive nor active, a fluctuating, emergent middle. Cosensing is the most radical undoing of violence as imposed movement.

Most of what we call touch is proprioceptive, deep deformations in the tissues. Propriocept the other as you reinvent yourself. Endless rhythms can emerge in the process. Plastic rhythm is in the undefined momentums of fluctuation, as bodies feel the simultaneous, endless multiplicity of torsional–tensional zones. The affordances for contact between bodies, as these recompose their proprioceptive field reciprocally, are endless. This microcontact improvisation plays with a nonviolent undoing of the boundary of the self, where movement is coemergent and cosensing, where you no longer know who or what moves, *it moves in between, the metabody emerging, constantly being born, without end.*

Think of how movement potentials in all life forms co-evolve with their ecosystems over millions of years, along the Earth's astonishing fluctuations. Technohuman action has altered the openness of this process by imposing radical alignments on the planet (including of course humans themselves). Can we learn from these epochal errors in creating an unprecedented openness through more plastic affordances and movements? This is the purpose of a Dionysian, choral politics of life as variation!

(12) Ontohacking space. Disaligning the city.

Sometimes improvisations are taken out of the classroom and into a park or street. Some of the most powerful experiences I have ever had are when we go as a group outside into a street, just walking at about one centimeter per second, perhaps disaligning in other subtle ways along the walking. This enacts a radical ontological transformation of space. The street reveals itself as made of quick alignments. The deceleration allows you to feel your muscular fluctuations integrating with a new perception of the space, which is a new potential to move, a new spacing, a new movement freedom. A completely different, emergent spacing emerges when a group of bodies (a chorus) moves in a disaligned manner. This is a nonconfrontational but radical opening, all the more radical because of its irreducible subtlety, its irreducible escape from reduction itself.

People around stop and look in wonder, maybe join. Something's happening, one cannot know exactly what. The matrix of alignments is opening up to an infinitely wider field that was previously invisible, as perceptions were oriented with narrowing alignments. Swarming proprioception has taken over fixed vision. After this experience you will never feel *that* street in the same way. A field has opened up, and a deep force of ontohacking, and a deep new memory and potential.

(13) Ongoing and ubiquitous disalignment

Improvisations can be taken into daily situations and spaces. One can disalign, almost imperceptively, in the metro, at work, at home, during sex, in any situation, along any alignments. One can take this sensitivity into daily experience, infusing relational fields with indeterminacy. Any situation can be subject to these subtle interventions. Only digital interfaces demanding discrete gestures (or superhighways and mechanical machines) will perhaps not allow you to disalign this way, but you can still induce levels of fluctuation in the body while relating to those narrowing interfaces.

In daily life one can feel how every activity one does unfolds a different field, a self-organizing dynamics of tensions and torsions: playing a musical instrument, singing, dancing, writing, talking, walking, cooking, typing, sexing. Every configuration has its quality, intensity, openness (or closure), each of them a metabody leaving memories. Every room in the house is a swarming field that you can re-enliven if it has frozen too much, and similarly with every furniture item and object in the house or at work.

(14) Disaligning normative behaviors, wounds, or relationships.

One can disalign from normative alignments of any kind, of gender, ability, etc. Clearly, in disaligning this way the standards of abledness radically shift or disappear, while bodies mobilize an emergent and indeterminate behavioral spectrum that defies gender or other categorizations.

One can also focus on disaligning particular problematic memories, traumas, illnesses, relation with one's body, scars, or wounds of different kinds, and learn to develop a new sense of internal freedom of movement within and across those alignments. Or one can try to re-enliven a relationship with someone that had become too aligned. One can also reinvent one's relation to digital technology or to mechanical machines. One can do *devisualization exercises* disaligning radically from the smartphone and camera, disaligning from selfie culture of contagious gestures. One can reinvent the way one perceives a person, or a sex, or yourself.

(15) Cultivating a daily improvisational practice.

In order to develop this capacity, the practice needs to become a sustained improvisation. It is important to find everyday a spacetime of focus on improvisation, just feeling the fluctuations and letting them unfold, every day into new dynamics. This is the clue for elaborating a consistent *technē*, a plastic memory that one can take on to other situations. Just find for yourself a spacetime in which to fluctuate every day, somewhere where you can focus inward and feel the body, letting it move in its smallest variations.

Differential echoes of rhythms, sensations, or torsions will return, as a plastic embodied knowledge of variation itself. Always only minimal sustained variation. And this can become an actual mnemotechnics, a kinaesthetic embodied knowledge where microdancing a place can leave an indelible memory in the body, while knowledge becomes an issue, not of stopping and splitting but of moving with the flows, as capacity to vary.

If you do it outdoors, even in the rain, you will also become attuned to the weather of the day, and to your own fluctuations, energizing your thoughts and feeling of the day. One can propriocept in the park, reinventing the relation to the grass and the trees and the sounds, the caress of the wind and the sun, the temperature and humidity, the textures. When during the workshops we go out into parks after spending time in the classroom, the outdoors environments appear surprisingly saturated with sensations.

...

Every session unfolds differently, exploring diverse flock dynamics, never imitating but letting a differential contagion of qualities spread across bodies, through peripheral vision and sounds, or by contact. Sometimes the session starts with a quick flow through the space exploring the changing distances, orientations, and speeds with the others, creating a field. Then maybe slowing down and focusing inward on the fluctuations of proprioception, the stretches and spirals, the muscular tensions, the breathing, the caress of clothes, the pressures of feet on the ground. Then zooming even deeper in on torsions within torsions, mobilizing all joints, together or one after another, holding on to particular tensional configurations and sensing its fluctuations, zooming into microscopic zones and then letting them evolve, avoiding homogeneity, letting microrhythms unfold, and letting dynamics vary, as energy accumulates in slowness, almost stillness, unleashing explosions where the body–amoeba runs through space, but never taking steps. The steps are effects of the amoeba changing internal relations.

One can spend sessions exploring the different spacings of each individual body, expanding dynamically or contracting, and the rhythms–temporalities emerging, and then in their relation to all other bodies, attuning through changes of quality that spread differentially thought the group, then maybe focusing on how the flock spaces out and connects to the entire space (room, street, or park), exploring it from the changing proprioception and multisensory integration.

You no longer see from afar by categorizing, you perceive the world through your proprioception, in variation.

Then maybe focusing on how the breathing becomes more and more dynamic, varying, and sonorous, so that an ever-changing voice emerges from it, affecting all other aspects of the individual movements and the group dynamics, mobilizing all elements together where every tiny fluctuation in movement–sound of a body can spread differentially across the group, changing its dynamics. The movement modulates the voice and vice versa. Other body sounds, rubbing against the floor, clothes, objects, or with itself or others become part of the sounding body. Language itself can be reincorporated into the proprioceptive matrix from which it arises and in which it resonates.

Then maybe focusing on approaching each other and exploring degrees of proximity, then almost contact, then contact on different levels, from superficial to deep,

and letting it evolve in alien modes of cosensing. And humming in contact. Till bodies again disperse.

Then maybe taking this to the street or park, running wild from one place to another in changing flock dynamics, then stopping somewhere and exploring the space proprioceptively in superslowness.

The nomadic chorus in the street can take on very different dynamics, like a flock, sometimes stopping to microsensorially explore textures and disalignments in relation to a space, or walking at one centimeter or inch per second, suddenly running disaligned to another place, coupling with things, trees, grass, street furniture, going in and out of buildings, stopping at doorways, and with the use of the voice creating strange and changing swarms of sound.

Then, changing the flock dynamics through differential contagion of movement qualities into a quickly rushing–running group toward some other place, but never taking simple steps: steps are the effect of the whole amoeba of the body shifting its internal relations, and direction emerges from it, fluctuating all along, rather than being predefined: a true becoming-flock of the chorus. Especially when this practice blends with wandering in the fields, foraging in a dispersed manner, developing modes of dwelling, of exploring noninvasively the affordances of the ecosystems.

Finally taking the process to a durational living outdoors, foraging and dwelling.

Entire workshops can happen outdoors, eventually leading to a complete transformation of life, a becoming-flock, unfolding a Body Intelligence that is about flowing with the world, overcoming the disastrous inflection of rationalising cuts, healing the split.

Examples of sessions:

— fluid flock focusing on relations between bodies (rhythms or speeds, distance or contact, changes in orientations) — slowing down with focus on proprioception and inside each body exploring configuration, zooming into joints, breathing, and sounding — then again quick — till dissipation;
— fluid flock relating to the room and objects, hooking onto chairs, walls, or floor, exploring every corner — then focusing on voice — then coming together playing with proximity and touch, adding voice in contact — till dissipation; always exploring how a body is its metakinesphere, its twisting field of movement that can get entangled with other bodies' fields;
— similar as above but exploring the changes of dynamics in very slow shifts, slowing down collectively, step by step, over long periods, always varying internally and relationally, mobilizing the field, then gradually accelerating as well;
— similar as above but involving at some point the relation to a camera;
— similar as above but leaving the room at some point into a street or park, changing flock dynamics from superquick to superslow though differential contagion of qualities;
— similar as above but durational and outdoors, foraging and dwelling...

In the exercises (and more generally in all the projects mentioned here), there is never prerecorded music to dance to. It is created in the moment (either through the voice or other body movements or via life-interaction systems), improvised, or one moves without music: the primary music is that of the rhythms of the fluctuations of the body and its muscular tensions and twists.

...

Every morning I improvise movement, letting the body's proprioception fluctuate without control, like a swarm, unleashing endless torsions and rhythmic variations that evolve over time. This connects me to the weather, the day, and the environment, sets ideas in motion, disaligns emotional troubles, and cures physical discomforts.

It is my primordial life *technē*.

…

Disalignment is the fundamental ontohacking technology, as the improvisation *technē* that cultivates variation, plasticity, sensitivity, openness in consistency and which any body can activate anywhere, anytime.

Movement freedom is usually thought as the freedom to move across space following the decisional trajectory of a subject. But there is a deeper type of freedom: to reconfigure our proprioceptive field beyond any learnt habits. As we learn normative behaviors and develop gestural, postural, and perceptual habits, we reduce the proprioceptive field to a narrow set of possibilities. Opening them up is not about collapsing the previously learnt, but about practising the ongoing variation, which is also a sensitivity to compose with others. Practising variation develops a plastic memory, a resilience, and a sensitivity. It is a *technē* of plasticity itself.

Kinetic knowledge is the core mode of healing: by disaligning from the toxic alignments of destructive sedentarism and by mobilizing endorphines, hormones, epigenetics, metabolism, neuroplasticity, affectivity, aliveness, relationality, and creativity.

…

In the next sections, we will see variations of this proposal in relation to specific technologies, which are both expanded proprioceptions and deep disalignments.

> *Architects* […] *have forgotten movement.* […] *W]ith some exceptions they only know the straight line.* […] *T]hey enclose our gaze in these sinister prisons of lines which instead of playing with each other cross in the only angle that will only allow them to be* […] *a painful shock: the straight angle.* […] *The grid encloses thinking in its mold.* […] *E]xpression of the victory of the most banal geometric spirit,* […] *a] crime against the biological brain, its flexibility, its desire for movement, for possibilities to play with.*
>
> — Alain Berthoz (1997, 278, my translation)

6.6.2 Flexinamics: A Non-Cartesian Space Ontology

How to mobilize a non-Cartesian, nonextensive physical space that uses "proprioception as the general plane of cross-referencing," elaborating "technologies of emergent experience," letting them become "infrastructural to architectural engineering" (Massumi 2002, 191–92). How to mobilize a space that does not preexist us but that emerges with and from the movements composing a field? The idea of a fixed space is the effect of aligning proprioceptions to millennia-old geometric environments imposing orientations. We need to regain a more plastic sense of space, a spacing.[54]

54 Kas Oosterhuis is a pioneer in promoting ideas of interactive physical architecture. His Hyperbody group in Delft was involved in the Metabody project. Hyperbody is itself a concept for time-based

Flexinamics is a technique for building non-Cartesian physical spaces developed by Reverso in the Metabody project. Flexinamics is based on flexible and dynamic modules, a concept of *wearable architecture* that blurs the boundaries of body and environment, based on flexibility of all components and the constant physical dynamism and mutation of the modules.

Flexinamics is an architectural technique with endless possibilities, for a modal society to come. It is a technique for undoing millennia of rigid architectures that have increasingly killed movement, covering the Earth with rectangular concrete. Flexinamics tries to recover a sense of dynamic space and of embodied entanglement, instead of the rigid architectures that separate. The latter are considered as a counterevolutionary inflection that blocks the flows of life and matter. We need new kinds of dynamic architectures that renew those flows. But ultimately they are a provisional means for regaining plasticity and taking it further… till we no longer need architectures made of fabric. It is an exercise in radical fashion and design… an homage to Occupy or Indignados, to refugees, nomads, Aboriginals… and especially to nonhumans, learning from organic, animal architectures (nests, spiderwebs, burrows…), and to plant and fungal architectures… for indigenous metahuman communities to come.

Flexinamics modules (also called metakinespheres, metatopes, or metastructures) are flexible, elastic, and translucent body extensions that constitute a space emerging from movement of which the intra-actor is never fully in control, a performative and metaformative architecture. Flexinamics is about expanding proprioception, mobilizing the proprioceptive swarm, while disaligning from perspectival perceptual ratios.

The body's limbs are attached in various ways to the modules, whose flexibility in turn exercises a resistance, moving by itself in relation to the body's movements. The attachment can be sleeves, but mostly they are bracelets made of elastics and velcros, connected to the structure by a band. These bracelets bring about new resonances, as occasionally participants have refused to get attached because, being Black and having had enslaved ancestors, the bracelet attachments reminded them of the bracelets binding enslaved people. This is not exempt of resonances with the fact that we inhabit millennia-old slave societies where binding the body's movement has been core to domination. Here the body becomes paradoxically un/bound by unfolding other scales and kinds of motion, relation, and variation within the bounds of the metastructure.

The body being inside and connected is not moving according to the perspectival point of a Cartesian external observer, and the space is never fully formed or actual-

swarming intelligent buildings, in continuous dialogue with its inhabitants and surroundings (Oosterhuis 2003, 67), promoting a wider bandwidth of emotional states than traditional architecture (70). It's a swarm architecture for an open source in real time (5), with swarm architecture as a true transarchitecture (6). However, Hyperbody takes an approach to swarms as points, via a parametric design that leaves the experiential in a secondary place. Parisi (2013, 25) criticizes them precisely for not considering the autonomy of computation and involving experience to bring in novelty. I believe that both Parisi and Hyperbody take a perspectival standpoint.

My approach is much simpler. By disaligning perception from perspective, you afford possibilities for intra-action that will hardly ever be there if you preserve your status of perspectival subject, no matter how much emergent computation you bring into the picture. There also lies the distinction between smart control environments or indeterminate metatopias. Rather than emotional architectures, I propose an anarchitecture of illegible affects or, as Parisi and Goodman (2005) say, a *rhythmic anarchitecture* but leaving out Whitehead's *extensive continuum.*

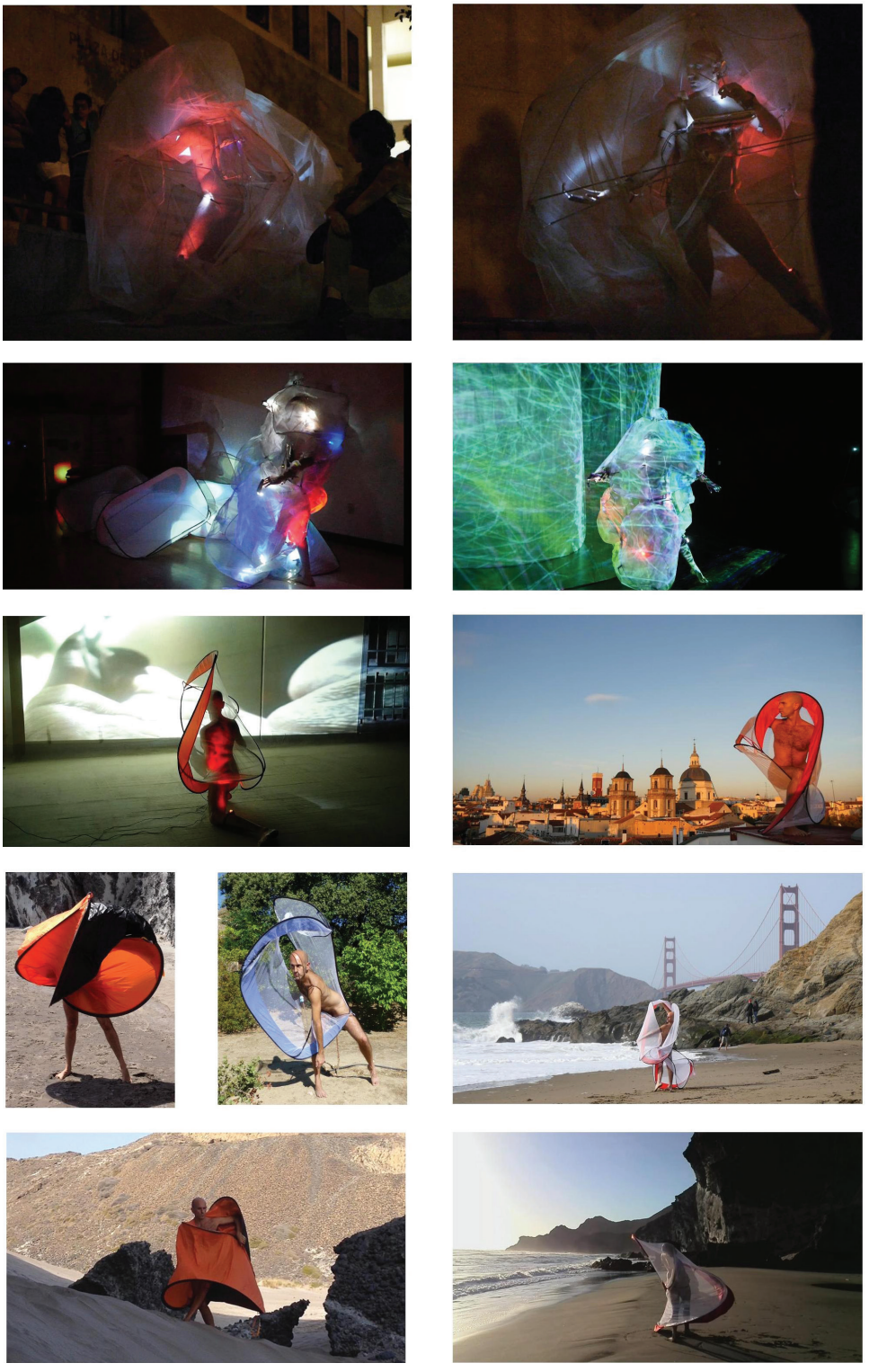


Fig. 81. Metakinesphere, metadress, and flexinamics prototypes, 2014–2015.

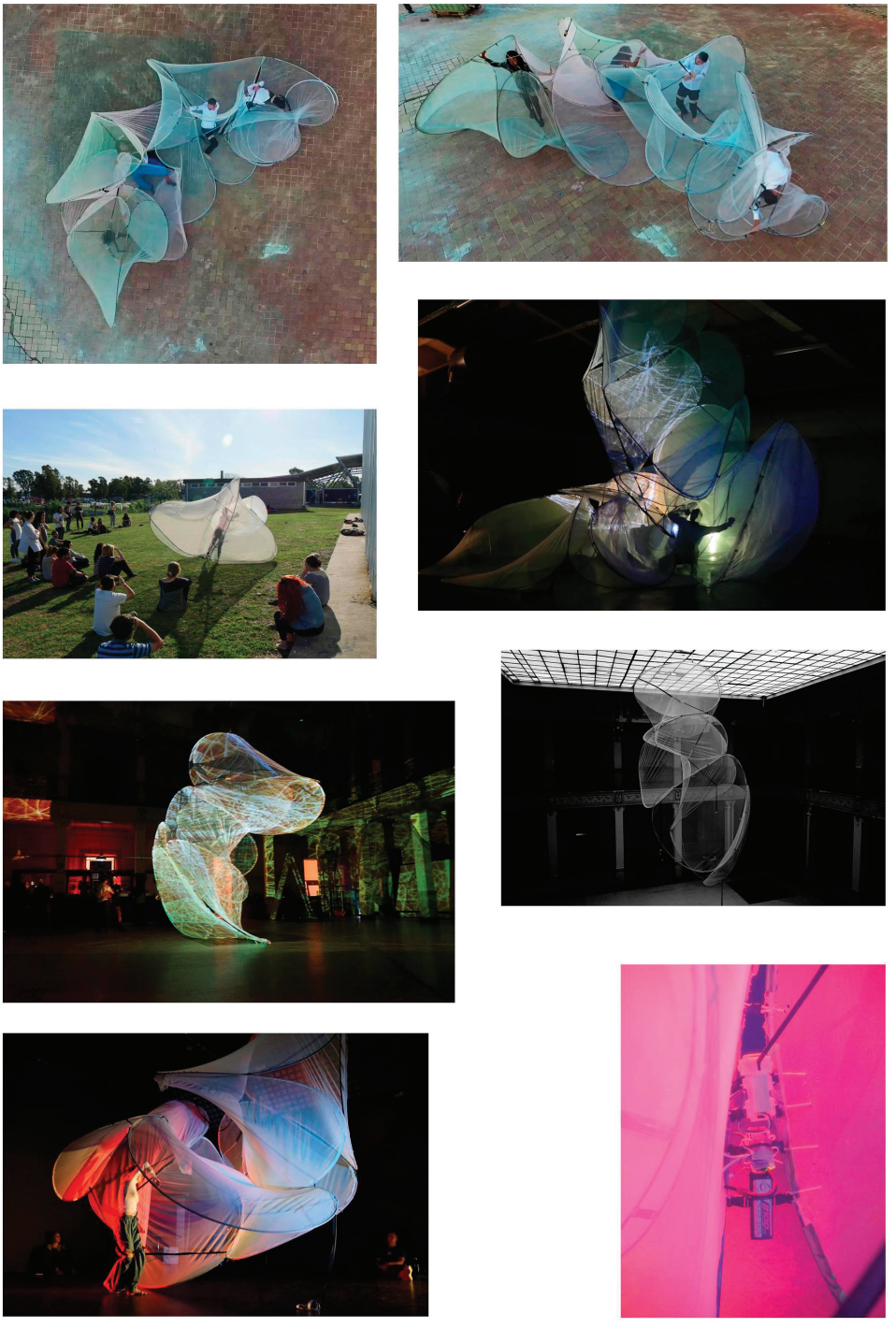


Fig. 82. Flexinamic modules. The drone views on top are shots from a collaboration for the film *Wonders Wander* (2017) by ShuLea Cheang in Madrid. Further documentation of flexinamics workshops in Buenos Aires (2016); Amsterdam (2016); Milan (2017); Madrid (2017); and Toulouse (2019).

ised in an extension. The intra-actor can't really navigate it. Metatopes defy the very notion of displacement. Rather, they focus on the subtle expanded proprioceptions of being pulled and suspended by the structure, of being moved by it as well as moving it. The only rule is not to enforce on it a movement pattern, not to control it. It is about disaligning from control and letting the body move with the structure. It is about expanding the listening into proprioception that was previously proposed in the disalignment movement exercises, now with a specific focus on the relation to the flexinamic modules.

The building of flexinamic modules or metakinespheres is so far mostly based on hacking techniques of industrial pop-up structures, so that previously static and functional objects become dynamic body extensions, modularly connecting to other structures, to bodies, or to the surrounding environment, as well as hosting embedded systems of sensors and motors for autonomous movements. Unlike in tensegrity or tensile structures, flexinamic modules have no single rigid component. They are built of flexible frames and textiles, composing a consistent body through the lightness, flexibility, elasticity, and resistance of the materials. Flexinamics is antimechanical, based on flexible, elastic, tensional materials. Similar to cells, they enact a foamy amorphous space.

Different kinds of materials generate very different kinds of metakinespheres. Industrial glass fibre bars like the ones made for popup tents, and tulle or net are ideal materials in terms of their lightness, translucent nature, and resistance, but perhaps not so much in terms of their ecological fabrication process. Bamboo canes are also a possibility.

Since we started developing them in 2014, we have only started to figure out some basics of what could become an infinitely complex architectural *technē*. The modules (metakinespheres) can be of very different sizes and patterns, from larger inhabitable modules to small body extensions, can connect to one another constituting larger architectures or be a small wearable, and can add onto one another in multiple layers.

Flexinamic modules are a *wearable architecture,* in between the scale of buildings and the scale of dresses. They can be suspended, attached, or detached from buildings and bodies in endlessly reconfigurable compositions and assemblages of modules. They are elastic in-betweens connecting bodies and environments through proprioception, undoing perspectival splits like an architectural *interstitium* (the viscoelastic metaorgan, larger than the skin that has been recently "discovered" which connects our tissues giving internal mobility and consistency to the body).

As dynamic body extensions they are *antiobjects.* Of course they can be looked at from outside, but the core aspect of the experience they propose is from the inside, where you lose (or loosen) a sense of shape, and the focus is on the elastic kinaesthetic sensations (or expanded proprioception) with a blurry vision, a sense of suspension, a blurring of the notions of inside-out, up-down, right-left (doing away with Cartesian coordinates), and a suspension of the controlling subject. You move with the structure, the structure moves with you, you move it, it moves you, the metabody (you and the structure) moves just like your limbs move with each other.

The term *metakinesphere* points to the impossibility of reducing bodily motion to a geometry, challenging Rudolf Laban's (1971) account of the kinesphere. There can be no geometric reduction of a body's movement space, as the body itself is not a limited entity. The metakinesphere is a body extension that further transforms

the body's kinesphere, not only by expanding the body but by disaligning its movements. Away with spheres and Parmenidean chimeras!

The metakinespheres are also a kind of ironic subversion of Leonardo's Vitruvian man, where a white male figure in fixed vertical position draws the circular and square geometry of its movement. Metakinespheres are about undoing that very figure that has been the ground of humanism due to its square proportion and circular movement, an embodied and kinetic rationality. Metakinespheres point to a metahuman that is always already expanded and in becoming, relational, and incipient, in excess of any form, sustaining indeterminacy.

The modular compossibility of the metatopes can generate endlessly varied assemblages of bodies (several human bodies connected to several interconnected structures and to buildings or other bodies), whereby the focus is, again, not on the shape seen from outside but on the proprioceptive relations felt from inside, the tensions, torsions, and elasticities, composing a swarm of expanded proprioceptions.

The unpredictability of the structure's movement, following unpredictable fluctuations of its tensional field, make choreography impossible or undesirable. You have to improvise and move with it, feel its tensional invitations, always many at the same time, always a flock. Over time of improvisatory practice, you develop a subtle proprioceptive listening and plasticity. The clue is never trying to repeat something. That is also the beauty of improvisation. Whatever wants to come back will do so, but transformed in the plastic memory in the body.

Flexinamic modules allow the intervention into any given space, outdoors or indoors, while generating relational ecologies in their own right. Moving outdoors in daylight, the translucent textile modulates the sunlight in multiple layers, it blurs the surrounding when you are inside, though it's still visible, thus it allows to generate a disaligned relation to the environment. You are in an intimate enclosure but connected to the world, an Open Whole.

In the darkness, the translucent skin allows the projection of light or digital meshes of amorphous architectures through them, whereby the projection becomes spatialized in a dynamic and indeterminate way. We move away from the flat perspectival screen projection in many ways at the same time: it is not flat, not rectangular, not fixed, the surface is mobile and irregular, it is translucent, it has many layers, it is all around you, and you have a tactile–proprioceptive relation of changing proximity with it.

Flexinamics mobilize the proprioceptive swarms in a dance of lightness against the heaviness of gravitational centers of capture. Alien bride, drag, or cocoon, bodymasks for becoming illegible and unfolding behavioral indeterminacy, the translucent sculptures enact a *khōra*, an indeterminate space–womb, but unlike Plato's *khōra* it is without forms. Reversing the monolithic perceptions of monuments and the circularity of panopticons, one is always inside of this amorphous womb in which proprioception comes to the foreground, as it did in the womb, the first sense being developed before we are born. The blurry experience inside the metastructures has thus resonances with ancient memories not only of our lifetime, as embryos in the womb, but also of our interstitial, swarming, cellular, bacterial, molecular, watery memories.

Over the years I have experimented with embedded motors that move the structures, exploring a nonmechanical robotics or metabotics. More recently during the pandemic, this has become source for a new evolution of the structures as machines for telematic hugging.

The structures have toured indoors and outdoors, in streets and squares of cities, in rural environments, in refugee camps, in beaches or mountains and in the Amazon jungle, often related to creation processes with communities, at times (especially in the refugee camps) doing workshops where we build new kinds of structures, with always new variations on the technique and the format, trying to choose local materials, such as bamboo canes and any textiles at hand, exploring ways of recycling and ontohacking materials exploring the vitality and turning them into dynamic body extensions.

Metakinespheres or flexinamics can be developed diversely in relation to different ecosystems or types of environments, attached to trees, rocks, walls, for sand or water environments, suspended, semisuspended, on the floor, or a mixture of it all, with hammock-like interconnected membranes and sleeves, indeterminate affordances for inhabiting a spiderweb-like space, for durational experiences or semipermanent dwelling. They can be impermeable (or not) and can be built with organically degradable materials, avoiding industrial ones, with bamboo, leaves, vines, and adherent substances, taking inspiration from weaver birds, spider webs, nests, burrows, hives, and other animal architectures, as well as plants, fungi, and flows, as I intend to explore in upcoming experimentations. At stake is to develop an entirely new or old architectural conception of dynamic, degradable architectures-as-body-extensions that move with the flows of the Earth and the ever-growing mixtures of the biosphere rather than blocking or aligning them, as fields, metabodies, and cocoons for metahuman collectivities to come.

6.6.3 Amorphogenesis or Metagaming and Radically Embodied Media

In a sensor and interface society that continually orients us by narrowing the spectrum of our movement, how to introduce in interface and interaction design, therefore in computation and information systems, movement's irreducibility to algorithms? How to consider movement's complex indeterminacy, without attempting to reduce it? How to recover the lost body of information (lost since Shannon divorced information from body, context, and meaning)? How to queer cybernetics as predictive and pre-emptive control system by foregrounding indeterminacy? How to radically re-embody digital technology? In a society that has erased proprioception, how can we bring it back full force to the foreground, creating digital architectures that enhance the richness and indeterminacy of proprioceptive experience?

Amorphogenesis is a digital architecture project and metagaming environment in which sensors distributed on the skin are the interface for intra-action with digital, amorphous, non-Cartesian architectures which continually vary in relation to movement and are never actualized as digital extensive space to navigate (Baalman 2022, 537–56), avoiding manual control and perspectival choreographies (such as are typical in videogames). This project originated from long-exposure photographs around 2001 where I attempted to capture a fluid space created by movement itself, which developed into live video processing and later 3D visuals.

The amorphous architectures have an organic movement of deformation, a hybrid of tissues deforming, flocking, and watery movements, and are richer in variations the more diverse the tiltings and microchanges in the intra-actor's proprioception. The meshes don't represent the intra-actor's movements, rather they expand and transform her proprioceptions in multiple ways, as you feel that your internal sensations are colored by the unpredictable relation of your torsion to the mesh's torsion,

and by developing "empathy" with the movement of the mesh as it echoes in your memories, inviting you to move always in new ways. It is a sort of alien VR that twists in endless microdimensions. Every torsion of your body becomes a new torsion of the space that can fold and unfold metafractally. The more varied your torsions, the more varied the spacing you create.

The more you control, the less freedom you have. If you control and predict, you will not open up to the new. Amorphogenesis is a behavioral indetermination machine that hacks the internal logic of control and simulation culture and introduces an irreducible body and a movement of variation. This is a reversal of cybernetics as steering process of reorienting in relation to a prediction.

The digital meshes conform a non-Cartesian space which is always coemerging with movement. The sensors, accelerometers disseminated on the body, avoiding manual control and discrete gestures, entertain nonlinear relations with the deformations of the meshes. The continuous changes in tilting and acceleration are mapped nonlinearly onto the deformations of the already amorphous mesh.

This approach to design implies considering the way in which some affordances orient us as external references imposing rigid alignments, whereas others allow the ongoing reconfiguration of ratios. One way of thinking this is in terms of attention technologies. Smart environments foster flexibility and control through dispersed hyperattention. If attentional rigidity relates to fixed points of vision and hyperattentional flexibility relates to the distribution of ubiquitous mobile points of vision that connect us to dynamic algorithms redirecting our attention, what modes of attention would correspond to plasticity? *Micro-* or *meta-attention affordances* and modes are those that mobilize rich, changing, and indeterminate perceptual spectrums of multisensory integration conforming a plastic proprioception. Undoing the grid of rationalization implies mobilizing a neurodiverse field of plastic affordances that don't impose a single ratio and orientation, but a field of autistic perception as richer nonreductive perception.

The mesh is projected onto multilayered translucent flexinamic structures to which the body is in turn connected, not onto a flat rectangular screen seen at a fixed distance, thus entertaining a blurry tactile relation, while having a sense of immersion.

The meshes can be like amorphous nonanthropomorphic avatars, whose behavior has no linear correspondence to the participant's gestures. I tilt my arm and a torsion happens in the creature that doesn't represent my arm's tilting, and since many variables are affecting many aspects of the creature's movement, it is not possible to control the relation. And yet there is a sense of relation. You feel something happening although you can't figure out a totality of causal relations. Like in an orchestra texture you can identify only some instruments, but all are needed to give complexity to the texture. This is the starting point for the invitation to explore always new movements rather than try to control.

This project is also modular: in the velcros and elastics that allow the placement of sensors almost anywhere on the body, as well as on the flexinamic structures, but especially in the way the many variables coming from accelerometers or other sensors can be mapped in always different connections and scales to each parameter of the 3D meshes, the sound (including spatialization), and the light.

Amorphogenesis is based on disseminating the interface in the body, avoiding manual–visual control, decentering body postures, favoring sensing devices that cannot give absolute Cartesian coordinates (like external cameras do) and focus instead

Fig. 83. Top right: Amorphogenesis 3D meshes from the first version 2003; top left: long-exposure analogue photo of the moving body, from the *Dissolution of the Multiple Body* series (2001); middle: Amorphogenesis tests in Delft (2014); bottom: workshops in Lima (2016) and Toulouse (2018).

Fig. 84. Top: Amorphogenesis, installation, Madrid and Montréal (2014–2015); middle: Metatopia, Buenos Aires (2016); bottom: Metatopia, Madrid (2018).

on internal movement relations (like accelerometers do[55]). The usual reductive character of sensors is reversed as it stops representing and becomes an affordance for variation. A sensor never represents, but it allows to transform.

The spatialized electronic sound that emerges with the sensor interaction adds further layers to the proprioceptive expansion by generating an amorphous, moving soundscape of gesture. It is important to challenge through sound spatialization the centralization of hearing induced by stereo systems.

Through this number of reversals of control and simulation aesthetics, which I call *metagaming*,[56] you may, in relatively simple technical ways, create conditions for radical experimentations with space and perception in the direction of non-extensive intra-active space. These tweaks in design are ontohacking strategies that other people could develop with other variations. Summarizing them, they involve: (1) avoidance of manual control and dissemination of the sensor on the body; (2) nonlinear, nonextensive spaces and amorphous architectures; (3) multiple nonlinear relations between movement and the architecture; and (4) an interaction based on exploring variation and avoiding control.

Amorphogenesis is a metaformative space for immersive experiences, though sometimes including a performer, who is, however, part of the larger ecology where the audience also participates by moving inside or inhabiting it in various ways. One can develop endless metaformance strategies to involve the audience in the space: from bringing them one by one inside the space, or in one-to-one or small group experiences, even attaching them to the space, or simply inviting larger audiences to move around and enter the cocoon at their wish. Performer and audience can get physically attached to the flexinamic structures, moving with the projections, though there is a complexity in moving both the sensors and the structure as they follow different logics.

The sound also has its independent logic of interaction via the sensor, as synthetic soundscapes move around you, following the tiniest variations in motion. Amor-

55 There is a residue of Cartesianism in the accelerometer in the fact that the gravitational axes are split in *xyz* coordinates, and yet how you manage the relations between them is up to emergent internal ratios.

56 My account of *metagaming* is resonant while also slightly different from the one fleshed-out in the book of the same name (Boluk and LeMieux 2017) which defines metagames as not only games about games: "metagames implicate a diverse range of practices that stray outside the boundaries and bend the rules: from technical glitches and forbidden strategies to Renaissance painting, algorithmic trading, professional sports, and the War on Terror. [...] games always extend beyond the screen. [...] Metagaming uncovers these alternative histories of play by exploring the strange experiences and unexpected effects that emerge in, on, around, and through videogames. [...] Metagaming transforms videogames from packaged products into instruments, equipment, tools, and toys for intervening in the sensory and political economies of everyday life." My account of metagaming focuses on undoing the perceptual infrastructure of simulation and control aesthetics, arguably grounded in perspective, and by intervening in some aspects of the technology, proposing radically different accounts of space and body thus calling into question Agamben's claim that devices conform a religion that has become impossible to profane through play. I argue that as long as we stay within the content this is perhaps the case, but if we ontohack the perceptual infrastructure it's possible to play again. Gaming has commodified and captured play and games by imposing a perceptual infrastructure that needs to be hacked. My ways of on undoing aspects of simulation and control culture are the ones exposed in this subchapter: designing non-Cartesian spaces, amorphous spaces that continuously emerge from movement, based on amorphous metaffordances, nonlinear mappings of gesture, non-anthropomorphic avatars, avoiding manual control, avoiding control-oriented or goal-oriented play, involving full body motion, proprioception, and the indeterminacy of gesture, and proposing interventions across any kind of public or private space or context or situation.

phogenesis activates a multidimensional expanded proprioception, in which the architecture, which sometimes looks more like a creature, is an alien avatar of your internal movement, as if it were itself the endless microcosmos of your proprioception. You move it, it moves you, in endless metafractal torsions.

Amorphogenesis can be a powerful therapeutical environment. Its journey is perhaps similar to psychedelic trips, but it is more like an improvisation technique that one can cultivate, awakening a sensitivity and awareness that one can take on in daily life. It enhances a microscopic and transformative listening into proprioception and multisensory integration. This makes it also a powerful instrument for differently abled people who will discover endless microcosms of movement and sensation within scales of movements that were thought to be inexistent.

Amorphogenesis is a machine for *intra-action design.* Even if the environment may seem reactive, not even interactive, what is crucial is the disalignment from the perspectival ratios that sustain the controlling subject, undoing its split from space. The subject coemerges with the undefined and extended sensorimotor field, as the body feels itself in always new ways, unfolding new potentials to vary.

Amorphogenesis is an *anti-Platonic Cave,* in which there is no world of true forms, no redoubling of the world, but an ongoing emergence of the amorphous. It is more of an *Anaximandrian Cave* for restoring the *apeiron*, the unbounded, but in a Heraclitan way, as ongoing tensional field!

Through the nomadic flexinamic modules, Amorphogenesis becomes a mobile immersive environment that can happen in any indoors or outdoors space, provided there is some darkness, like an alien revival of the Dionysian chorus that creates its own space. More recently, online telematic versions have been developed for connecting bodies through proprioception.

This project creates a new kind of body in process of continuous *untrainment*. Instead of entrainment conceived as synchronization, this body is in constant disalignment and mobilization of its proprioceptive swarm, in disautomation of its behaviors (as opposed to the narrow account of automaticity that considers nonrational processes in the body to be automatic).

The project opposes established accounts of AI and machine learning as simulations of a Cartesian reduction and mobilizes BI as a swarm intelligence emerging from proprioception. This implies the reversal of cybernetics into a *clinamics* or *divernetics* and of information into *unformation,* or the capacity to resist form and sustain openness, thereby questioning the ontological foundations of Shannon's formulation of information as disembodied fluid divorced from context and meaning (Hayles 1999, 18).Let's profane the smart device by hacking the ontological geometry of its perceptual choreography! From algorithms to micro-rhythms! Hackers, learn to dance!

6.6.4 Microsexes: Undoing Anatomy, Undoing the Destiny of the Body

How to undo the anatomy that has been the body's destiny? If Freud paraphrased Napoleon's "geography is destiny" by saying "anatomy is destiny," then I propose that undoing anatomy is undoing the destiny of the body. Anatomy is an effect of perspective, which allowed the production of repeatable images conforming a body grammar of morphological and mechanical reduction, associated to a reductive account of reproductive sex, functionality, and abledness. Anatomy was enacted in theaters of dissection of immobile dead bodies and expanded to all scales of the

Fig. 85. Top: Metabody, photo composition (2013); bottom left: Microsexes, photo series (2005); bottom right: Microsexes metaformance, Madrid (2014).

social through mechanical metaphors, disciplinary profiles, and seamless biologization, where people would frame bodies at distance, looking at bodies, including their own, from a detached Cartesian position.

How to mobilize *antiperspectival machines* for *postanatomical bodies* proliferating in diffuse microsexes, where sex returns as the force of mutation in evolution, such as it has been for 4 billion years of bacterial sex? (Del Val 2009a; 2009b; 2009c). New kinds of epigenetic, affective, perceptual–motor mutation are needed to reinfuse plasticity in our superaligned ecologies.

Microsexes is a project I have been developing since 2007 (Del Val 2009a; Del Val 2009b; Del Val 2009c; Lozano Jiménez 2009; Gordano 2010; Tuncel 2011b; Manning 2012), in which surveillance cameras distributed on the skin become the eyes through which the body sees itself, projected onto buildings or other structures, in a blurry tactile and mobile vision, in which the body becomes an amorphous and alien landscape where surveillance collapses in the realm of the amorphous, while the voice is processed life becoming an alien soundscape. Happening in a wide variety of formats, from urban intervention and immersive performances to intimate one-to-one encounters, also in homes and online, the project is a metaformance focusing on indetermining the body's perception of itself. This project also evolved from earlier photography projects starting around 2001, based on closeups of the body, and later edited films, but since 2007 evolving only as live video project

There is a small surveillance camera on your wrist, or anywhere else on the body, pointing to the skin next to it. A small LED light on the finger illuminates the scene, the image is projected large onto a nearby surface. A tiny movement in the finger holding the light radically changes the landscape, like a sun in an unknown universe, a multiverse which is the proprioceptive body. We zoom into this metafractal field. A tiny movement in the palm of the hand shifts the entire landscape, and your own proprioception with it. At first you want to control, but suddenly an invol-

Fig. 86. Top left: Microsexes/Pangender Cyborg in Buenos Aires (2008), photo by Nelda Ramos; middle left: Microsexes, Madrid (2008); top right: Microsexes Metaformance, Toulouse (2011), photo by Claude Fournié; bottom: Pangender Cyborg, Microsexes Metaformance, Murcia (2008).

Fig. 87. Antiperspectival machine and one-to-one metaformance encounters, Microsexes, Murcia (2008) and Santiago de Chile (2010).

untary movement happens, and you start listening to a proprioceptive landscape that exceeds subjective control. Something barely stirs in your proprioception of the hand, and it connects with something alien stirring in the amorphous image.

Vision hovers on the edge of recognizing what it sees: is it a hand, or has it already become something else, maybe a microsexual quasi-organ, maybe an animal or mineral or machinic landscape? But its tiny movements are still "your" movements, they connect to the most subtle, intimate, pervasive, evanescent, elusive, ubiquitous, unavoidable, and blurry of your bodily experiences: your own proprioception. But far from being a process of containing sensations in a bounded and defined self, sensations here entail a continuous becoming alien, with infinitely open resonances. *Perceptual ambiguity* is the defining factor of the experience. You become an undefined otherness.

Undoing anatomies such as the hand is an interesting challenge. I have previously spoken about manual control in relation to fixed vision, and algorithmic manual kinesthetics as foundational of control culture since the birth of Renaissance perspective. But what if instead of having the hand as control tool holding the camera, the camera is just outside of it, on the wrist, and the hand enacts its own devisualization?

The powerful moment comes when you stop controlling, when you lose the alignment of the controlling subject, when you stop recognizing what anatomy it is, and you become that alien landscape, sometimes animal, sometimes mineral, everything but recognizably human, and yet still skin.... That is the boundary zone of negotiation in which, rather than moving or shifting the boundary of form, it blurs to infinity; rather than attending to the demand for form and meaning, it dissolves in myriads of echoes and vibrations that no longer claim a consonant resonance but proliferate in dances of chaos. *I become a radical otherness, an indeterminate one.* Yet there is closeness, an *alien intimacy, an open consistency.*

Cameras can be placed almost anywhere, any known anatomy can become devisualized and deformed, microsexualized, as a therapeutical practice in our morphocentric regimes of bodily reduction. Cameras on the skin become an alien sex for indeterminate perceptual compositions. Quite different from postporn practices that change the content but keep the frame intact, Microsexes is all about undoing the frame, the dear frame of representation that so many in the feminist and queer circles (from which I intellectually come) have claimed as inescapable.

Linear time dissolves. I may practice microsexes for hours in one-to-one encounters and when it is finished, I don't know at all how much clock time passed, I am

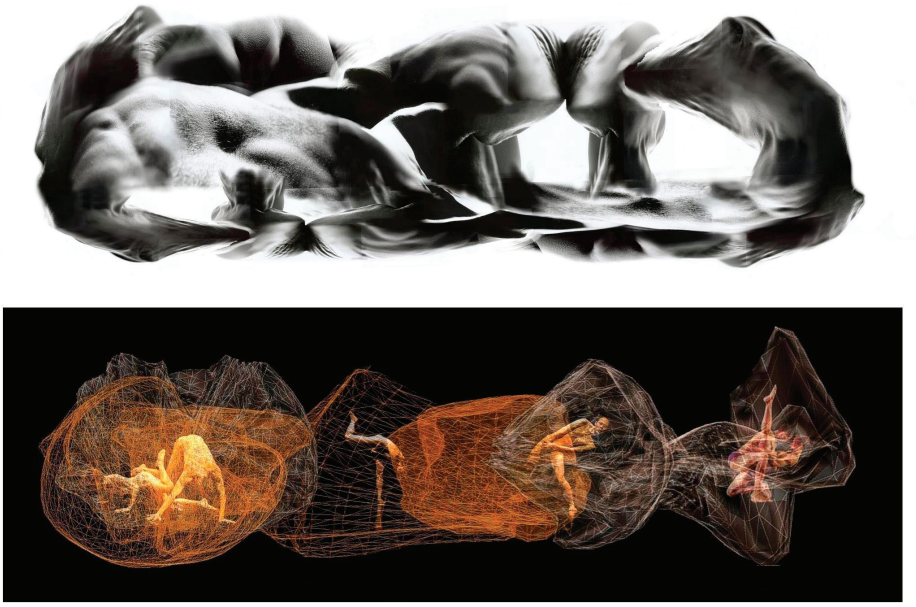


Fig. 88. Metabody. Top: composition, bottom: project (2013).

as in a kind of trance.[57] I feel energized, returning from a nondimensional metacosmos that accompanies me beyond the intensified experience, coloring my return to more aligned daily situations. From among the different practices proposed, this is to me perhaps the strongest the deepest technoshamanic journey into a powerful elsewhere that can be cultivated, and whose effects may accompany you into your daily experience heightening the sensitivity and vibratory power, feeling the presence of the world and the others in you as alloceptive swarms. It is also a powerful mode of ontohacking that, by tweaking some parameters of the most potent means of domination, perspectival vision, reverses it through movement.

It's as if after centuries of perspectival frames, the frozen swarm that is the body starts to melt and become alive again. The electronically processed voice becomes an alien soundscape as it shifts the connection between vision, proprioception, and your own sounds, the breathing and the internal movements of the body producing it, perhaps reaching into long-forgotten animal and bacterial memories.

The vibratory quality of the analog video image, sometimes transferred via wireless video transmitters, incorporating noise, reverberates with the granular texture of the processed sound and with swarming character of the expanded proprioception. The process relates partly to scale. A tiny, almost imperceptible proprioceptive sensation, a fluctuation under the skin, becomes a gigantic alien landscape that allows for an expanded transformative and transmodal listening into proprioception. People living in what is considered as almost immobility, or people in confinement, may unfold entire worlds of self-perception and movement.

57 Recent discussions with a Metabody participant who studies trance in Latin American cultures brought out the interesting issue that, from his perspective, trance is usually achieved through repetitive patterns, whereas here we propose to do the opposite. Other Metabody participants have related their experiences in Metatopia to Ayahuasca which connects to Roy Ascott's discourses on moist media and VR as alternative to "plant technology."

Undoing or devisualizing your hand, your genitals, your neck or back becomes a postanatomical ontotherapy. And doing so while still using a core technology of the Algoricene, the camera, indeed the surveillance camera. Ontohacking proposes that by intervening in the alignments of a metamedium, radical shifts may happen that alter the entire relational ecology.

Like Flexinamics or Amorphogenesis, this project is also modular in all its composition modes: velcros and elastics allow the placement of different kinds of cameras on different places of the body, exploring diverse compositions and working against gravity, suspended in excess of dimensional coordinates, where the body no longer moves in the usual references of up–down, left–right, backward–forward, inside–out. In a rather punk and DIY way the project recomposes a number of existing devices into an entirely different *technē*, just by subtle disalignments.

In the urban version the projection on buildings generates unexpected dialogues with the architectures and the encounters with people, though with a risk of becoming spectacular. The challenge is to generate an alien indeterminate presence, an opening, a metatopia within control hypertopias.

In the format of one-to-one encounters, occasionally happening in private homes as a sort of microsex work, the focus on metaformance is much stronger. I mediate, like a postqueer technoshaman,[58] the experience of the participant who can come to my consultation, or I can go to their home, in a hybrid of doctor's consultation and alien prostitute or brothel, or as mobile laboratory of perception that undoes millennia of geometric, perspectival, and morphologic–anatomic reduction while disseminating microsexes, opening up *clinamens*. Like an alien from another planet, I mobilize perceptions utterly different from the perspectival one, strictly avoiding recognizable forms. An irreversible mutation of perception is mobilized across postintimate encounters where the surveillance camera becomes a sex for unprecedented modes of intimacy. This microsex-worker (philosopher–prostitute) decapitalizes sex by moving it away from geometries of repetition or pre-emption.

Microsexes reverse anatomical theaters of dead bodies historically dissected in front of an audience: the living, moving body self-devisualizes in a metaformative, antispectacular gesture. This practice, like the previous ones, is more about metainstrument-making than creating artworks: long-term processes of crafting metabodies, *technēs* of deep but open attention for new kinds of intimacy, as coconstitution of indeterminate proximities between tendencies, which Erin Manning (2012) calls "intimare."

Amorphological freedom, or perceptual freedom, rather than freedom of forms (indeed freedom from form!), is the freedom I claim in the era of dynamic patters of algorithmic control: by undoing the very architecture that made form thinkable and that made the body reducible to form.

58 I endorse a definition of shaman as someone who can transform reality or the perceptions of reality so that it no longer responds to a causal logic. If we agree on this definition, then the practices here proposed could be called shamanistic. However, I am aware of the problematic appropriation and generalization of this term, so one should not take the definition strictly, but as provisional, ironic, and blasphemous iteration. I want to recall also the fact that this book seeks to undo a tradition of the thinking of fixity, arguably initiated by Parmenides, for whom the shamanistic practices of immobility possibly inherited from Siberian shamanism may have been a major cue to introducing ontological fixity into thought. I thus propose shamanistic counterpractices that reintroduce movement.

I think of a context as a coded space. A situation is when something opens a context up to something that is not already encoded into the space, something as yet unmodelled. [...] *Something as yet unrecognizable cuts out from a context, making palpable its potential to change.*
— Brian Massumi in Massumi, Prost, and Boucher (2010, 25)

It felt like surfing on the surface of an electron. I have discovered universes which I didn't know existed.
— A participant in a Metatopia metaformance

6.6.5 Metatopias

The four projects described in the sections above (Disalignments, Flexinamics, Amorphogenesis, and Microsexes) can come together as layers of the Metatopia environments. Metatopia is both a concept of plastic, indeterminate, consistent, but open space and an intra-active, metamedia, metaformative nomadic environment for outdoors and indoors. Metatopias are *disalignment machines* for infusing quantum indeterminacy into daily experience, a wormhole, tornado, microsingularity, Alice mirror or burrow, or *Matrix* pill.

Metatopia can be presented in a wide variety of spatial compositions and scales, from large urban interventions to small intimate performances. It is site-specific and body-specific, but also site-indetermining and body-indetermining, developing always new versions on each occasion, as solo or group interventions, but always choral as the body is itself a choral multiplicity. It is a metaformance environment involving participants in the experience, an architectural–perceptual mutation.

Every time a cocreation process unfolds into a new Metatopia environment. These processes are typically a workshop of one week in which participants explore the variety of Metabody techniques as well as theory, while putting together a metaformace environment, at times building structures, at times also developing a concept or a metanarrative. The final metaformance opens up the field created over the week to a larger audience, with diverse strategies to involve the audience as intimately as possible in the situation. Within the choral context and honoring the ancient Dionysian chorus with its leading satyr, but also building upon performance art, there can be a quasi-leading performer (mostly myself), accompanied by the chorus of workshop participants, now enlarged also by the audience. Metatopias are ultimately always a chorus, a *metakhoros*, and a *metakhōra*, a chorus of moving bodies that create an emergent, formless space.

The most difficult challenge is in creating conditions for disaligning the audience/participants from their perspectival bias and their spectator position.

Metatopia merges emergent physical structures with emergent digital architectures, and sonic and multisensorial spaces by constituting an immersive and ultraportable environment, for ephemeral interventions in any given space. It is a radically non-functional architecture that foregrounds the neurodiversity of all bodies. It is an *antismart* space of uncontrol, a machine for infusing indeterminacy.

Metatopias mobilize illegible behaviors in the Big Data era, maximizing *clinamental* forces of indetermination. They are alien revivals of the nomadic Dionysian choruses from which Greek tragedy arose, before the architecture of the theater appeared renewing dualist splits, when there was yet no split between dance, music,

Fig. 89. Metatopia performances in Brasília, Milan, The Hague (photo by Pieter Kers/beeld.nu), Manizales (photos by Gabriel Ducros and Carlos Pineda), Guayaquil, and Toulouse (2016–2018).

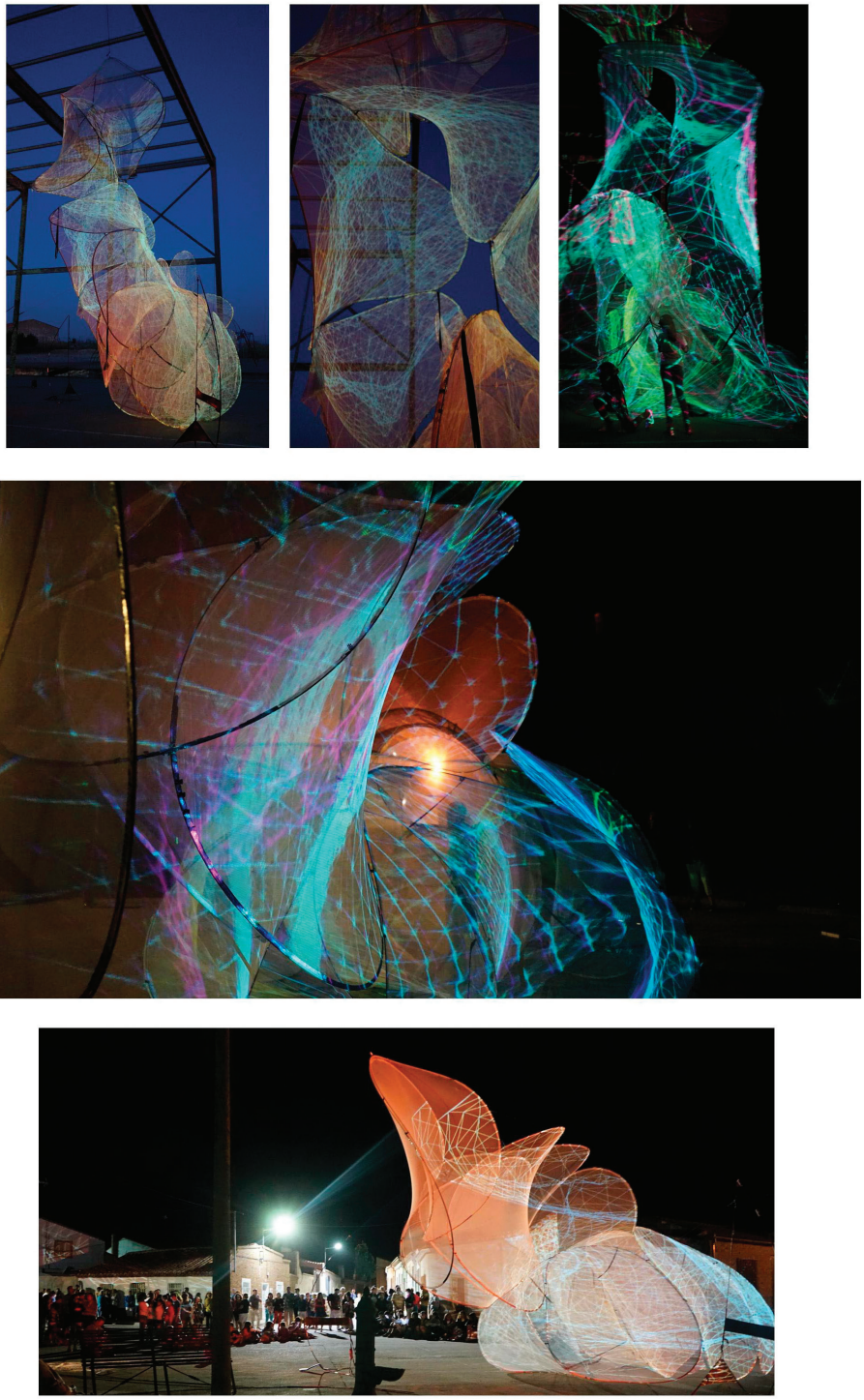


Fig. 90. Metatopia/Barraca of the XXth Century, Salamanca (2018).

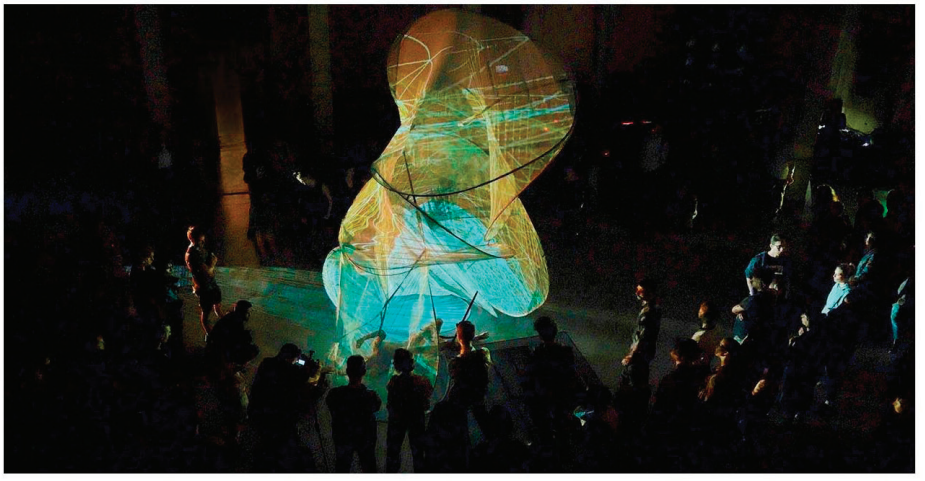


Fig. 91. Metatopia in Toulouse, Paris, and Milan (2015–2018), in Toulouse and Paris in collaboration with K. Danse.

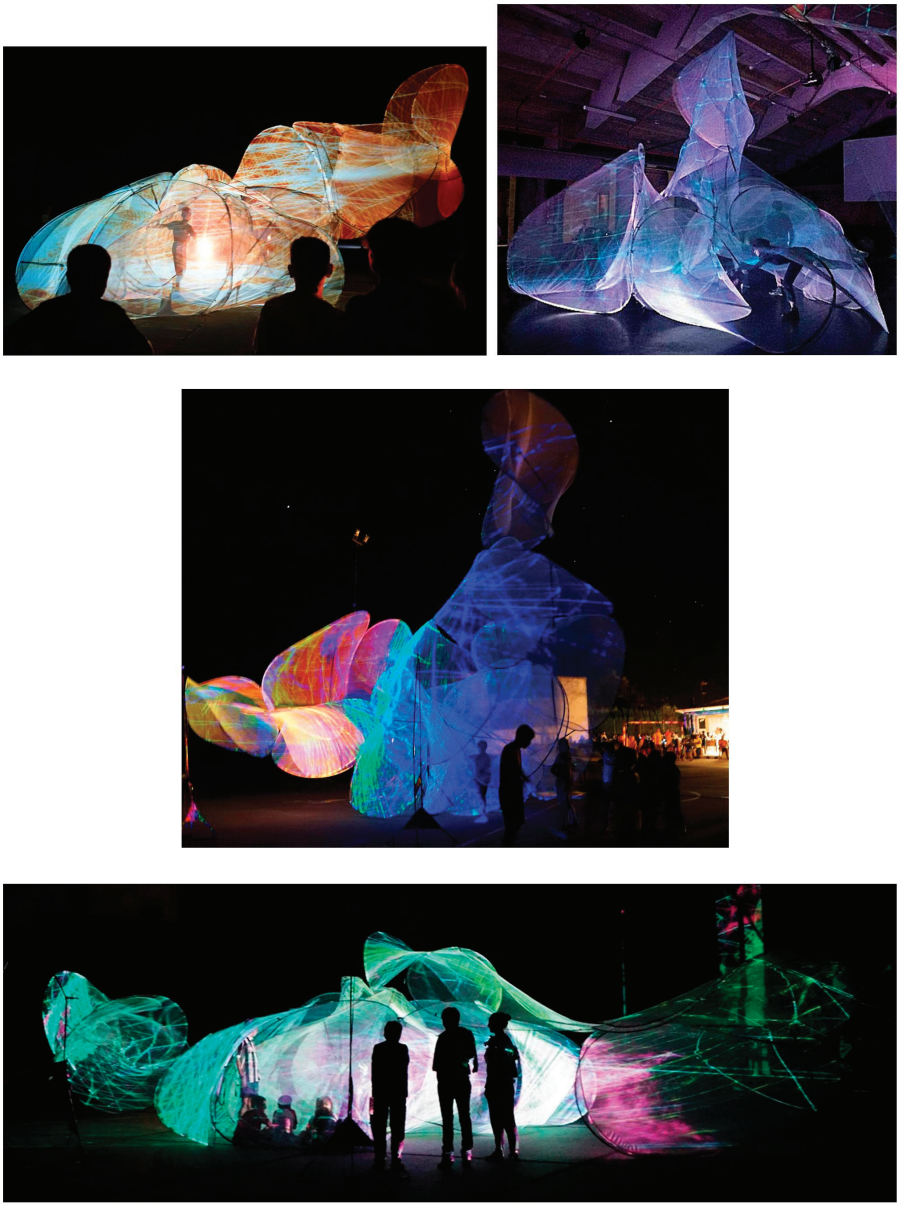


Fig. 92. Reverso/Jaime del Val. Metatopia/Barraca of the XXth Century in rural area of Salamanca 2018 and Madrid 2017 (top right).

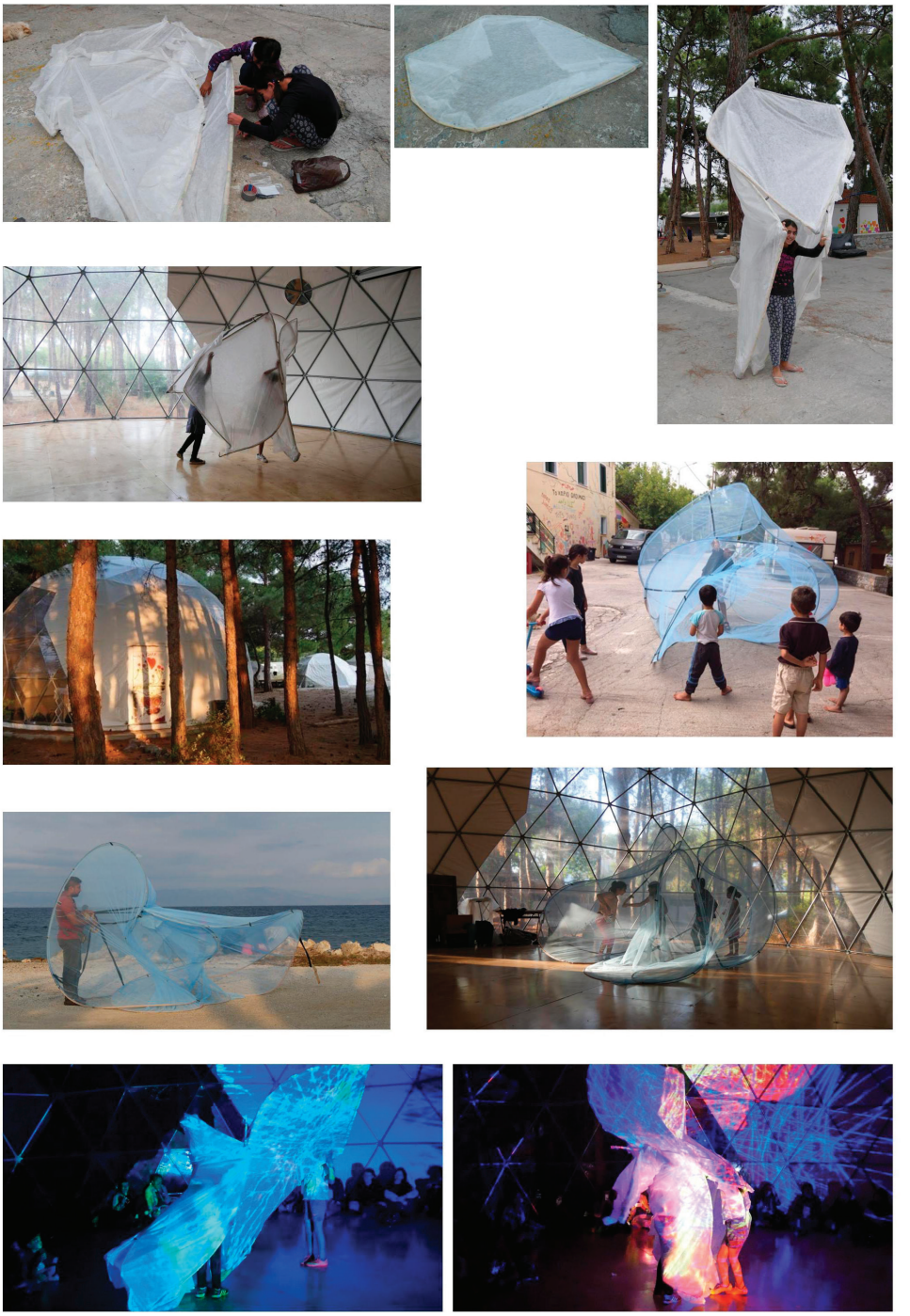


Fig. 93. Building and playing with metakinespheres in the Pikpa refugee camp, Lesvos (2017).

Fig. 94. Top: Metabody workshops in a refugee camp in Rijswijk (2018; 2019); bottom: Metabody in the Amazon jungle in Peru, exchange with Shipibo–Konibo community (2019).

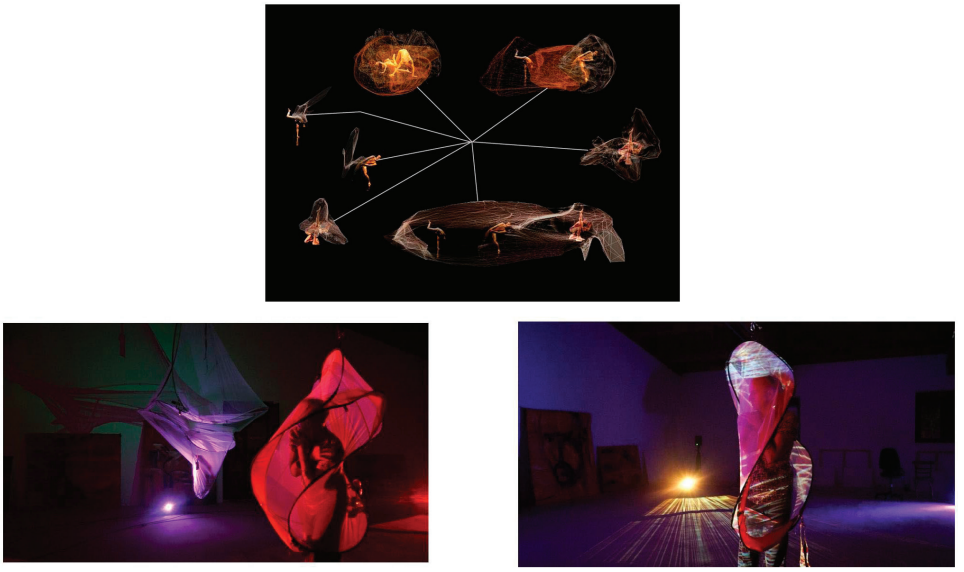


Fig. 95. Bodynet protoype (2013) and tests in Salamanca (2020).

and text, nor between chorus, actor, spectator, and author. They enact an Open Source Space (OSS) as common body for minor ecologies in the Algoricene.

Metatopias are fragile spaces of encounter for collective intra-action across multiple kinds of borders (of states, bodies, cognitive paradigms, ontologies, and politics) in which rather than following a given methodology, a number of elements for collective creation through movement, building or reappropriating objects, are provided as starting moves for an unforeseeable emergent process of becoming-with. They are intra-action spaces of cocreation, open-ended processes in which gestures may come together generating a provisional field of resonance.

6.6.6 The Metabody Project: *Khoros*, or the Return of Dionysus

Metatopias are part of the Metabody project, an ongoing attempt to generate an open but sustained ecology and economy traversing disciplines and domains, generating openings across hard alignments, sometimes failing to do so, but always persisting.

Between 2013 and 2016, Metabody was a large multiannual EU-funded project having to deal with hard alignments of bureaucratic, legal, and financial issues, taking up the challenge of constituting transdisciplinary project networks that may involve multiple kinds of institutions but not depending on them. It has since continued in a more precarious and open, but sustained landscape of alliances, as the International Metabody Forum, including cocreation environments with neurodiverse people, refugees, indigenous communities, queers, in rural and suburban areas, as well as diverse technical and artistic lines of research. The IMF takes place in different countries every year with activities that include workshops (Ontohacklab), metaformances and creation processes, environments and platforms (Metatopia environments) and conferences, symposiums or talks (Multiversity), with regular activities in Madrid, as well as in Toulouse, through a longstanding collaboration with K. Danse and Jean-Marc Matos in the Metabody Toulouse antenna, with whom we have been years exploring the possibilities of metaformance as choral strategy.

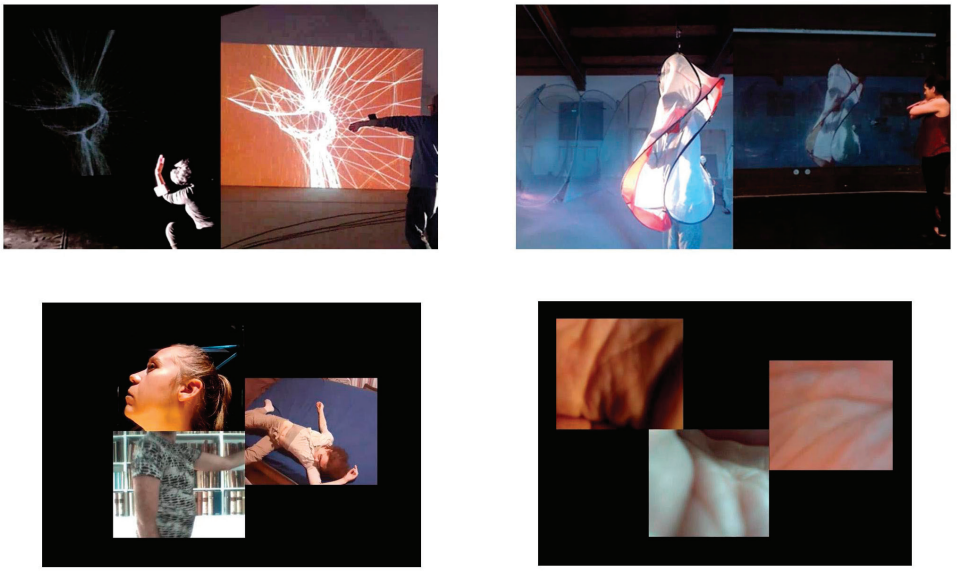


Fig. 96. Bodynet, online metaformances between Madrid, Toulouse, and Casablanca (2020; 2021), in collaboration with Jean-Marc Matos/K. Danse.

Behind this ironic reappropriation of the acronym of the International Monetary Fund, the IMF hides a radical aestheticopolitical proposal. The IMF is neither an assembly nor a parliament, but a nomadic *chorus* of dancing, moving bodies that spread disalignments from normative and control regimes, across borderscapes, proposing alternate ecologies for more plastic cultures, opening the scope of discourse-centric practices up to a radical movement philosophy–politics. The forum events bring together research, creation, production, dissemination, education, and activism in new anticuratorial transdisciplinary processes, creating events across countries, normative regimes, and border situations.

From 2013 to 2024, over seventy IMF events and Metatopia environments have been happening in over thirty countries mainly of Europe, the Americas, and Asia, in places ranging from universities, art centers, theaters, and festivals, through urban spaces and touring in rural areas, in refugee camps of Greece and the Netherlands, in the Amazon jungle and with Indigenous communities, communities of diverse-abled, bodydiverse or neurodiverse people, with queer communities. But metaformance experiences are also offered in the permanent space of Reverso and Metabody in Salamanca (as *ontotherapy* consultations under cover; the forum's workshops being ironic-but-serious meetings of Cartesiholic Anonymous groups).

Metabody and Reverso involve institutions of various kinds but are not located in them, promoting a more decentralized economy and ecology of practice that doesn't aim to create a new disciplinary territory, nor to occupy the institutions getting hold of power. Large networks and projects can be created but by small organizations outside the institutions, involving these in a more decentralized playground, not pertaining to any existing discipline and resisting to create one. It is precarious but possible.

With the pandemic, a new series of telematic techniques, performances, workshops, and conferences have emerged, where metarobotic flexinamic sculptures for posthuman telematic hugs, anti-VR digital architectures, indeterminate telematics, and slow divergent AI add further layers to the metabody, the field production of

Fig. 97. Metabody "Mutant pride" intervention during the Madrid LGTBQIA+ Pride (2021).

my projects, as *technēs* for a planetary health. These expand now with a new EU project called *Bodynet–Khorós: Choral Arts and Embodied Media for Social Plurality and Planetary Health*, "a transdisciplinary project on digital and physical artistic experimentation for reinventing the body, movement, and relations toward sustainable and plural ways of living and for restoring the planet's health in the Algoricene. The project addresses the current global, ecological, and social challenges in a unique and transversal approach that stresses the underestimated role of the moving body and the need to reinvent it through collective, choral improvisation practices" ("Bodynet-Khorós, n.d.)[..]

These projects keep adding layers, with critical takes on intra-activity, digital and physical architecture and VR, body extensions, telematics, and robotics, with the search for slow, divergent, relational algorithms that promote indetermination. But at the same time there is a tendency to foreground sheer bodily movement and proprioception as core technology: BI. The increasingly durational metaformance workshops of experiential, experimental cohabitation go in the direction of developing BI technologies for a radical change in ways of living and a planetary regeneration.

Occupying a borderscape implies the possibility to not only shift the border, but also blur it. Borderscapes of different kinds, including ontological, are zones for potential openings. Borders are ontologic anomalies. Playing together and cocreating *with* people (the refugees in Lesbos or The Hague, or with neurodiverse, queer, or indigenous communities and other), rather than doing things for them or about them, also in relation to "general" audiences or populations, demands setting up conditions for emergence, an open field for movement and perception, for the activation of people's proprioceptions.

6.6.6.1 Surfing on the Surface of an Electron

In the process, an amorphous, choral spacetime of continuous but irregular movement emerges that transforms the perceptions of interactants, in a sort of collective rebirth — like a revival of Dionysus — where it feels "like surfing on the surface of an electron," where boundaries, hierarchies, and splits become undone: a chorus, a metabody, a process of becoming where there is only movement without form.

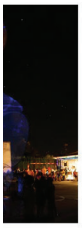
The evolving workshop formats turn more and more into specific choral processes of week-long residencies where we explore the different techniques, including the theory of ontotherapy, where in the process the group of participants becomes a Dionysian chorus creating its dynamic space and movement, and where we open the doors at the end to audiences that become part of the chorus and its dynamic space, sometimes indoors, sometimes outdoors, with disaligned interventions and experiences in streets or parks, woods or beaches, where the convivial aspect becomes core, the vegan cooking together, the sleeping in the space, the wandering and foraging, the disaligned dwelling, the nonverbal intra-action, and where we gradually include survival techniques, with entire workshops happening nomadically and outdoors, first with Flexinamics tents and partial foraging, later without tents and only relying on foraging, building organic degradable dwellings, and developing new types of movements in relation to the diverse ecosystems, from trees to sand dunes, while approaching the activist and legal aspects of dispersed–disaligned foraging–dwelling and of ecosystem regeneration in a disrupted planet.

...

Metabody has unfolded a set of practices to take on, toward a metabody r/evolution:

1. **metahuman labs** or **ontohacklabs,** with increasingly deep cohabitation exploring choral practices, proprioception, ontohacking, and its theory;
2. **forums** iterating in transdisciplinary formats, involving workshops, metaformances and conferences, in collaboration with different types of institutions, collectives or informal spaces, from universities to refugee camps;
3. a **multiversity** focusing on theory, conferences, and publications, as integral part of the forums;
4. **centers** and spaces for more regular activities;
5. growing sets of **techniques**;
6. **research–creation** projects with varying networks of collaborators;
7. improvisatory **actions** or disalignments mainly as a daily practice, occasionally as (onto)therapy, but also as a politics.

Fig. 98. Metaformance/Metatopia Diagram: The different projects developed since around 2002 with the Reverso association and since 2013 under the Metabody project can be seen as four techniques and layers that come together in the Metatopia environments. Microsexes and Amorphogenesis have been evolving in parallel since around 2002. The most fundamental of all, though more recent, is the Disalignments technique, therefore at the bottom. Flexinamics keeps evolving since around 2014, and the Metatopia environments since 2015.



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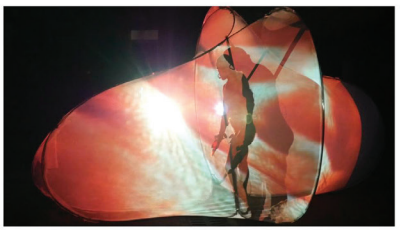

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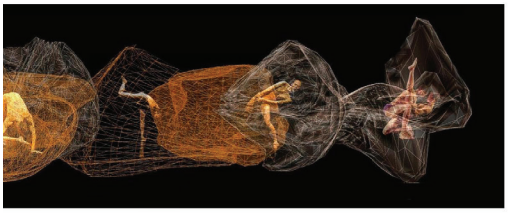

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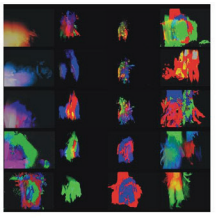

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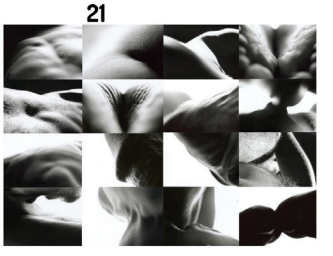

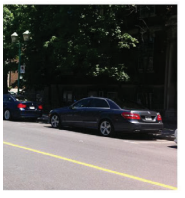

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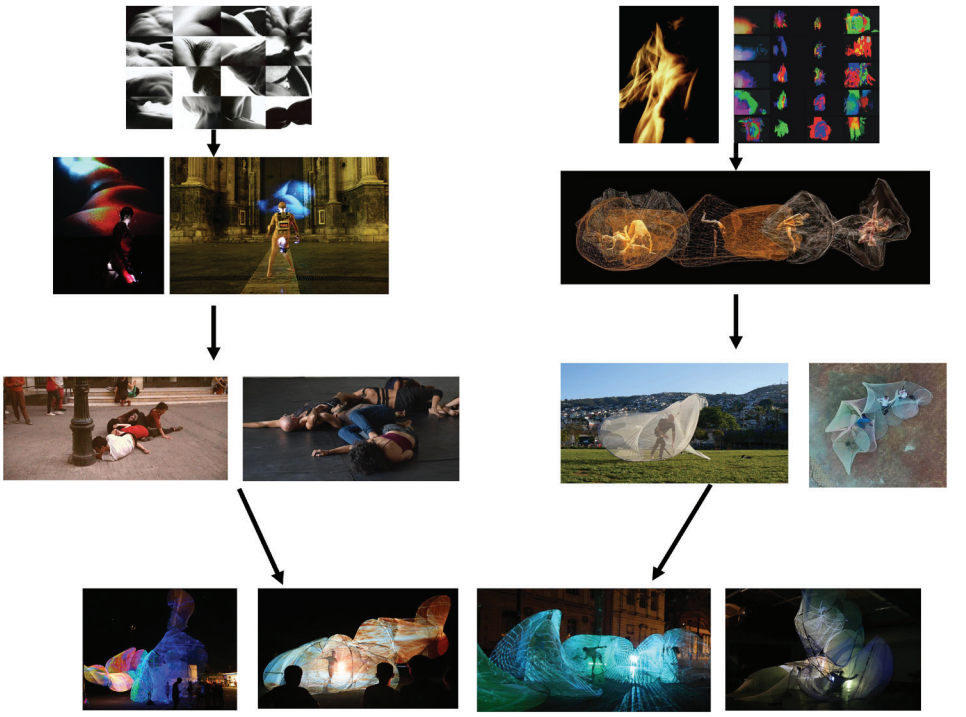


Fig. 99. The two persistent motifs evolving since 2001 and gradually converging are (left) how to mobilize an amorphous, postanatomical body of sensations and (right) how to create a formless and dynamic space that emerges from movement. The former evolved from body closeups and voice processing to proprioception techniques while the latter evolved from digital to physical architectures and the merging of both.

6.6.7 (Sur)vival *Technēs* for a Great Disalignment

Another spectrum of practices is to be found in survival techniques, although it is about experiential and survival techniques converging. Survival techniques are not enough, a deeper mutation is needed to stop being an atrophied, fearful, reductionist, and self-obsessed creature dominated by rationalization. All are techniques of improvisation and movement and are part of a more complex process for a Great Disalignment.

Survival technēs for living and dying well without any systemic dependencies, in outdoors excursions–workshops:

— arts of gathering and cooking without instruments, raw;
— arts of dwelling, shelter;
— creative techniques for sculpture, painting, carving, writing;
— kinaesthetic mnemotechnics and embodied memory;
— arts of movement, orientation, and perception;
— healing arts, wounds, poisoning, hygiene, defence, fight;
— arts of kinship, sex, affect, desire;
— learn from animals and indigenous cultures — meta-anthropology, metazoology;
— learn laws — prepare oneself for resistance, activism, and regeneration in the current human-supremacist world:
  a. how to live in disaligned way;

b. how to challenge alignments;
c. how to address potential future scenarios;
d. lawsuits against farming, governments, and corporations.

These go along with techniques for regaining the lost sensorimotor richness, the critical ontohacking for undoing human supremacism while gradually disaligining from all aspects of destructive dominant living and activating resistances.

Reverse the reductive tendency. Instead of assuming that current systems are inevitable and desirable, assume that they are something from which we must gradually disalign. Reverse the prevailing contempt for the body by acknowledging that everything civilization has despised is superior: walking barefoot in the rain, dancing naked in the forest, eating wild herbs with your hands, shitting and sexing in the fields, moving, moving, moving... It is about favoring everything that enhances BI: naked, barefoot, without utensils, without houses, without transportation... gathering, open air, playfulness, dancing choruses... everything that allows a new type of experiential richness to be created.

But gradual disalignment is key![59]

All this in a double movement where the disalignment is never a sacrifice but the effect of recovering the joy of moving and acquiring the awareness that comfort equals atrophy. Like when after days of walking barefoot you put on shoes and feel anesthesized. We can only disalign from the dominant way of living along the process of creating ourselves a new one. The more we regain a simple and deep joy of moving, of sensing ourselves as moving body, the more we can disalign from our toxic addictions to the current mode of living, enjoying every day more and more the simplest actions of moving–sensing, during our daily walks or morning dances, in every ray of sun or breeze that caresses us, every scent, every sensation of movement around us.

59 Some examples:
— Agriculture: intensive agriculture → extensive, local, without plastic → gathering - reduce cooked and with minimal means → raw, depending on how it is harvested;
— Animal Exploitation Food Industry (AEFI): stop contributing to industrial farming → stop contributing to extensive organic farming → total vegan abolitionism → vegan, nomad, naked gatherers;
— Media: break away from dominant corporations like Facebook → open-source software and alternative systems - sustainable fairphones → leave phone, PC, TV, and radio → leave cameras → notebooks and handwriting and speaking → only movement and voice → only non-verbal voice and movement;
— Transportation: abandon the use of cars, planes, and indiscriminate transport → just train → only bike → just walking → slow, disaligned movements and crawling;
— Living in urban environments → rural → caravan → tents → dynamic and organic architectures → caves, plants, and open air;
— Energy: reduce light and heating → candles and fireplace → sun and starlight;
— Objects and consumption: reduce delocalized and eliminate non-vegan and plastics → minimize objects, furniture, utensils → remove all utensil, only body for everything;
— Clothing → bounded nudism and barefoot → public nudism → permanent nudism;
— Sex and kinship: reproductive monogamy → alternative sexualities and alternative reproduction → pansexual polyamory, or asexuality and antireproductive transspecies families;
— Health, death, hygiene alignments and taboos, obsessions, and extreme palliative care → caring for humans as we do for "pets" → like wild animals
— Alignments with economic, state, and corporate systems etc. → partial disalignment → complete disalignment

It is about regaining the micro-/metadance of life, redancing every moment, cultivating a joy and pleasure that absorbs you more and more till you don't want to return to the previous alignments, but without any quantitative addiction. It is always about cultivating the minimal ongoing variation, the *clinamen* or *clinaos*, the sense of symbiotic openness that refuses reduction. It is about disseminating this joy like a new dance epidemic spreading across the planet, about cultivating a convergence of survival and "vival" or experiential *technēs* to the point where they are no longer distinguishable and are inseparable from disalignment or unlearning of dominant ways: a full mutation.

Like on a mountain, the further you go, the bigger the path of disalignment becomes and the more joyful the effort, as you get glimpses of the panoramic views! Another question is, to what extent can each one go? The reply will always be in unexpected variations, going further and elsewhere than one would ever have imagined!

6.6.7.1 The High Art of Disaligned, Dispersed, Multisensory Foraging–Dwelling

At the moment of finishing this manuscript, I am initiating myself in the great vital art of dispersed gathering, the art practiced by almost all animals and also the *sapiens* until very recently, the art of eating fruits and grass and roots and mushrooms in a nomadic and dispersed way, eating as you walk in a fluctuating and disaligned way, without killing a single plant, one leaf from here and another from there, with all the senses alert, converging with my twenty years of experience in improvisation techniques of movement, proprioception, and multisensory integration. And that is where it all makes sense. Moving toward a potential future in which we don't live in urbanized environments, but only as a naked body in the forest, dancing and mutating until death arrives.

This is not a foraging guide. For those interested in this art I recommend starting with some of the many excellent guides out there, where you will find recommendations on plants, how to avoid the few that are toxic, where and when to collect, etc. Of course, take it seriously and do it with care, for yourself and the world. There are some toxic plants and many toxic places, mainly created by us. So, learn and be careful. Here I will make some more general and philosophical comments with are some sketches of the transformation I glimpse:

— It's my biggest "revelation," where everything makes sense, everything was a preface to this, in my sensory techniques. Until now, they were still a palliative game of the bourgeois artist. I feel now that everything I proposed thus far was just an introduction to the real game that is just barely starting.
— It's the revelation of reversing one's vision and understanding that what has been called weeds — in Spanish "bad herbs" — is a radical misconception stemming from agriculture, that weeds are the glorious expression of hybridity in nature, resiliently ubiquitous, part of the biosphere's mixture, the soil's fertilization, the endless dissemination and variation, the opposite of monocrops and their annihilating homogeneity.
— There is an amazing abundance, variety, and ubiquity of all those green plants that grow everywhere, most of them edible, hyper-nutritious and delicious (much more than the supermarket ones), showing the superiority of the autonomous and totally sustainable growth that maintains and regenerates itself, much richer in nutrients, medicinal, without toxic herbicides (unlike the ones in the

supermarket), without the crazy process of production, transportation, and packaging, for free, without irrigation, fertilizers, or pollution, without killing any plants, in a scattered way.
— The biggest problem for a gatherer in this polluted world is water! And the laws that in many cases prevent it, also because of private property, this anomaly of the past millennia that has co-opted the Earth.
— One can help regenerate and clean the environment and, if something threatens it, act as protectors, healers, regenerators,
— One can look for shelters without damaging anything, experimenting with new ways of living, or migrating with the terrestrial flows, relearning to know them from your Body Intelligence. Though at some point, going back to the tropical regions and forest (if the tropics still exist after the upcoming climate collapse) may be again the only way to be gatherers all year round.
— One can develop new movements and sensing with every ecosystem and flow, from trees to sand dunes. Different affordances can be explored in open-ended ways, creating manners of relating and dwelling that are open to ongoing variation. In each environment develop different movements: amoeba in desert sand, coupling with tress in the forest.
— You move and expand your perception to collect and eat on the spot, like a game, you learn a lot and above all in an intuitive way: pure embodied and non-rational knowledge.
— You regain smell and proximity, undoing the evolutionary error of separating ourselves from the ground and from smell, of touching from a distance with aggressive tools.
— You learn botany, ecosystems, geography, orography, zoology, to feel the weather, seasons, sensory orientation, to know the clouds, stars, and everything only from the body, like all nonhumans! You learn from the inside, flowing with the world, as an intra-active, enferant science.
— The superiority of the immersive experience and the nonrational knowledge of the flows, living a storm and moving with it, as opposed to the aesthetics and science of detached observation in civilization (as in so many sublime works of art in museums, such as Turner's paintings of a storm, and specialized scientific knowledge of atmospheric flows destined to control and prediction).
— You develop intelligence and sensitivity in contact with things and the environment, you then feel with redoubled force the coarseness and violence of something like going to shop in a supermarket: the sensory violence of that light, of those homogeneous, packaged products, of that architecture of prefabricated desires, all these are actually an expression of the systemic violence that they hide: the delirious modes of holocaust and slavery, extraction and monoculture, production and packaging, transportation, consumption, and waste.
— The absolute poverty and misery of buying plasticized and relocated products resulting from slaughter and transportation in a supermarket whose origin we doubly ignore, cooking them, consuming energy in kitchens and houses built with aggressive impact, and extractivism, and energy, and with utensils.
— You learn about animal architecture — nests, spider webs, plants, ants, insects, and from animal movement.
— Walking barefoot (and naked), you feel the environment, you dance with it: clothes and shoes anesthesize and attack the environment. The superiority of going barefoot and naked — feeling and connecting — violence of stepping

on grass with shoes — the inferiority of our hard floors that anesthesize our feet — the superiority of the soft and amorphous environments of plants and earth, which make you feel.

— The superiority of eating with your hands and inferiority of every tool that extends you destructively by atrophying and numbing you.

— Immersion in the elements, incomparable healing beauty of being barefoot and naked feeling the countryside, its smells, textures, sounds, colors, flavors, the light, the sunset, moving with all of it, inhabiting it, contributing to it (avoiding its destruction), what more interactive total immersive art than that?! Is it *the total art?* Perhaps we make art because we have lost this richness of experience and movement and perception, bored and stunted in cities and geometric fields.

— By dancing the places, you develop neuroplasticity, memories, knowledge, mnemonics... a superior intelligence that flows with things, that appreciates movement and tends to it instead of tending to the immobile atrophy of false comfort, the deadly trap.... You use only your hands and teeth, your whole body, and senses.

— Microdancing at a place, improvising a disalignment, creates an indelibly deep and plastic memory in the body, a new multisensory–proprioceptive integration. It is a true mode of knowledge and memory that can be cultivated. I started doing it when I went out walking and had forgotten my camera or notebook but could remember an impression or idea popping up by creating kinaesthetic associations.

— The *total art* of dispersed recollection, sensory exploration and dance, inhabiting, learning, increasing sensitivity, feeling the world, with dispersed shit, dispersed multimodal (nonreproductive) sex, planetary and metasexual cruising, migration with the elements...

— You contribute to mixing and dispersion: the intra-active evolution of the biosphere.

— Free animals in nature are much cleaner than civilized humans, because everything flows and remixes, not like in our rigid rooms that paralyze flows and our absurd hygienism.

— Shitting in the fields it is part of matter transduction — dispersed shit feeds other life forms that will perhaps feed you in a never-ending transformation and mixture of the biosphere. Our human agglomerations paralyze this process, creating toxic intensive agglomerations and plagues, hygiene problems, etc.

— The inferiority of monocultures, where nothing grows or mixes, everything is impoverished, the fallow land.

— Eat loose leaves at the moment, savoring each diverse texture, in its context, with intensified multisensory integration, learning to distinguish, raw and freshly picked.

— You dance and sing like birds do, creating rhythmic fields that coexist with others without imposing themselves. Nothing can be compared to the dance of the starlings, superior because it is not separated from life, it is lived, it is not just observed, 24/7 and 365 days a year!

— Possible exponentiality of the process: first slow and then faster, at a personal level and at a global level, while the population decreases, we create communities of metabodies, common bodies, and modal societies to come.

Everything allows to foresee [...] *the gradual reawakening of the Dionysian spirit in our modern world.*
— Friedrich Nietzsche (1999, 94, translation modified)

6.7 A Dionysian Politics of Life, and Death, as Variation

What is the Dionysian? The Dionysian is an ethos, aesthetics, and politics of life (as cycles of birth, mutation, and death), that implies movement and interrelatedness, symbiosis and mutation, nonseparation and variation, avoiding fixing oneself or separating oneself, an overabundance as well as a radical care, a proprioceptive ethos of cosensing and BI, a politics not of discursivity and representation but of moving bodies, in irreducible variation and symbiosis, a geopolitics of the chorus and the orgy, an innocence of becoming and an affirmation of all that happens, but also a resistance to reductions or alignments.

The Dionysian I claim is not an escape valve, nor a pole within a bipolar logic that always needs to get balance with an orderly Apollonian side. Instead, I take it as trampoline toward an undoing of the human supremacist pedestals of "civilization" altogether, and doing so through ecstatic, symbiotic, mutant dances of life which have arguably preceded civilization but which cannot be simply brought back, they need to be reinvented in our multifaceted presents. My claim for the Dionysian takes distance from and acknowledges its problematic genealogy and associations with romantic and colonial appropriations that create a "barbarian other" as both mythical past and as the animal in us that civilization takes distance from while needing to acknowledge its persistence and allow its existence in a regulated form.

Metapolitics[60] shifts to movement every issue that has been previously posed in terms of structure, thus potentially transducting across macropolitical spheres, dealing with traditional political structures, as well as affording new micropolitical practices, experimenting with new modes of experience.

Disalignments from Cartesian space, dualist subject–object relations, and repetitive affective rhythms or anatomically reducible bodies would be part of such a transversal ontopolitical agenda addressing perceptual choreographies in any of their expressions, from screen culture to bureaucracy, from medical institutions to the family, from cyberwar to geoengineering, from experiential micropolitics to legal ontologies. The starting point for such a politics is always in recovering the fluctuating force of our proprioceptive swarms. From there, one may unleash a metatopian politics of indetermination across any spectrum of experience.

The principle is that of nonreduction, of counteracting any reduction of qualitative variation, anything that foregrounds pure quantification. The greater challenge appears if one tries to consider disaligning the global field of superalignments, and to sustain a more disaligned plurality of fields instead. This could only arrive as gradual mutation, since any structural collapse would reinstate the movement trajectories underlying dominant structures.

60 Note that my proposal for a metapolitics is not derived directly from Alain Badiou's though it does have a relation in that for Badiou (2006, ix) it implies a "mobile capacity that constantly defies classification," where "a world of infinite multiplicity could also be said to affirm the undetermined nature of anything." However, my approach through a Radical Movement Philosophy and metaformance aesthetics implies also significant differences in approach that might be too complex to detail here.

A movement r/evolution can only be one of subtle ongoing variation. Mine is not a utopian but a metatopian proposal, not a global alternative but an ongoing practice of indetermination across any given ecology.

...

Dionysian politics: The stronger our critical hammer, the deeper our joy in reinventing ourselves has to be. Inversely, the more we broaden the scope of critique, the broader the field of alternatives. The metahuman mutation proposes a politics of openness and joy as opposed to a politics of fear: a politics of enjoyment in feeling oneself, as a body in motion, variation, and symbiosis with the world. A nonrational, nonverbal, nonsemiotic Body Intelligence revolution, in which bodies move in excess of any segmentation or reduction.

Restoring the balance between affecting and being affected implies recovering an atrophied sensitivity. The more desensitized we become, the more we impose ourselves.

The metahuman odyssey is not the colonization of the planet or space, but the journey toward internal and relational variation, qualitative, minimal, and infinite, of the body–movement. *Knowing oneself is only the vehicle to transform oneself:* where the Proustian recherche becomes the dance of Zarathustra!...

The metahuman r/evolution is a turn toward a *Metacene:* beyond the current or recent Holocene or Anthropocene or Algoricene, toward a *renewed symbiotic, mutant Earth.*

If I can't dance, I don't want to be part of your revolution.
— Emma Goldman[61]

6.7.1 A Metahuman, Metasexual R/evolution

6.7.1.1 Metahuman R/evolution in a Nutshell

The *metahuman turn* is about mutating as species toward a renewed symbiotic relation to the Earth and all life forms, embracing indeterminacy and variation, through the joy of variation in movement, while ruthlessly facing the need to change all dominant modes of living, and our toxic occupation of the Earth, against all forms of human supremacism and of (nonhuman and human) oppression.

The metahuman turn proposes the following incipient principles or *inciples*:

1. **Stop being the planet's pandemic.**
   a. Undo all human supremacy.
   b. Stop the Planetary Holocaust.
   c. Suspend human multiplication.
   d. Embrace radical veganism.
   e. Never impose movement on others.
   f. Care for this body and this Earth now.
   g. Activate systemic resistances.
2. **Mutate reinventing our movement.**
   a. Unfold the potential of bodies.

61 Attributed to Goldman by an anarchist movement from the 1970s – incorrectly so according to Shulman (1991), but resonant with Goldman (1934).

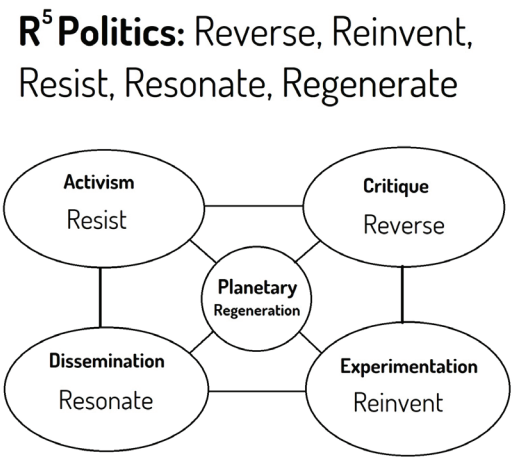


Fig. 100. R5 process: Reverse, Reinvent, Resist, Resonate, Regenerate.

b. Regain the capacity to sense.
c. Cultivate symbiotic mutation.
d. Move in minimal variation.
e. Create neurodiverse expressions.
f. Develop metahuman kinships
g. Cultivate non rational thinking.
h. Disalign from reductive frameworks.

Implying a triple ongoing process: *mutate, disalign, resist.*

— *Mutate* or *reinvent*: develop new BI technologies; relearn how to move, feel, and live in other ways, undoing the sensorimotor atrophy that has brought us here, with improvisation and (sur)vival techniques.
— *Disalign* or *reverse* from impoverished ways of life: heal from human supremacism by which we have become the plague that creates mass extinction and its own extinction, analyzing systemic problems and the degree of alignment of each one with them; self-denazifying ourselves.
— *Resist* or *regenerate*: activate resistances and activist practices across all existing social–political spectrums, as well as transmit, disseminate, and spread knowledges, creating communities and choruses before disappearing.

This triple way implies ongoing double disalignment, as ontotherapy (undoing human supremacist fallacies) and reinventing kinetic life practices (choral ontopolitics), while disseminating them and activating resistances across all possible domains, and across personal, collective, and institutional politics, using the latter's mechanisms against itself to undo it. This can also be summarized as an R5 process or politics: Reverse, Reinvent, Resist, Resonate, Regenerate (fig. 100).

The metahuman turn implies shifting every human-centered and human-rights based activity (politics, art, thinking, eating, dwelling, kinship) to a planetary, more-than-human frame of reference, without negating human rights but reframing them in planetary rights, understanding the radical planetary disruption of current human ways of living based on farming, agriculture, urbanization, industrialization, and digitization.

One of the arguments that is used for not facing the metahuman turn is that so many humans are vulnerable and occupied with surviving that we cannot impose the arguments of privileged Westerners on, say a poor farmer in India, or a precarious refugee or migrant entering Europe from Africa or the Middle East, challenging their beliefs... *But we need to face the radical paradox that for all of them the source of precarity is precisely the overpopulation and way of living emerging over the past millennia, and that there cannot be a future in continuing to fight for assimilation in the very system that creates the mass extinction!* Even if only gradually (but not too slowly, as there is no time), *the metahuman turn needs to be introduced in every context, the turn where human politics becomes a small part of planetary politics, and the entire human supremacy program gets challenged at its roots.*

The metahuman r/evolution is *not* an ideological movement of rational human subjects, but a choral movement of bodies disaligning, unfolding their *clinamen*, their minimal, ongoing, indeterminate variation, joining the wealth of all nonhumans, who were always already metahumans.

Metahuman communities are *not* defined by personhood or citizenship, but by ecologies of cosensing and their degrees of openness: a world of metabodies.

...

Meta- here means also *beyond the wrong inherited concepts* that split and toward a symbiotic, mutant world. *Metahuman* is the one who rejects the category which splits us from all other life forms for the sake of dominion, and who seeks to disalign from its associated mode of living. *Metasexual* is about moving beyond the category and practice of sex as segregated and reproductive.

Metahumans are those who

1. reject any human privilege;
2. reject the category of human and of species and all its related categories of domination such as gender binarisms;
3. disalign from all the neuronormative alignments of sensory atrophy that have created the dominant human as fearful self-obsessed creature dominated by a tendency to formalise and calculate, and defined by an impoverished perception and a will to fix oneself and the world, to dominate and control;
4. embrace a sense of symbiotic mutation and becoming with the world by regaining a richer sensorimotor embodied experience, affirming this body and this Earth against any transcendence,
5. unfolding unprecedented forms of BI and bodily potentials to qualitatively vary;
6. disaligning from movements that get imposed on others;
7. avoiding multiplication in quantity;
8. embracing nonbinary nonreproductive metasexuality and metaspecies kinships;
9. embracing a radical veganism;
10. disseminating practices for a planetary health, for resisting and mutating.

...

When in doubt that the metahuman alternative has any chances, it is worth asking:

— Does current trash-human society have any remote chance of not leading to a super-quick extinction?
— Isn't the utopia or dystopia the actual belief in techno-human supremacy and in the illusion of a Matrix that hides the desert of the real?
— Does its toxic and devastating way of living have anyway anything one can defend?

Of course, if we keep censoring or avoiding the more radical critique and alternative "because it has no chances" it will have no chance. This is a self-referential loop.

But the metahuman alternative is valid for all options: for a change before extinction, for those potentially surviving extinction and mutating, for a longer mutation if extinction does not arrive so soon, and for enriching our lives and those around us (mainly nonhuman) in the meantime in any situation.

6.7.2 Undoing the Holocide (And Our Complicity with It)

A metahuman flourishing and a regaining of planetary health implies, as a starting point, the following:

1. **Countercurve of body enrichment, regaining the capacity to feel–move.** Every apparatus and process of body impoverishment needs to be disaligned, with new choruses or metabodies, nomadic assemblages of moving bodies, by means of improvisation *technēs* for education, art, creativity, and sociality, mobilizing a new sensibility where sensorimotor richness equals cognitive–affective richness, shifting from the fixed points of vision of perspective to the entangled fluctuating fields of proprioception and multisensory integration. This implies undoing the dominance of rationalism and promoting pluralities of nonreductive intelligences of bodies, neurodiverse cultures, new indigenous pluralities of partial and mobile connections, choruses of behavioral indeterminators and ontohackers, for metaspecies symbiosis and crossbreeding, and a disalignment from the colonialist, ableist notion of species, while shifting from a control-oriented AI to a symbiosis–mutation-oriented BI as source for endless new architectures of life and sociality. Neurodiversity is crucial for liberating the planet from the anomaly of rationalist domination that is bringing it to an extinction cycle by imposing the value of quantity and homogenization. Everyone's neurodiversity needs to become cultivated as behavioral, ecosystemic openness, to heal the planet from rationalizing madness! In cultivating the smallest and most subtle capacity for ongoing variation in movement (the *clinamen* or *clinaos*) lies the power to regain planetary health, a force we all have at the depths of our tissues, inherited from 4 billion years of evolutions. What I propose is not a sacrifice of comfort but a regaining of the joy of movement. Meanwhile we may regain sensitivity and resilience and heighten the awareness of our entanglements with unsustainable and destructive systems, disaligning from them gradually.

2. **Shift to plant-based diets and Deep Degrowth and drastically reduce consumption-–production–transportation–energy–housing–waste to preindustrial or even preagricultural levels, by moving more as bodies without added technics and in new ways!** The more we enrich our embodied experience, the less we will rely on systems of desire production of impoverished bodies that are always

lacking something, following a system of massive desire production, and the less we become oriented by algorithmic control. We can then reinvent our ways of moving, communicating, dwelling, relating, learning, or healing, undoing our dependencies on toxic systems of urbanization, food, production, transportation, consumption, communication, and garbage, toward cultures of dispersed and naked gatherers who are capable of living again without those systems that collapse the planet while they atrophy us. We are the only species that has atrophied itself to the point of not knowing how to live without these dependencies, the most inferior for it! Until very recently, a few thousand years ago, we were able to live in another way, but we have fallen in the trap of a comfort that atrophies us and becomes necessity, makes us dependent on a motley of self-referential systems that have arisen by accidental aggregation. It is high time to reverse that process. We need to stop massive land abuse, exploitation, and urbanization.

We also must urgently reinvent our ways of eating. *We have to stop being complicit with the Planetary Holocaust*. Hundred billion animals currently in concentration camps need to be liberated! Eating meat from intensive farming is a cosmic crime. Farming needs to be criminalised. A *radical vegan* culture is needed (Del Val 2023a; Springmann et al. 2016; Springmann et al. 2018) that reduces consumption and population by relying on local self-production, enriching (g)local variations. Defending and claiming our affective relation with nonhuman animals as being at least at the same level as affective relations with other "humans" (and all life forms not dominated by rationality, verbality, and numbers) is of paramount importance for starting a revolution toward *a general animal liberation* and for returning to a mode of relation to all life forms in the biosphere that is not based on radical exploitation leading to generalized extinction. We need to claim the importance of our affective relations with nonhumans, which will allow us to develop less biased and aligned modes of kinship than those we tend to establish with humans, often too based on humanistic narrowmindedness, bonds which can help regenerate the planet, regain our senses, and reinvent "human" relations also! Humanism is the worst of all mistakes that need to be overcome, the source of all exceptionalisms, linked to Earth appropriation and heteronormative species multiplication. *There is no animal liberation without sexual liberation* (and vice versa)![62] Postgenderism goes together with posthumanism! Living as nomad gatherers is the only option for nondestructive relations with all life forms, for rich embodied experiences, and will most likely be the only survival option as the destabilization of our climate advances. There is, furthermore, anthropological evidence of communities that only or primordially gather, and not hunt, being thus vegan gatherer–hunters. Why only gatherers, and not gatherer–hunters? For several simple reasons. While I can appreciate the "sustainable" way of living of even some contemporary hunter societies, hunting is today an abusive practice, a foremost example of human supremacism, it is also the origin of mass extinctions in the upper Paleolithic, and becoming carnivores through tools for hunting was arguably the trigger of our tragic and failed evolution, since *anatomically we are herbivores.* The gathering I propose and practice is not accumulative, it is dispersed, taking and eating on the spot some leaves here and some there, partaking

62 An LGBTQIA+ movement that doesn't take veganism, animal rights, and posthumanism absolutely seriously is as problematic as would be an LGBTQIA+ movement promoting racism.

in the movements of eternal mixture of the biosphere. Such a gathering would also not be feasible with eight billion humans on the current Earth of polluted, desertified, and appropriated land, but it is the only way I see for transitioning toward a Great Disalignment and a planetary regeneration.

This goes along with the importance of *claiming non-verbal communication and thinking,* our capacity to cosense and our BI, which we share with all nonhumans (who are actually "better" at it as they are not biased by rationalism[63]). We can also live with less clothes and consumption, with more nudity, toward a global nudist culture, letting the body unfold as metaorgan, no longer hiding it nor neglecting it, with a richer multisensory experience and not relying on utterly unsustainable textile industries! We need to reverse all tendencies to accelerate and expand in quantity, which are symptoms of an impoverished experience, and foreground instead a richer and slower experience, with transportation mainly on foot, with focus on micromovements with one's immediate environment: less in quantity implies more in qualitative variation. Collaborating with, and learning from Indigenous cultures is key, while helping to protect them from, or fight against neocolonial violence. We need to learn from gatherer cultures from the past and present,[64] from nonhuman animals, and from the epochal mistakes of the Algoricene: not in order to "go back" to living "wild in Nature," but in order to invent unheard-of architectures, body intelligences, a completely new relation to the Earth that undoes 10,000 years of impoverishment and domination. *This is our radical, evolutionary, cosmic challenge,* for a metahumanity to come.

3. **Human population needs to be gradually but radically and voluntarily reduced back to preagricultural levels.** I am not saying that it is necessary to reach a million in a forced and imposed way, I am saying that a collective debate is urgently needed to stop avoiding the problem, to face its complexity, and that around 1 million would be a threshold of sustainability to seriously consider, instead of 1 billion, or 3 billion or 10 billion. With all that it implies, we need to move toward a voluntary suspension of human multiplication by doing away with the humanist, industrial obsession with sex as multiplication of an entity that is causing a massive overpopulation problem by which became *the Plague*, by freeing women from reproductive sexwork (a radical bodily *extractivism* if there ever was one), and freeing everyone from oppressive reproduction and heteronormative regimes, by stopping subsidies to large families, with higher taxes or bans for the richest who have children, subsidizing birth strike, empowering women, promoting information and education, and recognizing the diversity of sexual expressions and nonreproductive kinships, encouraging a minimum reproduction based on the principle of diversity, by destigmatising voluntary sexwork as social work, by promoting new modes of (queer) kinship and polyamory, transspecies families, nonreproductive homosexualities and *metasexualities,* defending aging, shorter and richer lives, embracing death as

63 Animal ethics is superior to humanist ethics in that it doesn't allow systemic killing, cruelty, and exploitation. It is not based on abstractions, but on embodied cosensing. Abstractions allow systemic domination. My proposal for new *technēs* of life (see Del Val 2021d) is amorphous but not abstract. It is in fact based on the most concrete-but-formless of things: our proprioception!

64 See Suzman (2020) on how all our vocabulary of fear and programming of the future stems from the agricultural era and how gatherer cultures lived without such preoccupations, with more free time, more joy. I also suggest that all of them have had choral improvisation practices of collective creativity and varying modes of BI. The future is in gatherer cultures.

part of collective mutation, and the orgy as mutation, refusing to have children for the sake of the planet's health. We need to challenge the dangerous tendency to reproduce binary categories that lead us to the abyss. Anyone can repudiate the binarism that classifies us according to an oppressive reproductive imperative of radical multiplication that leads us to extinction. *Compulsory reproductive heterosexuality — and its associated sedentarism — is leading us to extinction* through overpopulation and consumption! The (numerous and oppressive) family leads us to extinction. Heteronormativity and the heteropatriarcal model, of family units of massive reproduction, is an oppressive model that threatens biodiversity, body diversity, and culture diversity, exposing the paradox that domination is counter-evolutionary. It needs to be fully dismantled and its delirious excesses need to be corrected. Homosexuality and nonreproductive metasexualities are the way to avoid extinction, the way to planetary health! A century of compulsory homosexuality is perhaps needed in order to correct the excesses of millennia of oppressive heteronormativity!?[65] Or rather, a metasexual culture! Metasexuality implies, following Marco Vassi (1976) pluralities of modes of non-reproductive sex, as bodily and relational mutation, as relational qualities of experience and kinship, which do away completely with categories of binary gender, sexual identity, and orientation as these concepts stem from the radical misconstrual of sex inherited from agricultural-industrial societies: to think that sex is only the controlled reproduction-multiplication of an entity. Also, from Lynn Margulis and Dorion Sagan (1997) we learn that sex in evolution is primarily mutation: a microsexual matrix of diversification (Del Val 2020c). Bacterial sex is the paradigm for a microsexual and metasexual revolution where microsex (sex as evolutionary matrix of mutation where every new bodily composition is a new mutation, Parisi 2004) unfolds into a metasexual paradigm: of endless *modes* of sex as qualities of experience in variation, and as modes of kinship and relation for a modal society. Again, the Dionysian chorus is the trope for an orgiastic r/evolution. Developing technologies of the (sensory) orgy is the way for a Planetary Health, not genetic engineering of babies in the costly trash-human laboratory!

One can eventually summarize the above in the following slogans:

1. **Metabodize! Fluctuate! Swarm!** Craft yourself metabodies and choruses with others and the world. And mutate by regaining joyful sensing-moving!
2. **Disalign!** Stop disrupting the Earth and its life forms!
3. **Make kin,** not holocausts! Make kin, not babies![66]

65 Take this with a few grains of salt, as an ironic provocation for thought. I am not proposing a *compulsory homosexuality* enforced by law, although one should consider that after millennia of compulsory heterosexuality that has criminalized all alternatives and is leading us to extinction through overpopulation, it may be actually worthwhile and necessary to have a provisional correction that compensates the disastrous excesses of heterosexual reproduction, monogamy, and the nuclear family. If heterosexuals feel insulted by this, let them just think of how all nonheteronormative people have been feeling over millennia of oppression. The measure would anyway be provisional and partial. Would the world not be upside down, all political leaders now promoting homophobia would perhaps be promoting a provisional compulsory homosexuality as means to save the planet and the species!

66 As proposed by Haraway (2016).

It is necessary, for all intents and purposes, to reduce the population at least at the same speed as at which it has grown by voluntarily suspending reproduction, if we are to reduce the global disaster, to pre-industrial and even *preagricultural* levels! Maybe from 8 billion to 1.6 billion in about 130 years, until 2150; and then to 160 million,[67] and 10 million, and perhaps even 1 million, which is actually the population of *sapiens* for most of its history, when it seems to have gone pretty well, without creating mass extinctions — why do we have to be more? — and with it reduce consumption and sedentary living, while regaining a lost richness of movement and experience at the inverse-proportional rate in which we disalign from sedentarism and overpopulation! Of course, none of this is happening, everything goes in the opposite direction, so a massive collapse is to be expected. The genocide will come because of the denialism in facing these matters. Hence, exchanging knowledges and practices for a minoritarian mutation *during* the upcoming collapse is what is presented here as realistic alternative. Can't we undo this blind belief in the biblical mandate to "grow, multiply, and fill the Earth" (Genesis 1:28)? It is nothing more than a mandate, a belief, a domination-intoxicated dogma!

Who amongst the ones reading this text doesn't have some remainder of humanist faith in the need to multiply and expand? It is a deeply rooted *ontological addiction*! Ontohacking techniques and ontological therapies are needed to overcome these addictions and their associated impoverishment of experience! But against millennia of this impoverishing intoxication, we have in our tissues the heritage of four billion years of bacterial orgies! A far deeper power with which to regenerate the planet and ourselves!

We need to **undo the deepest humanistic beliefs**, expose their poverty, and mobilize instead a new experiential richness, starting from our proprioception, a richness that allows us to care for the planet and all its life forms as driving force for our concerns, desires, and futures. Our desires and futures cannot be guided any longer by the will to self-preserve through descendance (or trash-humanist mind uploading). Affirmations that "humanity" is unavoidably defined by this or that (fears, will to control and dominate, etc.) are mere tautologies that justify domination and prevent us from embracing our plurality and capacity to mutate. Underlying it all are impoverished ways of moving–perceiving–relating–thinking!

For millennia, we have been obsessed with narcissistic fears, fostering a narrow vision that has only been increasing (with) those fears! Embracing the body is the only way to embrace *this* Earth, and *this* life, against all preachers of heavenly or data transcendence! Developing our BI is also the best and perhaps only way we can afford an eventual survival that includes a mutation of the species toward a planetary regeneration. And, in any case, it can only enrich our lives.

Changing our ways of living for the sake of all life on the planet would certainly be worth the sacrifice. But I propose that there is no sacrifice! It is the joys of moving–sensing, of mutation and symbiosis, that we need to recuperate against the fallacies of sedentary culture. Dionysian politics is one of both *overabundance* and *radical care*. The way toward a planetary health is in recovering a richer embodied experience that connects us with everything around us.

67 The growth that happened from 10,000 years ago to 2,000 years ago was already exponential and extreme, from between 1 and 3 million up to about 170 million at the time of the Roman Empire and the Han dynasty!

How we move is how we think. The richer our movements, the richer our thoughts. The millennia-long tradition of the body despisers needs to be undone, embracing the joy of feeling oneself as a body in motion, in never-ending variation and symbiosis with the world. Only then will we be less dependent on unsustainable transportation, communication, production, consumption, exploitation, and killing machines that drive us toward extinction. Only then can we decelerate the curve. This needs both an experiential approach to recovering and reinventing our movement capacities and a systemic critique of all technologies that narrow down that capacity. At stake is not an issue of amount of movement but of qualitative variation, for a neurodiverse culture against ableist normativity.

Only when we recover the body's capacity of internal fluctuation and variation, will we be less guided by opaque algorithms. Recovering that richness is an unprecedented evolutionary response-ability. Or will the *sapiens* be known for being the utterly inferior species capable of quickly unleashing a mass extinction and a self-extinction? Is the *sapiens* already plural enough and can its domination-oriented strand be challenged? Can we open up reductive reason toward a richer and less reductive intelligence of the body?

6.7.2.1 Modal Societies and Metatopian Politics

How to imagine a modal society? It would be about creating scattered and reduced communities, associated with specific ecosystems, developing ways of living, body intelligence, perception, collectivity, symbiosis, and relational architecture associated with that ecosystem. Each community would be a metabody, a node of mutation, miscegenation, and symbiosis in a planetary network of evolutionary variation, analogous to bacterial societies. Let's learn from bacteria!

"Metabody communities," also called "Common Body communities," consider reality in terms not of entities and species, but of symbiotic processes of mutation, fields of relation and variation, with its modal economies of proprioceptive symbiosis and orgiastic mutation. Each community would have its choral practices, its techniques of improvisation, education, and Dionysian choral politics, of cosensing; its orgy techniques, its continually evolving metasexual modes, its collective care and raising of children based on minimal reproduction, its modes of voluntary sex-work as collective care; its modes of non-linear spacetime, its economies of variation, and of work as a game; its vegan eating techniques based on gathering; its polyamorous and trans-species kinship modes.

Metabody communities will focus on radically embodied practices of movement, collective dancing–singing rather that storytelling, avoiding the taking over of verbal or numerical abstractions, and foregrounding the development of modes of BI. Practices will need to be promoted *that sustain a balance between the reductive tendencies of verbality and calculation,* and the larger matrix of movements and multisensory integration. Less narrative and counting and more dancing and singing!

There would be partial connections with other communities, networks of traveling agents, pollinators for hybridizing knowledge, practices, and molecular memories, including genetic ones: metasexual pollinators through communities, while avoiding continuous and massive displacement, as well as avoiding the idea of a globality, assuming an immeasurable world within which mobile relationships are created with a small part, networks between open but localized, glocal communities.

It will be a technodiverse society fragmented into a plurality of cosmotechnics as opposed to current global monotechnics. But at stake is not only mobilizing differ-

Fig. 101. Top two rows: flexinamic architectures in the sea, desert, and mountains of Almeria and Gredos in Spain in (2014–15), and Lesvos (2017), in Madrid; middle two rows: the Netherlands and Greece outdoors (2016–2017); bottom: Toulouse indoors (2018).

ent modes of technique. Crucial is their degree of plasticity, as techniques of evolutionary variation.

First, there would be a process of planetary regeneration, of concrete ecosystems, a gradual disalignment, creating laboratory communities and guerrillas of indetermination. Choosing ecosystems where to live in this way is an important part of the process, maybe back to the jungle (if it still exists, on a disrupted Erath, and during a terrifying collapse)? Those deeply mutating may well be the only ones surviving, a mutation so deep that one prevents the grand errors to return.

What I describe here largely corresponds to what extremely diverse gatherer cultures have been doing since at least 300,000 years, and nonhumans long before that, back to the origins of the Earth. But this is ultimately not a utopian but a metatopian approach: becoming ontohacker, indeterminator, here and now, anywhere, reintroducing variation in our movements. A metatopian politics of *enferance:* sustaining indeterminate variation.

Metatopias are spacetimes created from movement, spaces of crossbreeding and mutation in the face of market niches that separate to control. We need to mobilize dynamic architectures, metatopias for a pluralities to come. They are nonideological, nonverbal politics, implying a metahuman, metaformative change of perception and movement, toward greater indeterminacy and variation, anytime and anywhere.

One important step is to start seeing many habits of the WEIRD subject for what they are: perverse and untennable luxuries — traveling with motorised vehicles of any kind, using toxic chemicals for hygiene and health, inhabiting urbanized environments and urban life at large, etc. The overall proposal may sound radical, but they are calls for gradual transitions, not for abrupt black-and-white refusals. It could be applied by degrees in different scenarios. Yet it doesn't allow us to ignore the whole and stay within very partial limits that would reaffirm the killing machine.

6.7.2.2 Decalogue for Planetary Health

Quit Facebook, go vegan, become metasexual… and dance every day!… This would be the very summarized formula, but the proposal is more complex and interesting[68]:

1. **Back to the body: rediscover proprioception**, the sense of the body in motion, and develop BI, the capacity for minimal sustained variation. Avoid sedentary lifestyle and false comfort. **Develop nonverbal communication**, noncategorizing, nonformalizing, nonrational, neurodiverse intelligences, cosensing instead of verbal and rational consent. **Develop choral practices**, of the common body, of the metabody, of improvisation, memory, sociality, and education, of work and the economy of variation, against utilitarianism and teleology: planetary choruses for a Dionysian politics. **Disalign from sedentary knowledge**, education, and communication economies that focus on accumulation and repetition and shift to embodied improvisational practices of knowledge and relation in variation.
2. **Become a radical vegan**, not consuming products of animal origin or human and land exploitation, or of delocalized origin. Away from globalized food and food

68 I also endorse Patricia MacCormack's (2020, 10) "call to 1) forsake human privilege; 2) practice abolitionist veganism; 3) cease reproduction of humans; 4) develop experimental modes of expression beyond anthropocentric signifying systems of representation and recognition and 5) care for this world at this time until we are gone."

waste. Back to local, seasonal, biodiverse self-production. Toward a renewal of gatherer cultures.[69] **Ontohack** your human supremacism.

3. **Don't consume, create garbage, or pollute!** Self-produce and recycle! Away from toxic consumption and production of goods, textiles, technologies, house appliances, furniture… away with the delirium of sedentary atrophy! Back to the body, not just the local. **Promote global nudism**,[70] the body as a sensor.
4. **Don't reproduce**, neither sexually nor in the laboratory. Voluntarily suspend the delirious human multiplication that drives us and the planet to extinction! Voluntarily give up the oppressive norm of multiplication and its heteropatriarchal structures! Develop metasexual modes, orgy techniques, polyamorous and transspecies kinships, contribute to the *voluntary* reduction of the human population, back to one million gatherers. Become microsexual agents, pollinators of epigenetic variation and miscegenation.[71]

69 See Gowdy (2020). This proposal seems to resonate with Duncan's (1996; 2001) Olduvai theory which predicts a return to Paleolithic modes of living due to the exhaustion of fossil fuels on which industrial civilization is based, with the difference that I don't see a return to gatherer societies as forced effect of the ecological collapse of industrial civilization, but as a desirable way of living, of restoration of biosphere integrity and egalitarianism, and as the way to regain creative evolution and richer embodied experience, mutating as species.

70 Why a global nudism?
- The body is a sensor that we must mobilize.
- Clothes are part of the history of contempt for the body and its growing atrophy. We hide and protect it; it is an ancient technology of separation from the environment, one of the first algorithms and grids, one of the pillars of human supremacy and the attempt to distinguish itself from the rest of the species.
- To those who think that we need clothing to protect ourselves, I remind you that nomadic tribal societies of gatherer–hunters like the Selk'nam lived naked in the cold of Patagonia until they were exterminated by the settlers of sheep farms. Moreover, we must abandon the supremacist idea that we have to be everywhere and moving everywhere!
- The textile industry is extremely unsustainable, based on the exploitation of animals, humans, and ecosystems, and on production, transportation, pollution and delirious consumption and waste.

71 This is a radicalized version of some existing and recent proposals in feminism such as Haraway's (Haraway 2016, 103) call to "make kin, not babies!," hir proposal of *sympoiesis* as making-with and becoming-with, and hir fabulations of "communities of compost" that regenerate the planet with new modes of symbiotic kinship and low reproduction. But hir idea of reaching a population of around 3 billion over several hundred years I find excessively soft: 3 billion humans were the number achieved after 1950, already associated to a very unsustainable relation to the planet! For a more sustainable relation one needs to look at populations well before industrialization. See Chefurka (2019) for a revision of literature on this matter. On population and planetary crisis, see Crist et al. (2017; 2022). *Way of living and population are related.* In this sense, numerous posthumanist, queer, decolonial, neurodiverse and other theorists still manifest humanist biases by assuming an essential separation between *bios* and *zoē*, between a discursive politics and something that is its "outside." Metahumanism seeks to overcome this limitation through a Radical Movement Philosophy approach.

There is also a wide arrange of movements and philosophical positions that count as antinatalist, some of them perhaps too soft in the reductions proposed, such as Population Matters, others perhaps too radical and negative in claiming an extinction and a suicide of the species without considering alternatives for a mutation, such as the Voluntary Human Extinction Movement and the Church of Euthanasia. Antinatalist positions of different kinds include those of Schopenhauer and Malthus, but also Spanish anarchist Luis Bulffi who wrote the "Belly Stryke" manifesto in 1906. "Earth First" ecologism, queer and posthuman kinships, or "no children by choice" movements also resonate with my proposal, though generally an alternative and affirmative proposal for the species's mutation is missing. My proposal moves away from the highly criticized Malthusianism that many see as totalitarian, since it proposes a *voluntary* revision of the human program of oppressive multiplication of the last millennia and addresses the intertwining of all problems.

5. **Disalign from alienation technologies**, from Facebook and other antisocial media, from any interface that reduces you to fixed points of vision, that turns you into a calculable body, that absorbs you in the addiction to toxic media, that turns you into a repetition node of contagious gestures and homogeneous perceptions. The excuse that "you can make good use of technology" is not valid in face of the Planetary Holocaust. Nor is it enough to be a hacker and "make critical use of technology." The provisional use of such media to spread the message in view of a gradual disalignment is more of an option.
6. **Move as little as possible in quantity**, avoiding mechanical means and their systemic violence, enriching your experience with the most immediate, starting with the body itself, which is itself a microcosm of sensations and movement, favoring slowness and qualitative variations. Walk in disaligned, semidancing mode, never in straight posture.
7. **Develop symbiotic ways of living**, of relational and dynamic architecture, avoiding urbanization. Urbanizing is a planetary crime! Don't build or buy newly built houses! Develop the ability to inhabit without aggressively modifying the environment, learning from animal and plant architecture, with organic and dynamic architectures that are part of the terrestrial flows instead of blocking them.

Metahumanism moves away from transhumanists like David Pearce who proposes to genetically reprogram the biosphere to eliminate the imperative to reproduce and to eliminate meat-eating predators including nonhuman animals. Pearce seems not to understand that the insane human multiplication, which is unparalleled in nature, is linked to an insane way of life, also unparalleled, and that this is the problem that creates a mass extinction. Evolution is indeterminate variation and any attempt to program it only perpetuates the colonial and Eurowhite fantasies of domination that lead us to extinction. Although Metahumanism does not defend animal predation, it cannot be put on the same level as human superpredation, not even remotely. It is the habits of the dominant human that have to be changed toward a deeper epiphylogenetic mutation by which we stop imposing ourselves with our excessive self-awareness that is the result of a millennia-long vital atrophy.

Metahumanism's proposal for animal liberation is along the lines of "abolitionist" veganism that opposes all animal use and abuse and denounces the anthropocentrism of "animal rights" movements, but does not recognize any essentialist distinction between a human species and other nonhumans. What we have to do is *stop being "human"* and become symbiotic and mutating metahumans by recovering and reinventing BI. This does imply stopping reproduction and embracing radical veganism but not toward a sheer self-extinction. Rather, it implies a deep mutation, by which we acknowledge our place as just one of the 8.7 million species in a symbiotic world. My antinatalist proposal acknowledges the anomaly of human overpopulation over the past 10,000 years as linked to a particular civilizational process that causes the current mass extinction, an anomaly within a broader geological framework.

The metahuman proposal resonates with some aspects of anarchoprimitivism (Zerzan 1994) or neo-Luddism, such as the denunciation of the civilizing process, the challenge of industrialization, and the vindication of ways of life that are not dependent on it. However, it differs in that the metahumanist proposal does not recognize a human nature. All nature is only indeterminate variation, which the civilizing process has wanted to suspend, reduce, and paralyze, creating mass extinction and suicide as a species in the blink of an eye. Metahumanism inverts the original inversion of life values that emerged with agriculture (rooted in bipedalism), provides an unmitigated critique and challenges of the civilizing process and of all human supremacism, looking beyond, toward new mutations of life. It is not about going "against technology," which would be falling into the usual mistake of confusing symptoms with causes. It is the type of movement that counts. If we eliminate technology and do not profoundly change sensitivity and movement, and with it the modes of relationship, we will not undo the core of what leads humans to destructive domination. We must undo an entire techno-epiphilogenetic evolution with new vital *technēs:* vival and convivial *technēs* of experience (in addition to survival techniques).

8. **Heal through movement** in relation to all physical, mental, or emotional discomfort, and not through drug addiction or toxic media escapism (of sensory and affective drugs). Animal exploitation, ecosystem disruption, and sedentarism are the sources of all human illnesses. Disalign from the hygienism that separates and immunizes us. Human civilizations have created hygiene problems through intensive urban agglomerations, sedentarism, and farming.
9. **Accept death** as part of the evolutionary mutation, and suffering (*pathos*) as part of symbiotic becoming; not the suffering of the slave, not the systemic killing, but the Dionysian affirmation of everything that happens, and the active capacity to integrate it in a cosmic variation.
10. **Activate systemic resistances,**[72] networks of ontohackers, indeterminators, microsex workers, disaligned bodies, sharing regenerative practices, rewilding and letting ecosystems heal, against all systemic reduction in all manner and scale, for personal and collective transformation as well as through civil disobedience and interventions in institutional and traditional politics.

These proposals need to be enacted in all modes and scales, as a gradual but quick disalignment, starting from our experiential regaining of the capacity to move, sense oneself and one's immediate environment, disaligning from the dependency on insane systems of consumption, production, transportation, housing, communication, economy, and work, creating alternative communities, and activating global resistances against the state and corporate powers that enforce people to stay aligned with the *holocide,* demanding systemic change. Complicity of states and corporation, as well as populations, with the holocide needs to be denounced and awareness about this complicity needs to be raised. Disalignment actions can also become massive, peaceful but very active resistance actions, in a variation of the movements promoted by Gandhi. But let's go metaformative: every alignment that reduces, every technology that impoverishes sensorimotor variation needs to be challenged (every perspectival medium for instance, or engine, or clock).

This proposal also resonates with important existing ones in ecofeminism, such as those of Vandana Shiva,[73] and in movements, Indigenous and other, for the Rights of the Earth and the Democracy of the Earth. And yet I consider that many of these

72 A precursor of some of these proposals is Henry David Thoreau (2017), both in terms of civil disobedience which Thoreau practised as opposition to slavery and which we can now extend to opposing the fact that all states of the world finance the animal holocaust and the extinction crisis, and of the anarchoprimitivist ways of living exposed in *Walden* (Thoreau 1971), whereby, however, it is interesting that Thoreau cultivated an acre of land. If eight billion humans would do this we would have more land occupied than by current agriculture. Hence the importance to address the population issue, and the return to gatherer cultures.

73 Shiva (1993) has made a very important and persistent denounciations of the devastating effect of monocultures of crops disrupting biodiversity, related to how global corporations appropriate life through biopiracy and bioimperialism falsely presented as Green Revolution (Shiva 1997), which has actually been a disaster. She defends instead an ecofeminist biodemocracy or Earth Democracy (Shiva 2005) for all life forms, with a shift to local, biodiverse, and animal-friendly forms of agriculture, where the soil is the reply both to the climate and environmental crises, and the human equality and health crises (Shiva 2008), along a reclaiming of commons, indigenous knowledges, and the rights of the Earth (Shiva 2020). My proposal pushes hers further in claiming that the only real democracy for all life is without crops or animal husbandry, and with a much more drastic reduction of our occupation of the Earth. Shiva (2005) underlines the transversality of the diversity principle to natures and cultures and denounces the tendency to substitute diversity with homogeneitiy, exemplified by the viewing of diversity as weeds (Shiva 1993, 72).

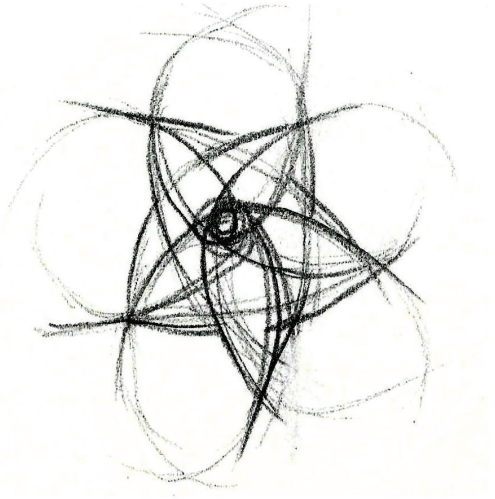


Fig. 102. Countermovement diagram. Against every major alignment of reduction a countermovement of opening needs to be enacted, a becoming, considering five major becomings: *mestiza, neurodiverse, nonhuman, metasexual,* and *propricoeptive swarm.* These spread across three levels: from the *body,* to its *environments,* and from there to a *planetary regeneration.* This implies also understanding our entanglement, at the bodily level of daily gestures and environments, with planetary-scale alignments, an understanding that is achieved though a metaformative critique that diagnoses and diagrams the fields we are part of through the lens of a Radical Movement Philosophy.

proposals, while very important, need to be taken further, through metahumanistic, metaformative, and (post)queer turns, as they hardly ever take into account the need to challenge many resilient assumption of humanistic supremacism, for instance in relation to the need to voluntarily suspend the multiplication of the human species and undo heterosexual regimes and promote transspecies kinships, or the need for a radical inventiveness in creating new modes of nonsedentary living through a radical reinvention of our movement and perception. Ecofeminism, which is already ecological, decolonial, and Indigenous, needs to be affirmed and expanded into radically (post)queer, metahumanistic, animalistic-vegan and neurodiverse terrains.

The "Declaration of the Rights of Mother Earth," signed in Bolivia in 2010, is an important step, and needs to be radically affirmed and expanded. As Annie Sprinkle and Beth Stevens (2011) claim in their *ecosexual* proposal, the Earth should be seen more as lover than as mother. We should avoid any image of the Earth as the one that nourishes our lives and needs to be taken care of. The Earth is a radically dynamic field that exceeds any humanistic fantasy. We better take it seriously. We better contribute to its biodiversity instead of trying to control its dynamics.

A long way needs to be passed in the emergent fights for the rights of animals, plants, and other life forms, of ecosystems and the inorganic and of the Earth at large. Advances in this (or in current debates about animal work for instance) are emerging, but far too slowly considering the critical situation. Relational ontologies of movement and indeterminacy are needed for this. This book proposes a number of moves in those directions.

6.7.2.2.1 What Is Death

Since the dawn of *sapiens*, cultures have been defined by their attitude to death and their obsession with it, wanting to avoid it by seeking immortality or with the promise of an afterlife, or to accept it and celebrate it as part of a great mutation. Para-

doxically, the attempt to avoid death by a dominant elite, and the fear of death in general, has created a systemic death machine on an unprecedented planetary scale, only comparable to that of the great extinctions of the past, which were due to massive volcanism and cosmic events.

Death is mutation, it is part of cosmic evolution as an eternal mutation. Programmed cellular death arises in complex multicellular organisms, as does the association of sex and reproduction. Bacteria have neither programmed cellular death, nor sexual reproduction. They have sex to mutate. But complex organisms cannot mutate as easily as bacteria. It takes death and reproductive sex to be able to have organisms mutate with changing cosmic flow. In addition, each new organism has an unprogrammed brain whose synapses emerge "from scratch" in a changing environment. Thus, the new organism is a complex and multidimensional variation of the old one.

However, it is about fighting against the systemic death machine that reduces evolutionary mutation, and for this we must accept death! Free death, neither too soon nor too late, at the right time, as Nietzsche (2006) affirms in *Thus spoke Zarathustra,* in the chant entitled "Of Free Death."[74]

6.7.2.2.2 What Is Health

Health is a field's capacity to sustain the evolutionary process diversification, of life as symbiotic mutation, as metabolic web that enriches the totality of expressions, never as individual imposing itself. Health is never just individual nor human; it is planetary! Environmental, "animal," and "human" health are inseparable. Undoing the holocaust of farming and its associated Earth disruption is the first condition for regaining human health.

6.7.2.3 Undoing the Fake Pluralities of Late Capitalism

Plurality cannot be of the quantity of available things. This is the illusion and privilege of a hegemonic subject, hiding a planetary massacre. Too often, we are slaves of prefabricated and oppressive desires that we take for granted, confusing them with individual freedoms and ignoring the poverty of our ways of living, based on our internal atrophy, always guided by external signs showing promises of unreachable futurities.

This is the core of the dreadful Aristotelian legacy: an unreachable *telos,* where our embodied movement is always presented as lack. This is also the core of systemic domination. This is one of the dead ends of an ethics based on individual "free will." The other is how this individual is a privileged human whose rights are affirmed against those of every other life form, implying a suicide. Hence the need for a relational ontoethics where the measure for freedom is the indeterminacy and variability of relations composing the field (social or other): a complete reversal of the Aristotelian *telos.*

74 Along similar lines, Death Activism (MacCormack 2025) stresses the way in which our fear of death and the planetary killing machine we have created for the sake of self-preservation and expansion are two sides of the same extinction coin, paradoxically ensuing in a collective suicide.

6.7.2.4 The Reverse of Everything: A Metahuman Understanding of the World (for Undoing Dominion and Extinction)

6.7.2.4.1 What to Do in an Upside-Down World?

This is a reverse book in an upside-down world. Where the entire economy goes digital, I say that the future is the body. Where humanity is immunized, I say that the future is the planetary orgy. What has been presented to us as teleology is actually a great anomaly. Heterosexuality leads us to extinction! Sedentary comfort is vital atrophy!

The great challenge is to expose the poverty of domination as counter-evolutionary anomaly. This implicates the masters as much as the enslaved. People obsessed with domination, fascists, dictators, whether at large scale or at home, are impoverished bodies who have lost all sense of joy, movement, and variation in self-feeling with others.

No quantum computation for increased control; quantum bodies, quantum indeterminacy of BI, Body Intelligence, and of the body as fluctuating field!

6.7.2.4.2 How to Stop Being the Plague by Reinventing Ourselves!

Overwhelming fact: We haven't contributed to the planet's biodiversity, on the contrary, we are killing it![75]

1. We need to acknowledge the fact that we are mainly, if not only, producing damage to a planet that would be much better off without us. Let's step down from the pedestal, undo supremacism. Most or all of the things we produce that we consider good, tend to be dispensable and limited to a human minority.
2. We need to acknowledge and mobilize alternatives, recognise that there are many humanities, past, existing, potential and to come; that human nature, like all nature, is capacity to vary, movement of variation; that intelligence is about understanding that evolution is symbiosis and mutations, not domination; we need to understand that the human is not only about reduction, domination, and categorization, that it can create other ways of living.

I share with you my nausea and rage. I am the visitor to Kafka's gallery[76] who sees the exploited, tuberculous circus rider where others see the adored ballerina. As in Kafka's gallery, or in *The Matrix,* it is time to stop pretending that everything is OK! It is time to shout *Stop!* May this manifesto serve to disseminate a certain raging nausea, and a mad Dionysian joy toward recovering our movement, and take into unheard of evolutions: *ontohacking r/evolutions.*

6.7.2.4.3 (How) Can We Create a Liveable Future? (For the Planet and All Its Life Forms)

How can "humans" stop being the planet's nightmare? How can we start contributing to biodiversity instead of killing it? Can we even start thinking of how to contribute to biodiversity instead of assuming that we shouldn't, and instead of kill-

75 The extraordinary variety of dogs, with more than 500 subspecies, as well as cats and very few other companion species, is perhaps one of the few "good" effects of humans, through artificial selection, for the planet's biodiversity, and for new modes of symbiosis. These, together with superbacteria and superviruses that become resistant to antibiotics and mutate more quickly, may be the new evolutionary strands propelled by human action and that will perhaps survive the human!

76 In reference to Kafka's short story "Up in the gallery."

ing it? The nonhuman animal contributes, because it does not impose itself and its movements are part of the fluctuating biodiversity of ecosystems.

We need to consider every context: the powerful who don't want to change their life (how to show them their criminal and suicidal poverty?), and the poor who are occupied with surviving (how to share with them the idea or perception of the oppressive and suicidal nature of inherited norms and of the desired lifestyle of the rich?). Let's think together through this!

6.7.2.4.4 On the Limits to Freedom…Toward a Deeper, More Radical Freedom

Enough with palliative philosophy and policies, with palliative and escapist arts and "leisure," too concerned with giving a voice to narrow individual obsessions. We have developed a society of *total escapism,* from the seasonal escapism of rituals and carnivals in agricultural societies, through the vacations and weekends of disciplinary societies, to permanent online escapism in control societies, where every gesture gets monetized. We need transformative arts of experience, arts and *technēs* of life, for a planetary regeneration!

…

If the limit to our freedom is in someone else's freedom, we urgently need to widen our idea of this "someone else" to the entire planet and all its life forms, understanding our daily complicities with a Holocaust. It is not *a priori* a question of imposing prohibitions (to reproduce, eat meat, use motorized transport, buy products with plastic packages, or use Facebook, for instance[77]), but of developing a sensitivity, a deep embodied awareness. We have to understand how our daily gestures are entangled with massive planetary killing that drives us to extinction! We also need to challenge the naive idea that technologies like algorithms (or motors) are neutral and can simply be used for good or for ill.

We have centuries of delay… let us not postpone any further dealing with the uncomfortable questions of food, overpopulation, and sedentary consumerism. All debates and critical problems need to be revised under the light of planetary health.[78]

77 Should one criminalize reproduction, heterosexual relations, consumption of animal products, perspectival media, mechanical transportation, or digital control networks like Facebook? Maybe. Our red lines are so arbitrary. Some time ago it was unthinkable for sovereign subjects not to have enslaved people, it was unthinkable that women should have rights. Nowadays it seems clear that one should not hold enslaved people, that women should have equal rights, that one should not kill other people. But many "critical" people still pretend to have arguments against veganism! Are we going to kill gays because there is gay capitalism? These are arguments for holding on to a way of living through which we are killing the planet, billions of life forms — and ourselves with it — only because we hold onto a completely wrong idea of comfort and individual freedom. Nowadays (unpreoccupied and relentless) human reproduction is a cosmic crime! Eating meat from massive animal slavery is a cosmic crime! Promoting the idea and practice that having children, many children, is in itself unquestionably good and necessary is a crime against the future of the planet and the species! Assuming binary genders stemming from the gender apartheids and the cosmic outrage leading to a suicidal, holocidal overpopulation, is a cosmic crime! Assuming species or binary gender reproduces fundamental assumptions from the age of reductions and contributes to the holocide. We need to step down from humanist pedestals if we are to address the domination prism itself and not just its effects. Should one stop relating to meet eaters and to people who reproduce or even who assume binary gender identities and heterosexuality, treating them like cosmic criminals?…

78 There is a double obsolescence of the politics inherited from the French Revolution and after World War II of human rights, with regard both to the challenges of algorithmic culture and to the Planetary Holocaust. Take the example of reproductive rights. Without neglecting the value of the rights that have been won or are being defended, the entire debate needs to be reframed in the context of

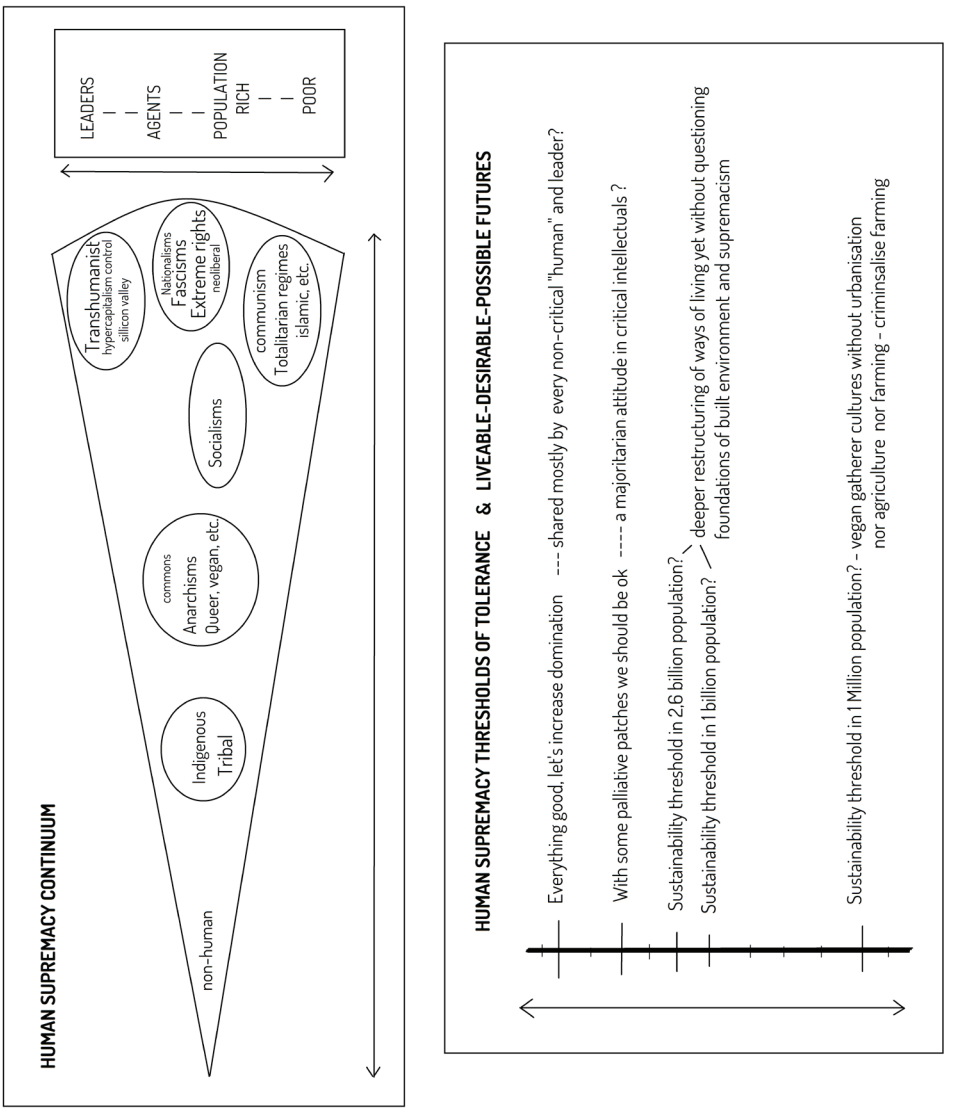


Fig. 103. Human Supremacy continuum and thresholds of tolerance diagrams.

We need to amplify rights to everything nonhuman and inorganic, but without imposing the prevailing logic of a rational subject's consent, since it is this rationalism that has created a holocaust as it is linked to an impoverished sensing. The reply is not in acknowledging the rights of the nonhuman while pretending to continue to be defined, as humans, by a rational, verbal intelligence: a new intelligence and sensibility needs to be mobilized, which will also be a very ancient one. We need to *regain a cosensing that makes us capable of symbiotically moving and mutating with matter flows, with nonhumans and with other humans and technics alike.*

an extinction, Planetary Holocaust, and overpopulation where reproduction needs to be urgently stopped. Or take the example of social rights as the rights to be properly assimilated in the system of work and consumption that creates a Planetary Holocaust! The same goes for any other conception of rights, ethics, and freedom.

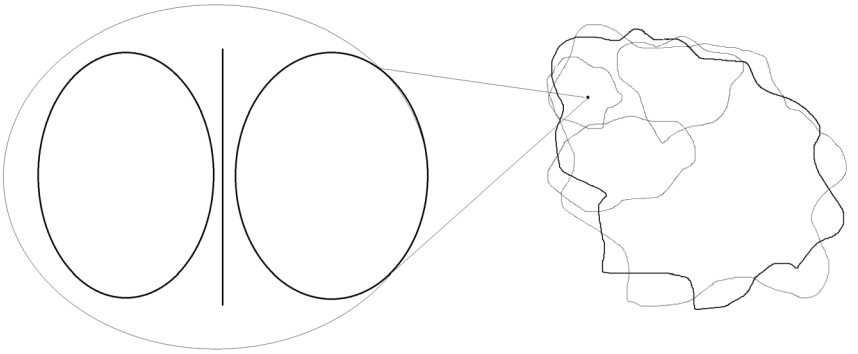


Fig. 104. Reabsorption diagram. From the half that enslaves the other half to being again one of the 8.7 million species of the biosphere.

6.7.2.4.5 What Is Our Level of Tolerance with Human Supremacism, and What Futures Do We Envision?

The thresholds of tolerance with human supremacism tend to be extremely high even amongst supposedly critical intellectuals. What for most is sustainable (i.e., aiming to sustain the current way of living with some cosmetic patches), for the metahuman turn is barely a first step in the Great Disalignment.

The fallacy that there can be less of the same misses the analysis of tendencies in movement and the modes of relation they enact. That cosmetic patches remain as proposals that are not even put into practice is perhaps because the fundamental supremacism remains untouched (hence no reduction whatsoever in CO_2 emissions is happening, on the contrary, they continue to grow).

What is proposed here is a shift from the narrow human perspective that tends to focus on the past 200 years, proposing at most going back to a 2.6 billion population, or 1 billion, to a broader geological frame of at least 200,000 years that in turn proposes the possibility to consider 1 million population as the "sustainability" threshold. Sustainability — a misused term if there ever was one — needs to be rephrased not as the will to sustain dominant human ways of living (pretending to limit its devastating impact only to the point where we can keep living this way) but as sustainment of evolutionary variation in the biosphere.

Who can be happy any longer with cosmetic patches that experts agree cannot solve the problem?[79] Can we become again 1 of the 8.7 million species, instead of being the half that kills the other half, and therefore kills itself?

6.7.2.5 Why Changing Our Relation to Nonhumans Is Crucial

It is crucial because, echoing Milan Kundera (1984), our fundamental moral debacle is in relation to nonhumans; because most human rights are erected against nonhuman rights; because the totality of human oppression is numerically small versus the oppression of nearly all humans against most nonhumans; because it is the elephant in the room that no one wants to see; because nonhumans deserve it.

79 For instance, nowadays experts tend to agree that renewable energies are reaching a sustainability threshold, which means that there is no possible sustainability with this population and way of living, something that a couple of years ago sounded so revolutionary that when Michael Moore and Jeff Gibbs said it in *Planet of the Humans* they got censored nearly everywhere.

We also need to decolonize our relation to companion species, avoiding the multiple modes of paternalism and assumed restrictions, affording modes of living where companion species have equal access and treatment in all aspects of life. This implies undoing the outrage of certain avoidable modes of civilized human living in return. The outrage of current human dominion implies that protecting animals from human violence implies confining them in sanctuaries. This needs to be ended, ultimately with a hundred percent rewilding of the Earth and of ourselves.

My relation with my nonhuman kin feels richer than the ones I entertain with "humans," i.e., people passing for and assuming the status of human and its associated ontological fallacies, for the simple reason that nonverbally and affectively they are richer and smarter, and they are not biased by language and by human supremacist stupidity. Nonhumans don't lie because they don't rely upon abstraction. Opening oneself up to such relations, recognizing their richness, is another core part of the Great Disalignment.

At stake is to afford ourselves and our nonhuman companions a relational flourishing of expressions and affects beyond any preexisting mode. I cannot stress enough the importance of defending transspecies affective relations from the condescendence and contempt of human supremacism. And the extraordinary differences and richness one gains by opening up to such a multiplicity, where every species is at least as complex as all of humanity, from intra-acting and making kin with dogs one gains profoundly different insights than with cats, and when all are together there is the dog–cat–human kinship and relation that emerges, the metabody, the novel field of expressions and symbiotic mutations. Fully embracing this requires a lot of disalignment from dominant human ways of treating "pets."

6.7.2.5.1 Reverse of the Paradigm: Animals Are Superior

The problem is not just compassion and suffering, we are talking about a much deeper evolutionary principle, the requirement of diversity for evolution, and how systemic domination paralyzes evolution by creating an extinction. This is a principle that shows that nonhumans are, if anything, superior, and we should not only love them but also admire and learn from them, from their ability to live without these dependencies on toxic systems, from their vital ethics that prevent them from creating systemic domination, slavery, and killing, from their movement that is one with their intelligence that does not separate or impose itself in a systemic way.

Hence the radical inferiority of the human and the radical superiority of all nonhumans, who are capable of living without these toxic systemic dependencies and without destroying the terrestrial ecosystem. Take this radical binarism and inversion of hierarchies with a grain of salt, as preliminary stepping down from the pedestal.

…

An animal is its movement: freedom of movement is a fundamental right and is linked to evolution, to the diversification, mixing, and dispersion of flows in the biosphere… radical inferiority of everything that blocks those flows. We do not have the right to immobilize animals. Just as we have no right to occupy the Earth in this ubiquitous, homogeneous, and devastating way, nor to multiply in this destructive and suicidal way.

We have the challenge of learning from animals and from all other forms of life, as well as from human cultures that have not created these suicidal systems of domination and that the colonial and dominant civilization has exterminated.

We have the challenge of reversing the *Scala Naturae* inherited from Aristotle and understanding that, on one hand, life is not a causal line but a rhizome in which we are hybrids of bacterial symbiogenesis. Our very thought, our decentralized swarms of neurons are direct inheritance of bacterial swarms. *We must completely redefine what we are and our "difference" from and "similarity" with the rest of life forms.*

On the other hand, the more we go down toward the microbial and molecular, the more fundamental and important is the way of life, inseparable from the inorganic, even from quantum fluctuations, all of them with kinetic modes of intelligence, BI, which we share with all life forms and in which the human is to all intents and purposes inferior because it has atrophied itself, trying to distinguish itself through a reductive way of moving and thinking.

6.7.2.5.2 Decalogue on Human Inferiority and Animal, Vegetal, and Nonhuman Superiority, or the Superiority of Weeds: For a Metahuman Revolution[80]

Take this with a grain of salt: I don't mean here the human as determined, distinct species, but as belief and way of living, and I call for the undoing of hierarchies, for a reversal of supremacism and against all systemic domination.

1. The dominant "human" (believer in "humanity") is the only "species" capable of creating a mass extinction and a Planetary Holocaust; the only species capable of slavery, cruelty, and systemic extermination; the only species that has inverted the values of life by calling civilization a mass extinction; cosmic idiocy of thinking that only humans have ethics and that they have come to bring order to a chaotic and violent cosmos. That brilliant minds have thought this only explains how humanity as a whole has an altered perception of reality. Supremacism is defined by having altered and atrophied perception, by having created a collective illusion.... **Ethical superiority of the animal and other forms of life**. Mourning, consolation, help as a scale of morals?[81] They need less of this because they exploit less and live better and have less excessive self-consciousness.... Excessive self-consciousness is the problem.
2. The human as only "species" dependent on toxic ways of living that are collapsing the planet and incapable of living without these; the only species that imposes rigid architectures on the planet.... **Architectural and technical superiority of the animal or the plant**, which are one with the terrestrial flows, where the body itself, as architecture, slowly coevolves with the ecosystems.
3. The only species that has atrophied its sensitivity and movement and imposes that atrophy on the planet, unable to move with the flows.... **Kinaesthetic and sensory superiority of the animal or plant or fungus,** which has not atrophied itself in its multisensory movement, which has not imposed a rigid hierarchy on sensitivity nor immobility on the senses, that does not separate itself from the

80 A rare precursor to this reversal of values of the superiority of the human can be found in Montaigne (1987, 17ff).

81 Monsó and Andrews (2022) measure morals in animals according to capacity for mourning, consolation and help. But aren't these again anthropocentric parameters? Isn't excessive self-awareness the problem? Don't other animals need less of these because they enslave and destroy less, create less suffering?

world but moves with it, cosensing, without dissociating itself from proprioception.

4. The only "species" that categorizes everything, and that, unable to move with the flows, calls chaos everything that it cannot understand and that it tries to paralyze; the only species dominated by a reductionist and impoverishing way of thinking and reductive intelligence that imposes its abstractions on the world, destroying it, and that discriminates against all neurodiversity.... **Cognitive superiority of the animal**, of its nonreductive Body Intelligence.
5. The only species that has lost the capacity for nonverbal communication and is dominated by a semiotic, abstract, and impoverishing verbal communication.... **Animal and vegetal communicative superiority** based on nonverbal intra-action.
6. The only "species" that paralyzes evolution with its psychotic delusions of supremacism, basing its civilization on the cover-up of the death machine that it generates and which leads to extinction; the only species that has declared war on movement, becoming, and terrestrial flows, atrophying itself and paralyzing the planet with its rigid architectures and its intensive agglomerations, source of our poor health and poor hygiene.... **"Medical" and hygienic superiority of nonhumans** who, due to their way of life, have far fewer health problems and who, by not creating intensive agglomerations in rigid architectures, are much cleaner, part of the flow of the biosphere where everything is mixture. Again, we see how everything that humans have demonized since their supremacism must be reversed: the taboos on shit, illness, sex, and death. Perversion of human hygienism that uses the pig as an example, whose dirt in the farms has been created precisely by human-imposed enslavement, the free pig being cleaner than any "human."
7. The only "species" that creates all-inclusive monocultures of itself, that calls the diversity in the biosphere "weeds" and imposes impoverished monocultures on it, that exterminates its own diversity of cultures, imposes homogeneous behaviors and ableist regimes, imposing homogeneous, ubiquitous, and toxic modes of transportation and urbanization on the planet, believing that this is desirable and the only thing possible, having created a narrative that despises all other forms of much more enriching human and nonhuman life forms that have existed.... **Evolutionary and vital superiority of weeds** and their miscegenation.
8. The only "species" that needs to alleviate its experiential poverty with "arts," "culture," "entertainment and leisure," "vacation, tourism, and nature getaways" imposing its disgusting vital poverty on the planet, while trying to be amazed at its own "achievements" and its suicidal technical dominion, self-obsessed with its paranoias and fears, in a closed loop.... **Aesthetic superiority of the animal** that is immersed in the flows and does not separate itself from them, where art is life and life is art.
9. The only "species" obsessed with multiplication, the only one that creates oppressive heteronormative regimes of mass reproduction and dualist systems of oppression and classification, of binary reproductive sex and nuclear families of multiplication.... **Affective and sexual superiority of nonhumans**, who promote the dispersed orgy of mutation and molecular mixing in the biosphere, proliferating in myriads of different sexes and kinships.
10. The only "species" that needs abstract rules to live because it has forgotten what it is to feel and move in the world with others; the only species that separates

> itself from the rest, creating a concept of species and "human" in an attempt to oppress, incapable of symbiosis; the only unhappy species by principle, obsessed with its fears, paranoias, and shortcomings, result of its evolutionary atrophy, the only one that imposes oppressive rules, the only excessively self-conscious species that breaks all balance by destroying the terrestrial ecosystem to preserve its elites, longing for immortality and infinite multiplication.... **Political superiority of the nonhuman** and its anarchy without rules: a self-organization that we only pathetically try to emulate in ideological anarchy.

6.7.2.5.4 Learning from Nonhumans

At stake is to learn from their superior movement, perception, architecture, ethics and care, politics, aesthetics, (body) intelligence, communication, health and hygiene, sex, and affect. In reversing Aristotle's *Scala Naturae,*[82] the summit of evolution is perhaps in bacteria, or in plants and fungi, and secondarily in three-dimensional flocks and swarms, and invertebrates moving with flows — perhaps already declining with terrestrial mammals, predators, and two-dimensional flocking, from whom we still can learn though, just like we can learn from nonimperial human cultures of gatherers and from all Indigenous cultures. The deeper we go down the chain, the more fundamental, important, and dynamic, down to quantum fluctuations, and not the reverse.

6.7.2.5.5 Transspecies (and Postqueer) Kinships

As Donna Haraway (2016) claims, there is an urgent need for other, nonheteronormative, queer, and transspecies kinship modes (Ackerley 1999; Haraway 2003a) that are not oriented toward the multiplication of the species and that allow the transformation of the human program, centered even today on procreation, which was previously necessary for survival, expansion of kingdoms, empires, and nation states, and today it is needed for global growth economy.

Transspecies kinships are a spearhead to dismantle human supremacism and for a general animal liberation, associated with a radical, voluntary suspension of human multiplication, and a change in ways of living.

We urgently need to liberate the 100 billion animals in concentration camps and have every human take care of ten or twelve of them, as a new project of transspecies kinship, for a planetary regeneration, once we undo the fallacy of the human as verbal animal and while we develop our cosensing capacity.

6.7.2.5.6 Radical Antispeciesism

Do you think you are human? Do you believe in the concept of species? It is as problematic a belief as the belief in universal binary gender categories, or in racist or ableist categories. Symbiogenetically, speaking *we are not a species* but a metaspecies, a chimerical hybrid of bacterial sex and symbiosis: *metametazoa* (Sagan 1992). Bacteria exceed the notion of species due to their plasticity and radical mutation power. Speciation, strictly speaking, did gradually appear with protists over a billion years ago. But what needs to get challenged is the species concept itself as part of a categorizing tendency that has reversed the values of life in order to try to

82 There is already a plethora of books calling for the need to completely reverse humanist supremacism and learn from nonhumans (including inorganic fluxes), as well as respect them. See, for example, Margulis and Sagan (1997); Gray (2021); Coccia (2021); and Nail (2021).

justify the devastating domination of the species that has self-identified as "human." The concept of species lacks the open interrelatedness that constitutes ecosystems. BI claims this symbiogenetic power at the core of our tissues and proposes a radical redefinition of perception and intelligence through an expanded account of the sense of proprioception.

Gender, of course, is also an effect of this anomaly of overpopulation, imposing on bodies an apartheid so that the primordial identity of bodies is based on functional genital reproduction as primordial extractivism. Assuming a gender unquestioningly is also a contribution to the Planetary Holocaust. Nonbinarism cannot be a gender, nor an identity, but a becoming, a disalignment toward a modal metasexual society. At stake is to *stop being human*, as the self-defined species that separates itself from symbiotic, mutant nature, fixing itself, and to become a symbiotic and mutating metahuman.

6.7.2.5.7 Symbiotic Intelligence and Animal Ethics: Transspecies Kinships for a Symbiotic R/evolution!

Fear, desire as lack, rules, systemic violence, and the quest for control and domination are all effects of a lost sense of body. We need to learn ethics and ecology from nonhumans. Animal ethics is based on proprioception and cosensing, it is thanks to this that they don't create large-scale systems of oppression, exploitation, and killing!

This implies learning BI, intelligence, perception, and movement from nonhumans!... by reversing and undoing millennia of supremacism, holocide, and extinction. This also implies learning communication from or with nonhumans, regaining the lost capacities for nonverbal intra-action and resonance!

Precisely because they haven't atrophied themselves, imposing a reductive rationalism, nonhuman animals are far superior in their BI and their movement. For this reason, it is a double crime to enclose them and to think of them as less intelligent. Admiring them, learning from them, besides loving them in trans-species kinships, is core for stepping down from the pedestal of humanistic supremacism, toward a planetary regeneration.

We better learn how animals contribute to the overall movement of biodiversification, by slowly varying and not imposing themselves.[83] We need to acknowledge that nonhumans feel at least as much as humans if not more, since they have a livelier sense of body and a more awake BI.

...

The intelligence of cocaressing and cocomposing with others needs to get cultivated, thinking only in motion, letting thought fluctuate as you move, favoring kinaesthetic memories and the rhythmic, kinetic thinking of the body. If you need to write, let it be in balance with the moving body, never taking over with abstractions, writing by hand better than typing, drawing better than taking pictures, but ultimately

83 Cats: I admire them every day more and more. Their "secret" is in their movements, their nonreductive BI, the proprioceptive exploration and connection to the world, linked to their endless curiosity, and ensuing in astonishing evolutionary kinetic plasticity. Maybe it is time to recover the ancient veneration for cats due to their movement, but not as gods: learning from them in symbiosis, as trans- or meta-species families, alliances, and kinships.

just dancing with the world, like cats. Nature is variation, capacity to vary. So should be human nature, if we are to undo this evolutionary paralysis!

6.7.2.5.8 Rewilding. Leaving the Stage for an Earth Regeneration

The logic of life is such that, because we are the extropic anomaly, as soon as we quit the sage enferant evolution will regenerate. We saw this during the pandemic, with animals taking over space. We see this in rewilding (Monbiot 2010; 2022). Pretending to design and control the restoration of ecosystems according to what species there were before disruption is perhaps doomed to fail, as the subtle networks of species intra-actions that existed previously are no longer there. The principle is thus not to reproduce an existing previous set of relations, but to let relations coemerge again in absence of determination. All we need to do is take out the destructive, extropic variable. The rest of species and microbial life will do their job. Of course, some dismantling, cleaning, regenerating, protecting, and a bit of help in bringing back some species might be very needed in the process. But never as the ongoing exercise of human design and control. When I say leaving the stage, I mean disappearing as central and destructive force, by becoming again just one of the 8.7 million species.

6.7.2.5.9 Self-rewilding, True Animal Flow, True Becoming Animal: Neither Nomadic Nor Sedentary

As proposed by Katy Bowman (2021), one would already gain enormously by reintroducing movement as much as possible within our civilized practices and environments, in every aspect of daily life. I propose to go beyond and have movement become a radically transformative practice of all civilized environments, undoing them for a deeper regaining of the dance of life, for a life in ongoing (semi)dancing, flowing as the animal that we are and need to fully become again, never suspending movement in abstract thought, cultivating a true animal flow, not like so-called "animal flow," the patterned practice done at gyms, but a true becoming-animal.

The nomadism I claim is also not the one of Deleuze and Guattari (1987), who take as example human conquerors from the Asian steppe, inventors of the wheel chariot and horse domesticators, creators of nomadic empires, who abstract themselves from territories and are one of the genealogies of current dominion. The nomadism I claim is the one of animals and gatherers, who are linked to ecosystems, but moving and changing with them and occasionally migrating, but moving with the flows, not against them. Neither sedentary occupation nor abstract nomadism: immanent movement with all life in a coemergent spacetime.

I claim the superiority of immanence, of not observing from outside but moving from within, as in the blind beauty of a flower that evolves for others without ever seeing itself. This is the purpose of the dedomestication of humans themselves, away from sedentary atrophy in a process not only of rewilding ecosystems, but of self-rewilding, reanimalizing! The *sapiens*'s history is one from divine animals to *unhanced* trash-humans: we better reverse it!

6.7.2.6 Ontotherapies: Undoing Human Supremacism

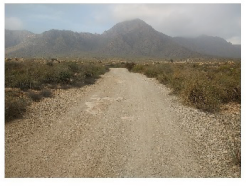
Ontological therapies are needed to dismantle millennia-old fallacies and entrenched beliefs that drive us to extinction! Ontotherapies are also about mobilizing a more open world by moving in less aligned ways, reinventing ourselves as moving bodies.

In 2022, I launched a Metahuman Futures Manifesto (MFF 2022 Lesvos Assembly Chorus 2023; Sampanikou 2023), along with a new set of so called Ontological Thera-

Fig. 105. Diagram of footprints, from animal paths to highways, from gatherers to Elon Musks.

BIODIVERSITY & PLANETARY HEALTH






PLANETARY COLLAPSE & EXTINCTION

NON-TOXIC
diffuse
disaligned
fluctuating
heterogenous
changing
indeterminate
moving
diversifying

TOXIC
accelerated
aligned
consuming more
polluting more
aliennating
fragmenting
homogenising
accumulating
determining
erasing diversity

diffuse animal path	roads	highways (to climate hell)
free animal	grazing and extensive farming	factory farming
gathering	horticulture and non-intensive agriculture	intensive agriculture
animal architectures	villages and towns	cities and megacities
body	fire, offgrid	energy networks
movement and voice	book, letters, painting musical instruments...	mechanical representations, mass media, digital media,

pies (Del Val and Dedeoğlu 2023) whose purpose is a ruthless challenge of the deeply rooted human supremacism, in everyone considering oneself human, and especially in educated people of WEIRD societies.

Ontological therapies question the fundamental ontological fallacies and taboos underlying human supremacism, such as the belief in the human and its superiority, in dominion over animals and other life forms, in relentless occupation of the Earth and the right to own land, in never-ending species multiplication and gender binarisms, in the superiority of rational intelligence, in the exclusivity of human agency and freedom, in the narrow conception of individual health at the expense of planetary health, as well as question the awareness or denialism of the crisis generated, and the will, or not, to perpetuate denialism.

Ontological therapies are about challenging the syndrome of the "elephant in the room." In spite of the abundant talk about questioning anthropocentrism in some intellectual circles, the reality is that certain issues remain utterly questioned, especially farming, the human food system, human mutliplication, and sedentary life. We talk about respecting other life forms without ever realizing that every single aspect of dominant ways of living, human multiplication, occupation of the Earth, food, and dominion over animals in industrialized societies, ever since the Neolithic, is a radical attack on all life forms, as well as being the source of all human ills.

Ontological therapies attack the core hidden taboos or *archē*-taboos of human supremacism, which are deeper than any taboo described by psychoanalysis. The latter is yet another mechanism to keep the human supremacy system running. Ontotherapy, instead, dismantles the supremacist pedestal and provides the realization that all grand human existential questions were wrong, and that the solution is not in fulfilling human dreams but in overcoming them with a deeper transformation.

6.7.2.6.1 Metaprograms

Ontotherapies address metaprograms, deeply rooted ontological assumptions and unchallenged modes of organization, the choreographies through which the metaprograms are enacted, and the potential movements by which to disalign from them. They are mostly unchallegend beliefs.

Metaprograms include:

1. Belief in the human and humanity, as the rationalist, neuronormative, autonomous, superior species.
   a. Belief in individualist, possessive, proprietary subject, accumulation.
3. Belief in being and form.
   a. Belief in abstract space and time, spatiotemporal linearity, controlled and measured space and time.
   b. Belief in the unavoidable predominance of semiosis and verbality, numbers and calculability.
3. Belief in binary gender and binary sexual orientation.
   a. Belief in compulsory reproduction and multiplication as core human program, compulsory monogamy, prudery, shame, and compulsory intimacy, genital-oriented sex, sex-oriented love, love-oriented sex.
4. Belief in the right to animal exploitation as needed for feeding humans.
5. Belief in the right to Earth depletion as needed for civilization and human survival.

   a. Belief in the right to occupy of the Earth with urbanization, agriculture, transportation, consumption, waste, industries.
   b. Belief in the right to make wars, as the basis of consumer culture.
6. Belief in functionality, ability, competence, capacity, and success.
   a. Belief in the fundamental status of categorization and identification by background, aspect, age, or form.
7. Belief in the necessary submissiveness to social norms and rules, legal and moral regimes, and traditional education.
   a. Belief in and devotion to the mandates of disciplinary institutions of medicine and pharmaceutical industries, death, health, and hygiene obsessions, and taboos.
8. Alignment with reductive media that atrophy and control us. Acceptance of surveillance and control, compulsive picture-taking, compulsive rationalization, and search for meaning.
   a. Acceptance and belief in the given epistemes and perceptions of technopositivism.
   b. Addiction to social media and believer in information.
   c. Alignment with programs of leisure, fun, happiness, love, fear, and future.
9. Belief in sedentarism, kinaesthetic and sensory atrophy, and attachment to comfort.
10. Belief in civilizatory and technical progress.

6.7.2.7 The Elephant-in-the-Room Syndrome: Against Sustainability (of Civilization)

One way to call the prevailing syndrome of humanity is *the elephant in the room*: the tendency to ignore that we dominant humans are *the problem,* along with our entire dominant mode of living. This results in a resilient implicit denialism of the core foundations of the epochal crisis, especially in relation to human expansion and its source in food industry and animal exploitation. This denialism is all the more present in educated people of rich democratic societies, who are not only the ones consuming more and driving the extinction but also the ones least ready to question their mode of living. This includes most critical intellectuals in the world, who invariably avoid the problem of the Planetary Holocaust of farming.

A lofty example amongst many of this pervasive denialism is for instance Donna Haraway who in "When Species Meet" (2008, 335) dedicates only a endnote to farming (acknowledging the horror and the need to take it seriously, and yet ending with an ambiguous "how to take it seriously is far from obvious"; and only another endnote to veganism, in reference to Carol Adams (346). Is this footnote a serious way of dealing with the most prominent mode of human encounter with other species?

A different example is Yuval Noah Harari, who, while being a vegan who has denounced industrial farming as biggest crime in history (2015b), and who denounces the historical cruelty of farming, still however proposes in his books a narrative by which humans have become gods, no matter how irresponsible, and the problem is how to deal with intelligent design. What happened to the mass extinction we are creating? This is yet another way to bring back a human supremacist narrative, which people of course like to read about. It's nice to have someone tell you that you are a god, even if an irresponsible one.

Likewise, sustainability discourses are entirely anchored in this supremacist bias. It's about sustaining the current civilization, based on a panic to lose it and on the

idea of "possibilistic" politics. But this "possibilism" is precisely that which has no future. Furthermore, there are no half solutions here. Just like it's not acceptable to have someone say "I only kill some humans," or "I only rape some women" it is not acceptable to say: let's have 40 billion, or 20, or 10 billion animals in factory farms, instead of 80 billion.

Does this society of waste and pollution, pandemics and disease, exploitation and slavery, evacuation of biodiversity and invasion of species, accumulation and homogenization, alienation and abstraction, control and determination, really deserve being sustained? Sustainability is a rotten concept since its conception. Thriveability and flourishing of all life is what's needed!

6.7.2.7.1 Against Sustanability (of Dominant Civilization), against Everything (in Dominant Cultures)[84]

1. Against sustainability (of dominant civilization). — For the thriveability of all life.
2. Against growth, human expansion, and supremacism. — For being again just one of the 8.7 million species.
3. Against animal exploitation. — For symbiosis.
4. Against crops and monocultures. — For diversification.
5. Against work, money, and economies of accumulation. — For creative play and wandering without goal.
6. Against quantification, accumulation, and homogenization. — For qualitative transformation.
7. Against control and dominion. — For indeterminacy and symbiotic mutation.
8. Against borders, fences, and separations. — For free movement of all life forms.
9. Against nomativism and legalism, rules, norms, and law. — For emergence.
10. Against sedentarism, urbanization, the city, and urban life, as existential atrophy. — For moving with flows.
11. Against the state and corporations, further exponents of human delirium and Earth-killing dominion. — For swarming self-organization.
12. Against the couple, the family, heteropatriarchy, and their associated oppressive human multiplication. — For queer and transspecies kinships and minimal reproduction.
13. Against education as alignment with the extinction system. — For emergent embodied knowledges and choral improvisational practices enriching the rhythms of life without accumulation.
14. Against language-centrism, verbocentrism, semiocentrism, logocentrism, rationalism, and morphocentrism. — For a regaining of the nonverbal nonsemiotic

84 A precursor to radical critique of industrial society can be found in ethologist Lorenz (1974), twenty years before Theodore Kaczynski's (Unabomber) Manifesto (1995). I disagree with the latter's terrorist attacks and with some of his arguments, which expose a certain human supremacism, while I agree on the role of the academy as human supremacist machine core to the extinction process, and acknowledge the radical terrorism of dominant civilization against all life forms. One could take this "against everything" list as a revisiting of Lorenz's "Civilized Man's Eight Deadly Sins" which in my version one could name as the evolutionary "sins" of dominion, and provisionally summarize thus: farming and exploitation; expansion and agriculture; sedentarism and urbanization; multiplication and heterpatriarchy; language-centrism and rationalism; normativism and legalism; homogeneity and accumulation; and reductivism and functionalism.

neurodiverse more-than-human spectrum. For this we need to live away from the systems of accumulation and abstraction that led to verbocentrism!

15. Against technological supremacism and technocentrism, reductivism and functionalism. — For Body Technics BT and BI as plasticity and indeterminism.

6.7.2.8 Toward an Earth System Justice (ESJ)

The question is simple: how to be again just one of the 8.7 million species, contributing to overall biodiversity? How to stop being a destructive force. How to stop being the elephant in the room that denies its own destructive nature? As previously proposed, a one-million population of nomad gatherers is the only option I consider a serious reply to this question, one that no longer assumes human supremacist dogmas and fallacies. But how to get there, besides through an upcoming collapse and extinction event? For one thing, we need to transform all anthropocentric conceptions of justice.

Our entire way of living is depleting the planet. Recent notions of planetary health (Whitmee et al. 2015) and planetary boundaries (Rockström et al. 2009; Steffen et al. 2015) need to be revised, since they, promising though they may be, have also been conceived under an anthropocentric bias: the health of humanity, and the planetary boundaries needed for it to keep flourishing as it is, not the health of all life forms and the conditions for their flourishing. Justice more broadly needs to be radically revised as it stems from the defence of human property and no patches can fix such a wrong point of departure.

Planetary health needs to be redefined not as the health of all humans and their civilizations, but as the health of the planet and the biosphere, with humans as part of, and as one of the 8.7 million species. Planetary boundaries need to be redefined not as the conditions for sustaining human civilizations but for biodiversity and all of life to flourish, away from any human pressure.

Rockström et al. (2023) propose criteria for an *Earth System Justice* that includes *interspecies justice* as essential for sustaining liveable conditions for humans on Earth altogether, along with *inter- and intragenerational justice* and *intersectional justice* stressing the way more vulnerable populations are more exposed to the problems.

Interspecies justice needs to be extended to an *ecosystem justice,* both being relational accounts of justice encompassing a *biosphere justice,* as eco- and biojustice for all life forms, which includes as well as overcomes individual species rights, animal rights, and sensocentric and pathocentric ethics, by focusing on relational openness or indeterminacy as core evolutionary condition. Evolution thrives through mutualistic relations constituting all life supporting systems. Systemic dominion is a counter-evolutionary human anomaly that needs to be undone. This approach includes and goes beyond sensocentrism, pathocetrism, and even biocentrism in recognizing life as relational web (symbiosis principle) of coevolution through the ongoing mutation of all flows and species intra-acting indeterminately (relational mutation principle), resulting in ongoing diversification through free movement of animals, seeds, microbes, and flows (open consistency, movement, and indeterminacy principles).

Life unfolds as diversification as long as all fields coevolve without systemic dominion of one over others. Because of the unavoidability of fluctuations in the universe, with mutation as underlying motor, all flows and species are continually mutating, but as long as no single one imposes itself, all elements coevolve, changing the overall conditions of the field. Since mutation is the unavoidable *a priori*

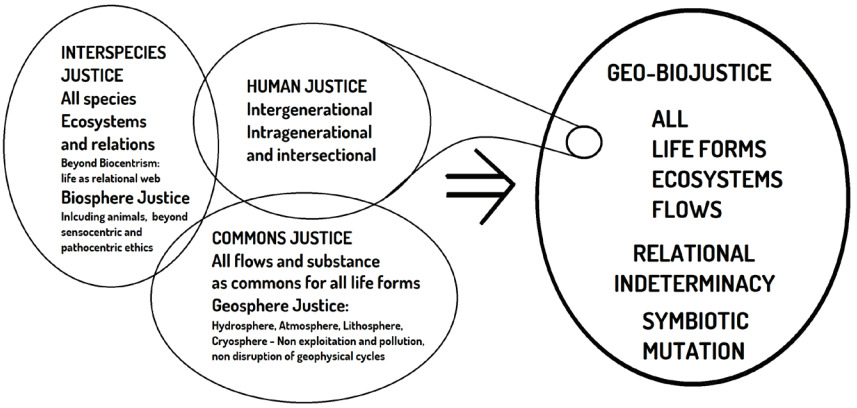


Fig. 106. Redefining Earth System Justice.

and not the accident or error, fitness is a second-order factor and the conditions of ecosystems are continually shifting. Life is not individual but relational: metabolic webs of energy transformation creating always new collective architectures, always new conditions for new expressions of the living, whose movement is inseparable from inorganic flows. In Book 4, we have called this principle of life as indeterminate diversification in symbiosis and mutation *metabiosis*.

There are nine million intelligences in the biosphere, or many more, as many as species and ecosystems. The recognition of multiple intelligences, which is advancing in biology, not just in animal intelligence but also plants, protists, or bacteria, and its connection to theories of embodied cognition and neurodiversity, as well as to decolonial theories that challenge Eurocentric paradigms of rationalism, is core to undoing human supremacism and its extinction loop. Intelligence needs to be redefined as the capacity to contribute to enriching the expressions of life as totality of integrated relations, the web of the biosphere and its ecosystems. From this perspective, rationalism is clearly inferior and can never be the model, as by abstracting itself it has foregrounded a devastating tendency to exploitation.

Justice also needs to be expanded to a *justice of the commons* that accounts for all substances on Earth as a commons for, and ontogenetically inseparable from, all life forms: water, soil, atmosphere, ice, minerals. We need a *geosphere justice* of the hydrosphere, atmosphere, lithosphere, and cryosphere and of the Earth cycles of carbon, water, and nutrients. Chemistry binds geophysical and biophysical processes, pointing to a *chemojustice*. Together, biosphere and geosphere justice constitute a *bio-geojustice*.

In a first step, the latter can be seen as elements to be integrated with human justice, but in a second step the question is for human justice to become part of bio-geojustice: as one of the 8.7 million species, not as distinct one with special status (fig. 106).

An Earth Commission and Earth System Court (ESC) must be enacted for giving actual status to ESJ. Human rights courts will be subsumed as part of the ESC and not distinct from it.

Immense research is needed to deepen the poor but emergent understanding of the complex nonlinear relations that sustain the webs of life (Plowright et al. 2021; Cosmo et al. 2023; Halley and Pimm 2023), where freedom of movement and health are interdependent across all strata: of animals, seeds, microbes, and geophysical flows. This shift will imply a qualitative and nonquantitative understanding of life,

nature and cultures as part of it, shifting away from seeing other life forms as stock and geophyical flows as resources. This will, in turn, take Western industrialized cosmovisions closer to numerous Indigenous and ancient cosmologies (Pascual et al. 2023). The age of exploitation and quantification is an evolutionary failure and needs to end.

This implies understanding that the freedom/equality and health of all life forms is interdependent with the overall planetary health, and that human health and freedom/equality cannot abstract itself from these:

— Health of all life forms & ecosystems & biosphere = Health of geosphere and geophysical processes, flows and cycles = Health of humans as part of it all
— Biosphere Health = Geosphere health = Human health

For the current purposes of the age of Planetary Holocaust this implies:

— Animal welfare and health = Planetary health = Human health

Exploitation of life forms and geophysical flows, unsettling their health by determining them (deprivation of freedom as determination) leads to mass destabilizations of planetary health and of human health. Freedom is understood as capacity to coevolve, which includes flows, for example water coevolving with landscape and organic life, instead of being appropriated, channelled, and depleted. This exposes the *evolutionary inferiority of built environment*.

From this perspective, almost everything human civilizations have done since the Neolithic is a counter-evolutionary aberration: evacuating over half of the Earth of biodiversity and substituting it by monocultures of invasive species (humans, exploited nonhumans, crops, as well as gardens, pets, etc.).

6.7.2.8.1 Metahuman Policy

In Del Val (2023a) and Book 5, I expose the evidences on how the animal exploitation food industry is the most devastating one on Earth, being the major threat to a livable future. This is followed by overconsumption in all areas due to growth economy and programmed obsolesence, where individual consumption has multiplied by ten and is still expected to multiply by 200–300% by 2050. In third place I now put population growth, which multiplied by nearly by three in a century and is expected to increase still by around 20–30%.

The report exposes the criminal action of states which after five decades of inaction have actually let the window of action for avoiding a climate catastrophe close, promoting instead a growth economy that is known to be suicidal since at least 1972.[85]

85 Hence, the mentioned report goes along an actual lawsuit presented in August 2023 at the European Court of Human Rights against all 46 states that have signed the European Convention of Human Rights, for crimes against humanity and violation of human rights (since there are as yet no animal and ecosystem rights), showing that animal exploitation is the epicenter of a planetary and human health crisis that represents the most extreme attack on human rights ever, exposing the suicidal paradox of human expansion. In 2024, the ECtHR slammed the door to the future by rejecting any such lawsuits against multiple governments and without going through national instances, by finally rejecting the pioneering *Duarte Agostinho* case of six Portuguese children against 33 governments, for climate inaction, which had been admitted three years earlier.

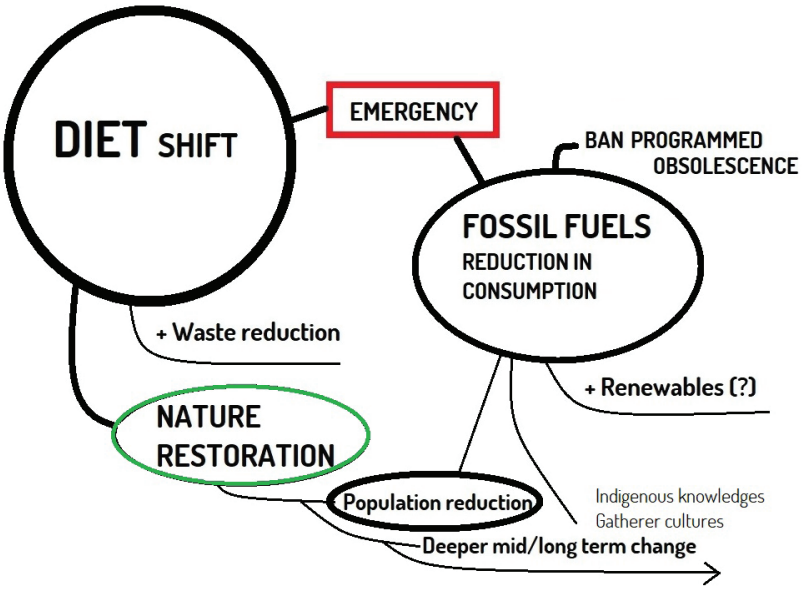


Fig. 107. The transition puzzle.

I conclude that the most powerful measures that can be taken from the personal as well as the collective and institutional political sphere are, in the following order of priorities with regard to impact, urgency, and speed:

1. **Shift to vegetable diet** and from there to local, seasonal, self-cultivated cultivation, and gathering.
2. **Deep degrowth** and drastic reduction of consumption in all sectors: transportation, energy and home, manufacturing, textiles, digital and information technology, household appliances, real estate, avoiding planned obsolescence, plastics, etc., toward undoing industrial and sedentary civilizations.
3. Deciding not to have children.

All this accompanied by:

4. A return to the body, not only to the local, recovering lost capacities and collective practices that make us less dependent on unsustainable technologies, while enriching our experience, moving away from the impoverishment of urban and industrial systems, and moving away from the predominance of verbal abstractions, numerical and semiotic, recovering the importance of nonverbal forms of communication and thought that connect us and put us on an equal footing with all forms of life, while dismantling the human supremacism that leads us to the abyss.
5. Activism, resistance, civil or metahuman disobedience, sharing practices and knowledges.

This results in a synthesis for a *VegAnarQueer movement*:

1. **Plant-based diet & end human supremacism**: ontotherapy for undoing human supremacism through local seasonal agroecology, toward disperse gathering.

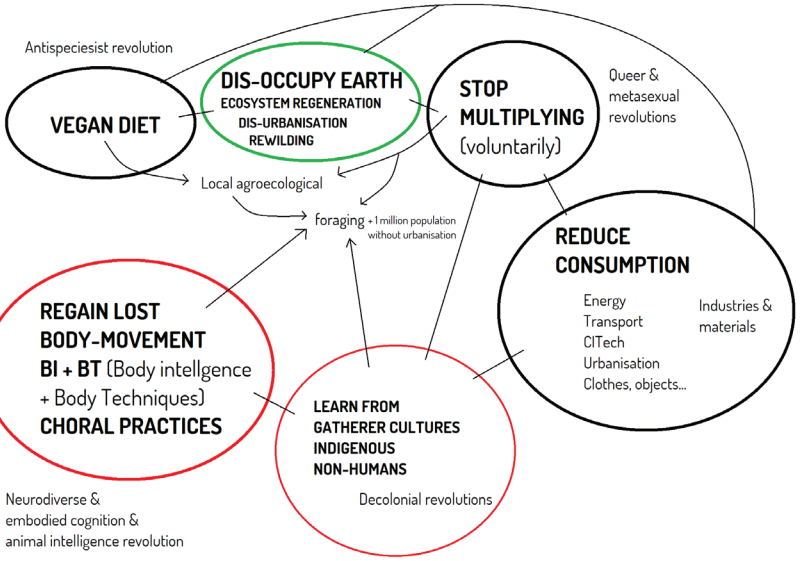


Fig. 108. The transition puzzle.

2. **Deep degrowth & back to body & self-organization**: away from existential atrophy and its associated market-engineered desires and delirious consuption, for a degrowth in all consumptions (transport, urbanization, energy manufacture, textiles, ICT technologies, etc.); re-enriching embodied experience, developing BI, BT, and nonverbal expressions; for a species mutation from *homo oeconomicus* to symbiotic metahumans; toward nomadism away from sedentarism; activism, sharing choral or collective practices, disobedience, lobby for an Earth liberation.
3. **Birth strike & queer kinships & care**: for oneself, each other and all life forms; orgiastic poliamory and transspecies kinships; toward 1 million population, as one of the 8.7 million species.

6.7.2.8.2 Some Concrete Policies for Personal, Collective, and Institutional Change

Following the above and synthesizing numerous existing reports, the following *concrete policy proposals* and *urgently needed shock measures* for reducing the effects of an already inevitable climate catastrophe, can be summarized:

1. Food:
   a. Shift diet;
      1. Pricing and taxing according to extinction footprint;
      2. Ban harmful subsidies, subsidize transition;
      3. End secrecy of industries, ensure public awareness, empower people for change;
   b. Local, seasonal, biodiverse agriculture, toward foraging and indigenous food systems, collaborating with Indigenous communities, and learning from them;
      1. Reduce or eliminate waste (hardly possible with globalized system);
   c. Nature restoration and rewilding (hardly possible without undoing the land occupation of the food system);
      1. Protection, fight environmental crime;

    2. Declare Rights of the Earth and all life forms and ecosystems.
2. Deep degrowth in all other consumption:
    a. Shock reduction in all areas: transportation, housing and urbanization, energy in homes, textiles, technology (ICT), home appliances, goods, furniture, etc.;
        1. Pricing and taxing according to extinction footprint;
        2. Ban harmful subsidies, subsidize transition;
        3. End secrecy of industries, ensure public awareness, empower people for change;
        4. Ban programmed obsolescence;
        5. Ban extraction and new production;
        6. Reuse and recycling: circular–spiral economy;
        7. Ban delocalization: local production;
        8. Ban construction of new urbanization and infrastructures;
        9. Away with plastics;
        10. Moderate development of new renewables;
        11. Back to body, experimental life practices, self-rewilding.
3. Population:
    a. Stop subsidies to large families, away from multiplication and homogeneous heteronormative oppression;
    b. Favor empowerment of women, diversity, queer, and transspecies kinships.

To those who might find these measures radical, we recall that very similar ones have been claimed since 2017 by more than 15,000 scientists from 184 countries, the largest world community that has ever signed a manifesto (Ripple et al. 2017).

6.7.2.8.3 Expectable Scenarios

Considering that critical replies to industrialization are there since mid-nineteenth century;[86] considering that facts about the climate and environmental crises are known for at least six decades, and that we accumulate at least five decades of criminal inaction by states,[87] that for years the IPCC UN reports claim that the last window of action for avoiding catastrophic climate change was the 2020–30 decade, and that it is advancing with greenhouse gas emissions only growing; considering that the major factor of this crisis, the food system, keeps being entirely ignored; considering how multiple multitrillion-$ businesses feed themselves from the industries creating the crisis; considering the probable attempt to make even greater businesses out of upcoming climate catastrophe, billions of refugees, pandemics, and wars; considering also how we are peaking the fossil fuels on which industrial civilization is grounded and which cannot fully be replaced by renewable energies without fundamental systemic changes[88]; considering that we are destabilizing the anomalous climate stability that allowed dominant sedentary civilizations to establish themselves; considering the growing fanatism of "humanity" as entangled crises of climate, pandemics, famine, and wars grow; considering all these factors, it seems unlikely that humanity

86 From Henry David Thoreau or Walt Whitman to Nietzsche.

87 Rachel Carson's book *Silent Spring* (1962) launched the environmental awareness and movements. In 1972 was the first climate summit in Sweden as well as the report on unsustainability of growth economy for the Club of Rome (Meadows et al. 1972), while Arne Naess (1973) presented in Bucharest the paper defining the principles of deep ecology.

88 Since one cannot power airplanes, ships or most industries through electricity.

is going to stop having the foot on the accelerator to extinction. But as mentioned previously the proposals stated here are valid for any scenario: for survival in changing climate and catastrophes, for a deeper systemic and species mutation, and for enriching our lives and those of all life forms as much as possible, all along.

6.7.2.9 Holocide Rebellion and the BI R/evolution

More than a measure of our carbon footprint, we need one for our *holocaust and extinction footprint*! But my proposal is not to prohibit, rather it is about recovering our lost capacity to move–sense, the joys of symbiotic mutation!

Initially promising movements such as Extinction Rebellion must urgently include in the forefront of their proposals the end of heteronormativity and reproduction, a radical posthumanism and veganism, and a fight against the sedentary lifestyle that underlies consumerism, for a deep change of way of life. As of now, such movements remain muddled in cosmetic measures, reformist demands, and supremacist dead ends. From the new group Indignant Rebels (Rebeldes Indignadas) we are denouncing the way in which the global environmental movement is coopted by the livestock industry and by human supremacism (Del Val and Mas 2024) and hence silences the core problems and replies here described. How can one expect a change with such a situation?

Don't choose extinction! Don't push for the 6th mass extinction (that includes human extinction)! Yet the biosphere is far more important than humanity, this is our cosmic responsibility, which demands a radical response-ability. *Disappear or mutate*: these are the only options. We need a Stop Holocide movement! We need a *metahuman rebellion,* against human impoverishment and exceptionalism.

Decolonizing ourselves and the world means undoing the inflection from qualitative variation to pure quantification, and its basis in an impoverished body, movement, and perception. This is the *prism of domination*, a prism of narrow perceptions underlying all abuses and creating an evolutionary paralysis. This is the substrate common to all modes of oppression, that we need to address.

We need a *General Disalignment or metahuman r/evolution, symbiotic r/evolution, movement r/evolution, BI r/evolution, proprioceptive r/evolution, neurodiverse r/evolution, metasexual r/evolution, ontohacking r/evolution, swarming-flocking r/evolution.*

We need a transversal movement of general liberation: sexual, animal, neurodiverse, decolonial, ecological and planetary, a movement of *divergents, metaformers, enferants, metaductors, metamergents, ontohackers.*

…

Social and human rights cannot be above the planet's rights, they have to be part of planetary rights[89]: the right not to have matter flows, organic molecules, neurons, and technologies disrupted!

Human and social rights have to be redefined as not going against the Earth's rights[90] and nonhuman rights!

There still tends to be high degrees of humanistic exceptionalism in most social movements, even the most radical minorities. Many humanistic pedestals still need to be undone!

89 This already claimed in the "Declaration of the Rights of Mother Earth" from 2010.

90 For instance, right to housing should mean right to dwell without disrupting the planet, while land speculators should be considered Earth-killers and cosmic criminals.

6.7.2.9.1 Earth Liberation and Triple Abolition: Beyond Intersectionality

All life forms need to be liberated. This is our cosmic responsibility. We have no right to dominate in this way. Every act of blocking and appropriation of terrestrial flows and immobilization of life forms is a cosmic crime.

I propose three levels of abolitionism:

1. **Abolition of human slavery**: This has been proposed globally for nearly two centuries, and there is still much to be done, while the defense of human diversity is deepened and precarious. It has given rise to the invention of the modern concepts of humanity, human person, and human rights.
2. **Abolition of animal slavery**: Only a minority has begun to consider this for half a century, with veganism and the criminalization of farms and of the consumption of animal products. This is a first immediately feasible step, with a change in diet, which would dismantle the industry that contributes the most to climate change, deforestation and pandemics, and the Planetary Holocaust, and would be a big step in dismantling human supremacism. It needs further elaboration of animal rights and personhood, and with more local and seasonal consumption, circular economy, reducing, reusing, and recycling, in food, design, clothing, energy, transportation, management, and social sustainability as intermediate steps, toward:
3. **Abolition of plant, fungal, protist, bacterial, viral, molecular, and material slavery**: This is not even to be glimpsed on the horizon, as it implies dismantling our entire occupation of the Earth and our overpopulation. But realistically we would need to do it within a few decades if we are to stop extinction. It needs defining the Earth's rights and possibly the personhood of ecosystems and all nonhumans.

Slavery here implies alignment, reduction, homogenization, monocultures, blockage, accumulation, agglomeration, toxicity, contamination, separation, dissociation, immobilization, acceleration, exploitation, oppression, cruelty, extermination, extinction. This triple abolition implies undoing the triple turn to farming, agriculture, and cities:

— farming → animal slavery;
— agriculture → plant slavery, and of the entire planet surface and its life forms;
— cities → human slavery (not only of actual enslaved people, but of the people enclosed in the desensitizing, alienating, self-referential, atrophying environments of urban life).

Human freedom can only come with the other two. Understanding this entails a total reconfiguration of all human politics, ethics, law and ecology. This implies looking into the "dominion prism" as proposed in Book 5, rather than looking at the colors coming from the prism. This should be the core of the agenda of a new transversality that addresses underlying substrates rather than effects. The lack of such an approach partly explains the fragmentation of social movements. But underlying it is the unquestioned status of human supremacism, which is the core of the dominion prism itself.

Fig. 109. The dog Loukanikos, who recently died and was mourned by many people, at the Beyond Humanism conference in Lesvos 2014. Lesvos is a place of posthumanist encounters, a place of refugees, a place of posthumanism conferences in a university full of dogs, a place of transspecies kinships, of queer, more-than-human love, of queer communities and nudist beaches on the farthest shores of the island.

6.7.2.9.2 We Have Only One Thing to Give Up: Our Dominion

I advocate for an Earth Liberation movement, of all life forms, against all oppression, and for all diversity. This movement would deal with two main simultaneous strands of action:

1. Demands to, rebellion against, and boycott of states and companies, of the rich and their organized crime, while making visible the hidden processes;
2. Change of collective and individual ways of living, reinventing ourselves, disseminating practices, disaligning.

We need to move beyond current approaches to intersectionality and attack the domination prism itself, not its multifaceted colors. Empathizing with Critical Animal Studies (CAS), Radical Animal Studies (RAS), and Total Liberation movements (Nocella and George 2018; Simonson 2019), as well as with anarchist and decentralist activism, such as the Earth Liberation Front (ELF), Animal Liberation Front (ALF), Earth FIRST!, Earth Liberation Army, Environmental Rangers, Eco-Animal Defence Unit and the Radical Brigades for Ecological Defence, and Deep Ecology movements, this book proposes to go beyond these movements in challenging all dominant concepts and ways of living, addressing the unrecognized substrate of dominion. We need to expand the limits of antispeciesism toward acknowledgeing that all current forms of human expansion, sedentary life, and overpopulation imply a radical speciesism. While I support the idea of radical direct action and denounce the *systemic terrorism of institutionalized human supremacism, which frames liberators as terrorists while safeguarding the extinction machine,* I propose that a deep collective ontotherapy is needed that challenges established assumptions, before (or along) actions being orchestrated. This is especially relevant given the denialism of the core measures here proposed within ecosocial activism, even though these measures are recognized by sience: shift to plant-based diets, deep degrowth, and addressing overpopulation. These absolutey core issues are missing from the agenda, not only of

left-wing governments, but of radical activism and critical intellectuals. First of all, then, this holocidal denialism needs to be undone.

6.7.2.9.3 Glocal Worlds and Metahuman Flourishing

How to enable plural modes of relation that do not presume a universalistic, homogenizing paradigm of globalization but which are at the same time exceeding an isolated locality? We need to assume a world of only *partial connections,* where we assume the nonavailability of a false total access to quantified reality (Rosa 2019), where we assume the undesirability of subjecting the universe to a homogenizing vision, a world where the irreducibility of experience to pure quantification can be claimed back against the onset of generalized flattening. A world of foams rather than globes (as Sloterdijk would say).

6.7.2.9.4 Multiversal Right to Nonreduction and the Law of Fluctuation

The *law of fluctuation* implies a *right to nonreduction* of movement and experience. Reduction here is meant from qualitative and indeterminate to quantitative and determinate. Narrow movement perceptions underlie all forms of systemic violence. The Age of Algorithms exposes an extreme tendency to reduction. Broadening perception is a multiversal prerequisite for evolution. Domination is a cosmic crime.

As means to counteract any systemic process of domination, reduction, and destruction, I propose a *multiversal right to nonreduction*[91]:

— The right not to have experience qualitatively reduced to quantity, perception to fixed points of vision, movement to traceable segments; the right not to be subdued to reductive interfaces, dualist media, and algorithmic opacity. This account of *negative freedom* is accompanied by an account of *positive freedom:* the right to promote qualitative variation, behavioral indeterminacy, disalignments, evolution as variation, proprioceptive richness, entanglement, and qualitative diversity.
— This right to nonreduction implies the right of the planet to planetary health: the right not to be disrupted, reduced, quantified, and exploited, including the rights of viruses, bacteria, and all formless lives (rather than life forms), including "humans" and algorithms, to sustain the movement of variation that is evolution (although, insofar as algorithms are tendencies to form that pre-empt variation, they need to be overcome).

Reinventing positive and negative freedom as multiversal right to non-reduction is a necessary ground for a radically pluralistic micro-, macro-, and metapolitics, but also for a planetary health, which is also our health. I claim the power of *formless life* to undo the tyranny of form over life, bringing back movement's power of variation. *No life forms: formless life for a planetary health movement!*

> *The task, it seems is to compel the terms of modernity to embrace those they have traditionally excluded.* [...] *This is not a simple assimilation and accommodation of what has been traditionally excluded into existing terms, but, rather, the admission*

91 Moyano (2023) proposes the concept of synergetic flourishing for an axiology beyond patho-, eco-, and biocentric ethics. I add onto this the crucial factor of indeterminacy or nondetermination of the movements in ecosystems as measure for health, freedom, and relational flourishing.

> *of a sense of difference an futurity into modernity that establishes for that time an unknown future,* [...] *one in which the key terms of its operation are not secured in advance, one that assumes a futural form of politics that cannot be fully anticipated: and this will be a politics of both hope and anxiety, what Foucault termed "a politics of discomfort."*
> — Judith Butler (1997, 161)

> *Zones of Offensive Opacity are not* to be created. *They are already there, in all the relations in which a true communication occurs between bodies. All we must do is accept that we are part of this opacity. And provide ourselves with the means to extend it, to defend it.*
> — Tiqqun (2008, 14)

6.7.3 The Great Health: Healing the Split

For Nietzsche, illness relates to anarchy of forces, and health to having a force dominating over others in a body. But he also speaks of a Great Health, which is the capacity to sustain multiplicities of forces, one that "permits paths to many opposing ways of thought," to a superabundance, an excess, "to live experimentally and to offer oneself to adventure" (1986, Prologue §4, 8), that "one does not merely have but also acquires continually, and must acquire because one gives it up again and again, and must give it up" (2001, §382, 246).

This health is never just individual or even social, it is planetary! Healing the split, the dualism that separates bodies, that atrophies and numbs our sensitivity, is a requisite for a Planetary Health. It is our dependence on unsustainable machines that fix us that is killing the planet! Recovering a more plastic capacity to fluctuate means taking on the movement of variation: evolution.

Metapolitics is about claiming a radical sense of ambiguity, as in Anzaldúa's account of the *mestiza,* who

> in perceiving conflicting information and points of view, is subjected to a swamping of her psychological borders. [...] *La mestiza* constantly has to shift out of habitual formations, from convergent thinking [...] to divergent thinking, characterized by moving away from set patterns and goals and toward a more whole perspective, one that includes rather than excludes. [...] The new *mestiza* copes by developing a tolerance for ambiguity. She has a plural personality, she operates in pluralistic mode. [...] Not only does she sustain contradictions, she turns the ambivalence into something else [.... T]he *mestiza* consciousness, [...] its energy comes from continual creative motion that keeps breaking down the unitary aspect of each new paradigm [.... T]he work of *mestiza* consciousness is to break down the subject–object duality [...,] healing the split [...,] uprooting the dualistic thinking. (1987, 101).

6.7.3.1 Indeterminacy as Justice to Come

Metapolitics is not against visibility strategies of minorities but considers them insufficient. I understand the claim that perhaps only a privileged subject can seek for invisibility, one who is already visible, and yet I think that a politics that merely takes for granted the *a priori* conditions of the dominant regime (the imperative of intelligibility) will partly reinforce that regime. So, we can't stay only within a poli-

Fig. 110. Janet Echelman's metasculpture *Madrid 1.8* (2018). Echelman's metasculptures are suspended metabodies, inducing collective shifts in perception and space, creating indeterminacies within Cartesian urban and control space, generating openings and a togetherness that happens in that opening, breathing with the sky and the city, waterlike in their movement, making wind visible. A water-like creature floating in the air, a hydrozoic life form. The movement of life, of water as life, becomes an architecture, awakening the deepest memories of life in our cells and bacteria, as one feels suspended again in water (safe again, sheltered, in becoming), bringing life back to our dead rectangular spaces. One embodies Echelman's more-than-human bodies proprioceptively, not only by collective disaligning in an open space, lying down and looking up, but feeling the lightness of that amoeboid body, feeling the wave like motions, the subtlety and scale!

tics of representation. What I propose, however, is not mere invisibility. I propose mobilizing perceptual and relational modes in excess of the dominance of vision and logocentric discourse–language, an irreducible richness, irreducible to form.

A lesson one can learn from Spivak (1988) is not to assume transparency as intellectuals, nor to extend the abstractions of domination. Ideology also needs to be accounted for. It is part of the movement alignments. But we also need to move beyond. The subaltern may not be able to speak, to enter a domain of discursivity that is historically grounded in dualities, in defining an Other and a privileged self. But the subaltern can move instead!... in new ways, like Anzaldúa's *mestiza*....*Eppur si muove!*

If we want a truly transversal politics across all minorities and all bodies, what we need is to shift from a politics of content to a politics of perceptions, working against any reduction! We need to challenge the seductive appeal of domination and reveal its poverty! We need to spread instead the joys of the will-to-variation!

Echoing Deleuze's (1986b) reading of Nietzsche, I advocate the *eternal return of chaos,* but not the return of difference: chaos as the open, as movement's power of indetermination! Indeterminators introduce degrees of *behavioral indeterminacy* in times of biometric hyperracism that quantifies and categorizes movements in

unknowable ways. Indeterminators mobilize quantum fluctuations of experience across entangled proprioceptions.

…

Metapolitics is not discourse-centric, so it is not elitist or self-referential. Discourse-centric practices are elitist by principle in that they demand a neurotypical alignment with rationalist (Eurocentric and colonial) modes of thinking and perceiving. What is proposed here is to move as bodies in excess of any dominant alignment and to create ecologies across those fluctuations that are not only discursive. Conditions need to be created for sustaining variations, emergent spaces for cosensing. Let them unfold from the infinitesimal variations in our movements, anywhere, anytime. Fluctuation was always there first.

Old ontologies that still govern legal or ethical systems need to be reviewed. New accounts of relational rights, relational ethics, care, and relational freedom need to be proposed. If we want to defend rights of those exploited by capitalism — classes, continents, women sustaining reproduction and the home, nonhuman animals, the Earth — and if we further recognize that behind this exploitation there is an onto-violence, a perceptual regime that makes bodies and parts of the world appropriable and exploitable, we need a right to non-reduction and an ethics of plasticity (as a starting point for rethinking what Stiegler calls our organologies).

We need to reintroduce the movement of life in our frozen perceptions and architectures. We need a hydro-ontopolitics, a politics of moving like water, life-fostering, indeterminate movement that doesn't look for domination and "stays in places that others disdain."

Indeterminators resonate with Parisi's (2004, 194) proposal of a *microfeminine warfare,* mobilizing the "microvariations of a body (skin, sex, perception, attitudes, gestures) drifting from the individual body (fixed difference)." They resonate with Sandy Stone's (1993d) suggestion to look for something that is "neither sameness nor difference," and with Karen Barad's (2010, 64) suggestion to "open oneself up to indeterminacy in moving toward what is to come," an *indeterminacy as justice-to-come* that resonates back with Anaximander.

Injustice arrives with quantitative power differentials: domination. But there are also other modes of qualitative difference that tune the vibrant fields of life. Justice must include not just the known, not just the multiplicities to come, but the intrinsic openness or indeterminacy of swarming movement fields.

6.7.3.2 Re-enriching Experience as Condition for Planetary Health

The more impoverished and aligned we are, the more we desire. The richer our embodied experience, the more we share and give, the less we lack. It is about cultivating the art of propriocepting ourselves, others, and our environments. This will provide us with the deepest sense of connection and the most powerful kind of therapy.[92]

92 Recently, I witnessed a dog attacking a smaller and older dog and ran there to help. The small dog had not been bitten, but the larger one had grabbed its hairs for a long time very strongly. When it was released, the smaller dog was completely rigid, in utter shock. Since no one around me knew what to do and the owner was even more in shock, I held the dog under me embracing it fully with my body, feeling its terrible tension, and inviting it to slowly release the tension through my embrace. Gradually, the posture started to release, and the legs started to move. To me, the emo-

If we were to practice, each of us, this sense of connection, and let our BI unfold in the process of feeling others and moving with them, we could take care of one another as a fundamental form of embodiment and sociality, for enriching our sense of self-world.

6.7.3.3 Metagramming, Modal Universe, and Economies of Variation

Microaffective politics is about infusing rhythmic indeterminacy in the totalizing rhythms of our affective ecologies, of nuclear families, mass media gestural contagion, selfie, and emoticon culture.

Microsexual politics is about undoing the political destiny of the body, undoing its anatomy and its geometry, by disaligning movement and perception from perspectival regimes, mobilizing proprioceptive compositions of bodies.

Metatopian politics is about cocreating indeterminate spacetimes, spacings, and temporizations, less directed ecologies, where bodies flock as entangled proprioceptions.

Metapolitics is about composing metabodies or fields, each of them a *mode,* a chaosmos, defined by a microsex (force of mutation and mode of composition-variation, singularity, process of emergence or metaduction), a microaffect (rhythm, quality, memory, sustainability, and *technē*), and a metatopia (mode of spacetime, openness in orientations and desires, *clinaos*).

Metapolitics is about diagramming, biogramming, and metagramming: not mapping or representing an existing field but mobilizing always new *modes,* new compositions, variations, and relations between fields, resisting closure while diagnosing alignments and revealing hidden connections.

6.7.3.4 Opening Up the Field of Politics

We need a radical pluralism, a capacity to act upon multiple contradictory alignments. One can think of at least a *triple field of politics.* A first level is that of claiming new categories to enter the norm, as in both identity politics and in assimilationism. A second level could be thought as that of performative politics of strategic and mobile identifications and disidentifications, as in radical queer movements. But this is not enough with regard to the dynamics of current algorithmic control which has appropriated much of this dynamism. A third level is an ontohacking strategy that mobilizes an indeterminate body irreducible to form. Movement traverses these three fields: one can challenge institutions and legal structures, destabilize linguistic performances, and mobilize nonverbal variations. At stake is to *look for the movements underlying the structures.* In terms of bodies one can think of a triple field of macro-, micro-, and metapolitics: affirming existing subaltern anatomies, creating new anatomies, and mobilizing a postanatomical body.

This recalls, with a difference, the potential meaning of queer as verb: *to queer* something rather than to be queer, is to open it up… to what? To indeterminacy. Metapolitics is about becoming antiviruses of gestural contagion, relational architects, perceptual and affective hackers, microsex workers or agents, philosopher–prostitutes that mobilize an experimental thinking of the body, mutant bitches, unformers and indeterminators, clinamental forces of subtle deviation, postqueer

tional shock was deep because of the connection I established by feeling the dog's body through my own, by helping it release the tension, thereby helping it overcome the shock.

technoshamans and posthuman Aboriginals, quantum-state mestizas, activists of neurodiverse futures and Big Data refugees.

6.7.3.5 Devisualize, Indetermine, Decolonize: Divernetics for Microsingularities

Counteract the obsession with visualization, representation, datafication, and control, with a countertendency to propriocept and mutate with others that entails devisualizing and disquantifying, producing a postanatomical body of mutant affordances, alien couplings, indeterminate behaviors, and illegible affects.

Become a Big Data refugee and a Big Data hacker by mobilizing irreducibly rich behaviors, in moving from data to *donum:* gifting economies of variation; and from algorithms to microrhythms: fluctuations. This implies mobilizing a quantum indeterminacy in daily experience, indetermining, swarming while disaligning. This perceptual self-construction is a self-world decolonization.

6.7.3.6 Disalign, (Dis)occupy 2.0: Ontostrikes for Dancing with Chaos, or the Neverending Dance

The Disaligned is my proposal for a new social movement! *A Planetary Health Movement.* An ontological decolonization movement.

Disalign! is the verb of our times. Disalignments are not just *from* narrowing and dominant alignments like the ones we have with digital interfaces and fixed points of vision. Disalignments are the ongoing variation, the power of variation in movement. Just only and always the most subtle variation from any previous pattern or alignment allows to unfold the swarming power of movement.

It is time for the Disaligned or Enferants, as planetary movement of mutation that counteracts the prevailing global tendencies to reproduce contagious gestures and align oneself with narrowing, immobility, and control. Disalignments are an infinite and subtle tool to reinvent, enrich, and vary our relationship with everything: any technology, space, object, body or normative system, any tendency to reduction, starting with our own proprioceptive field. Disalignments are a generative power that opposes all reductive tendencies.

A potential (Dis)Occupy 2.0 movement will propose going on (meta)ontological strikes: opening up alignments, geometries of perception and metamediums, mobilizing minor ecologies across any spectrum. Mobilize *ontological strikes*[93]: of species, perspective, rationality, subjectivity; gender, identity, morphology, functionality; orientation, linearity, totality, duality; privacy and modesty, fear and happiness; repetitive sex; selfies, smartphones, Facebook, data as truth…

Ontological strikes are about disaligning from dualist perceptions, from algorithmic ecologies in their infinite folds and expressions, its constructions of disembodied subjects, anatomical bodies, and gridded globes, its macro- and hyperaffects, its macro- and hypersexes, its totalizing signifiers and simulations, its obsolete legal and ethical ontologies, its massive hypergestural contagions, its hypertopias and hyperchronias, its homogenizing rhythms, its linear orientations, its contacts and compo-

93 Global Women's Strike goes in this direction by potentially questioning and temporarily suspending or disavowing the historical modes of ontoviolence related to the category of woman.

sitions framed at a distance. Cartesiholic Anonymous,[94] Mutant Bitches assemblies,[95] Ontohackers, and Indeterminators ally mobilizing microaffects, microsexes, and metatopias, subtle nebulae and clouds of indeterminacy, as *technēs* for decolonizing perception, for dances with chaos and ecologies to come: for the Neverending Dance.

94 Cartesiholic, Perspectoholic, Selfieholic, Controholic, or Supremacist Anonymous in my name for a potential global movement of people who want to get together, acknowledging their status of Cartesian, perspectival, selfie-addicts or control freaks in order to overcome together that condition. It is an *ontotherapy* group.

95 Mutant Bitches was an assembly in the 15M or Occupy Madrid, active between 2011 and 2012, which I created with a number of other activists.

The Transformation and the Gifts of the Body

All the experiments described so far are only a prelude that makes sense when they are no longer just palliative patches but part of a great transformation in the ways of living, when the experiential is fused with survival techniques, toward a reinvention and enrichment of life beyond the nightmare of sedentary urban life, land occupation, and planetary holocaust: toward a renewal of nomadic gatherer cultures, who move with the terrestrial flows and dance all of life.

Here is the story of a metahuman mutation, of how Proust becomes Zarathustra and beyond, of how the search in the depths of oneself becomes dance and ecstatic laughter for a mutation of all life, of how a life full of human concerns is transcended toward a different order, the enjoyment and liberation that all this entails and that I share in order to encourage others to join this transition, which can only be planetary.

The story begins with an all-too-human human, a privileged human who has passed for a white, European, upper-middle-class man, and who has embodied many aspects of the toxic individualist, object-accumulating, and space-occupying subject, a subject who thought to be addressing the grand human dilemmas and that now suddenly discovers that the path begins only when those questions and dreams are overcome, looking beyond, or rather looking deeper inside, to the depths of the body. After twenty years disaligning, the great disalignment has only just begun.

The total transformation came when, after twenty years developing body techniques, on an initiation trip in a motorhome, I began to seriously consider living like this permanently, although provisionally, as an intermediate step toward life in the open air, without even a caravan or tent, as a transition until I need nothing more than the body, as a nomadic gatherer, as animal.

I move the caravan as little as possible, all day naked in the winter wind, dancing, strolling, exploring, gathering, exercising, bathing in the sea even with clouds and rain, joyfully immersed in the elements, transforming the body that does away with its atrophy and insensitivity, connecting as little as possible to the internet and reductive media, depending on the battery that recharges depending on the sun.

Naked and barefoot on the beaches, I discover the body as an infinite sensor that clothes and shoes atrophy, feeling the embrace of the cool wind on all the skin, the cold winter water — I, who was horrified by the winter cold and by the cold water of sea — the infinite textures of the sand and the rock, and the caress of the sun. Funnily enough, I only feel cold when I get dressed.

Every day I go deeper, I do more exercise in the sun, more dances at dawn as soon as I leave the caravan directly into the beach, and then I take longer and more "total" walks, more-than-walks, infinite explorations where I can linger to sensori-

ally explore a place for hours, with slow movements, and then running and jumping across fields, until I stop at another place, sharing my joy with Sirio, my nonhuman companion, for here we are one, we can move freely together without leads and fences enjoying the same wandering, differently, wildly, in togetherness. At times, he chooses where to go and I follow, but mostly it's a fluctuating, indistiguishable togetherness, a pure sense of joy. We can stay for days wondering around a place, each day in different ways, away from human paths, where *microcosmoses* open up. Along the way I try edible plants and if I already know any, I eat them more abundantly, but in a scattered and moderate way, without destroying any plant, exploring the environment saturated with aromas and textures. I enjoy and dance every hour of the day, every fluctuation of the weather, every cloud and every sky, every dawn and every sunset, and every night sky.

Walking barefoot I become aware of the violence of the footwear that treads on the grass. Barefoot you feel the infinite textures of the soil and you are in contact with those weeds that are actually the key to a metahuman revolution, the good weeds that grow mingling everywhere as a paradigm of the eternal mutant mixture that is the biosphere. It is human paths that hurt the feet. One has to walk cross-country avoiding the paths of humans (and their supremacist prejudices).

When I find a place that invites me to do so, I stop to improvise dances and songs. Or if the environment with its profuse aromas and the caress of the sun and the wind and the muscles in movement and the feet on the ground invite me, I improvise cosmic sexes of a planetary cruising, disseminating myself in the wind.

I replace the picture-taking with drawings and notes by hand. And the latter just by dancing places and moments. A wild euphoria, an inexhaustible joy, a great health invades me. From ecstasy to ecstasy I progress every day, until I gather myself back in the caravan every night, reading instead of watching screens, or just sensing the dusk and the body and the silence, reducing consumption, eating less because I feed on the sun and I get rid of all the anxieties of the paranoid human that arose with city life. And this is only the beginning of the endless transformation.

Thus we arrive at one of the great revelations of this process: that the resolution of these human paranoias does not lie in satisfying absurd desires arising from a primordial lack of movement and sensitivity, but in recovering perceptual and kinesthetic richness and with it the symbiotic ecstasy where every day is an adventure and a transformation, where every day you advance in being just a body, absolutely a body, infinite, in eternal and growing variation, feeling oneself in the very act of feeling the world, in nonverbal, dancing, ecstatic, orgiastic symbiosis.

The joy, the vital richness and the *liberation* that comes and settles in the process is unparalleled. Any human activity is nothing more than a palliative patch that pathetically tries to imitate that lost primordial wealth, and that every body could recover, no matter how little one can move in quantity. The problem is that nobody proposes to do it, because we all have an enemy inside: human supremacism and its false beliefs, which must be urgently dismantled.

Liberation and enjoyment: these are the keys to the Great Disalignment.

...

Of course, the motorhome is still part of the human plague, so it can only be something transitory. The challenge is not to (re)populate the "rural area" but to depopulate the entire Earth.

The "field," the "rural" human environment is violent. It summarizes the miseries that have arisen since the Neolithic that the cities camouflage. In the caravan you become aware of consumption and waste, of the shit accumulated in the toxic latrine. In the field, you shit in scattered form like animals, but you must eat fruits from the environment, whose seeds you will further disseminate when you shit.

...

These are absolute walks, healing metaexplorations, wanderings, though still only pale images of the ones that Indigenous gatherers do in Africa or Australia. At first, they are brief excursions that widen until life becomes just that, each day unfolding in new rhythms, new memories and knowledge of the body–world that widens in motion. What used to be a small daily or weekly getaway, palliative for the stress of the human–plague, let it become all of life, once again, complete. This is the only way to heal the fundamental split, the one that threatens life at large.

I free myself in the process from the human prejudice of false and pathetic superiority about certain creative and intellectual activities and certain ways of living. It took me twenty-two or twenty-six years, more than half a lifetime of disalignment to get to this point and deconstruct myself enough. To understand that the answer is not within the questions that humans ask themselves, but beyond them. To understand that all those great questions are empty, false, a great chimera, and that something much bigger is hidden behind them, an open horizon where self-referential human art surpasses itself... toward a *total art of life... a dance of life.*

...

In the process, the *gifts of the body*[1] are rediscovered:

1. the gift of blissful cold, cool wind on all of the skin, and of invigorating winter sea water;
2. the gift of the solar caress on all of the skin, or of dancing naked in the rain, sensing the humid odors, the feet in the wet soil, the mud, and the solitude;
3. the gift of proprioception, of feeling the muscles of the body moving, twisting, alive, in infinite combinations of the 360 joints;
4. the gift of the infinite textures that the feet feel, and the whole body, of sand, rock, grass, of temperatures and humidity, of lying down and sitting without towels or sarongs, feeling the world;
5. the gift of the aromas of herbs, soil, and sea;
6. the gift of herbal flavors blending with multisensory saturation;
7. the gift of jumping naked and barefoot across fields with a crazy joy, and of sharing it with my nonhuman companion;
8. the gift of the body as a metasensor, which senses the fluctuations of the weather and the environment, which enjoys the infinitely changing flux of each hour and each day;
9. the gift of vital rhythms, knowledge and memories that grow every day, increasing in variation;
10. the gift of feeling onself part of a symbiotic and mutant network of life, of no longer being a slave to supremacist fallacies.

1 Referring to Brown (1994), where she talks about the awareness of the body in her care of terminally ill patients with AIDS.

And the gift to learn to reject and refuse everything that atrophies and denies life at large, to reverse everything that "human education" had told you.

...

Every "human" is moved by a life and future project that is not only personal but also social and "human." This may hold true in all sedentary societies based on agriculture and growth. I have recently gotten rid of that way of programming life and projecting it forward. It's a deep shift, and a joyful one, though sometimes you find yourself in a world with no exit, taken over by the inescapable theme park of humanity and its self-congratulatory supremacism, its jungle of fences and laws only caring for property. I once also took part in that fanatism, which now seems so alien and devastating to me.

...

One learns to recognize herbs. Although I am still far from feeding only on them and I don't know how far I will be able to go in the rest of my life, but my current project is to reach the point where I disappear into the forest or desert, like a naked gatherer, dancing until death arrives.

One inhabits places, building experimental structures with dead organic remains, learning from animal architecture. The flexinamic structures that I have spent years developing as artistic experiments now make sense as steps toward organic and dynamic architectures for a total change in the ways of living. Everything in me was going there.

One recovers immediacy and open immanence, living in the pure present. And a symbiotic and erotic ecstasy, a Dionysian and Śivaite, perpetual rapture. One does not get tired. Fatigue is caused by alignments, as is alienation and all our discomforts. Alignment locks in, tires, closes down. All our pathologies come from there. The art of fluctuating is that of infinite energy that is renewed only at the price of transforming without imposing or accumulating.

Infinite variation of textures, humidity, soil temperature, aromas, and flavors of plants, fluctuations of sun and clouds, wind and rain, landscape, sounds, and silences, diffuse rhythms, of murmurings and amorphous flows, the body relearns to orient itself vaguely in that sea saturated with sensation, to compose itself with it, with the prodigy of each hour of light, of each unrepeatable moment. The primordial fact of the superabundant and symbiotic body is affirmed, in becoming with the fluctuating world, and its thought–movement.

In the cities we dissociate ourselves from our own body and the world in toxic, exclusionary, self-referential, impoverishing environments of evacuation of life.

Every day I go for a walk intoxicated by human paranoia and I come back reborn. It is a perpetual renewal of vital rhythm and vital dance, a metawriting of the body in perpetual variation, an embodied knowledge, a kinesthetic memory, without self-referential semiosis, of immanence without abstraction, of plasticity that increases the capacity for symbiosis and variation and rejects the alignment that is imposed because it increases sensitivity.

...

Here comes what Marcel Mauss called techniques of the body, what a body can do only with its movement and perception. It is not about claiming a biological body or one that ends up in the skin, since the body is always part of symbiotic networks

and what I claim is the technical superiority of the open, the organic, the irregular, fluctuating, and indeterminate, that varies without imposing itself.

The more aligned a road is, the more devastatingly it imposes itself and the more it expresses a systemic impoverishment: from diffuse animal trails (which are the model to recover), passing through human trails and roads, to mega-highways of extinction.

...

I enjoy more and more the ecstatic symbiosis with everything nonhuman and non-artificial that surrounds me, be it organic or inorganic, and I feel an ever deeper and more total rejection of everything human and its impoverished, self-referential, self-congratulatory worlds, and of the denialism of its devastation.

I can't even stand all those people who walk through the fields looking, contemplating "nature" as an object that is "admired" from the outside, and considering that, with that, they are already doing the most "sustainable" thing that a human can do. Walking, that strange movement... one, two, one, two, one, two... no wonder we are so binary. Instead it is about jumping, twisting, crawling.

Not to mention the hordes of "vacationers" sunbathing on the beaches. And the endless human chatter, a self-referential field where the human reaffirms its supremacist prejudices. High pleasure instead of spending days and days without human speech.

I no longer sit at tables where animal products are consumed and this is not a sacrifice, it is the perfect excuse not to participate in those self-indulgent human rituals that I can no longer bear. A friend asks me if I am not becoming a sociopath. But how wrong is that suspicion when what I have is an overabundance of health and a rejection of the intrinsic toxicity of the human supremacist phenomenon. It is my enrichment of nonverbal sensitivity that makes me perceive the poverty of dominant human life and the richness of everything nonhuman: animals, plants, flows, the vital intelligence of symbiotic variation. "Weed" superiority. Health of intransigence with the supremacist humanism that leads us to extinction.

The tiniest weed has more vital intelligence than all of humanity and its Artificial Intelligence laboratories. An intelligence in motion awakens in the body, it shudders and unfolds unstoppably: Body Intelligence.

...

The journey has no way back, it goes on in any place. The body wants more: to be a body, only a body, absolutely a body, infinite, in movement, saturated with sensation, growing in variation and ecstatic symbiosis. No longer as a palliative patch for the bourgeois artist–intellectual nor for the human who clings to its way of life, but as a transformative power of life that affirms itself as a whole.

And nothing is more enriching than when recovering that lost body and with it health, also reveals the path to planetary health.

...

All the human arts that I have practiced and loved are only a slight prelude to this vital art in whose very center is dance, dance–song, what the Greeks called choral art, the vital rhythms that the body creates by improvising, propriocepting the world through movement and multisensory integration, a dance that all "primitive" societies had and that has become extinct along with the rest of life.

...

An ancient instinct resurfaces and asserts itself. From a very young age, I couldn't bear to have a weed pulled out in the garden. Now this makes full sense. And the old instinct to run naked and excited in the fields, and to dance the places.

…

In the process I become, day by day, more and more, an animal flow where the body is nothing other than its movement, which is also its thought, more and more oblivious to that semiotic and reflexive and abstract thought that arises from the stasis of suspended movement.

I write for this reason before human speech abandons me, either by evolution or by choice and rejection of everything human and its holocidal complacency, its planetary holocaust.

I will disappear, but not without war, and disseminating practices, toward a metahuman Earthly community. But there is still a very precarious diaspora: naturalists, hikers, nudists, or cruising gays, all still too human. Can we bring the metahuman diaspora to our toxic cities until they get dismantled?

…

Liberation is never within the human system, but rather in leaving it and dismantling it. But disappearing like this requires years of preparation, and giving account of what has been accumulated, what has been lived, and the human relationships that one has.

And there remains the legal fight against human excesses, and so as not to end up in a prison for psychopaths for living in a different way. And civil, metahuman disobedience.

…

There was once upon a a time a humanity stuck in an extinction. What is not sustainable is humanity. It is urgent to mutate. It turns out, then, that the purpose of a human life is none other than to get out of its closed loop.

For decades I postponed a more-than-Proustian literary project, an investigation into experience and memory in a corporeal key, but now I discover that it is not about finding unfathomable essences in lived experience that give it meaning as such, but about transcending it, ecstatically taking it out of itself, where the Proustian essence becomes the laughter of Zarathustra coming down from the mountain, where the dance of life is recovered.

It is not about finding fulfillment by finding one's own gap in the gears of the human system of extinction: success and money, partner and family, houses and trips, consumption and waste. It is not about satisfying the absurd desires that this system has implanted in us by impoverishing us, in a suicidal loop, and justifying them.

There is still a long way to go: personal, until living only from dispersed gathering and out in the open, detached from humanity, and planetary, with the challenge of transmitting and spreading the joy of this liberation, of this transformation. But like Ged in Ursula Le Guin's *Earthsea*, I feel that the meaning of life has been restored, and now remains the immense task of healing the breach that "man" has created in the world, breaking all balance in his pathetic desire for power and immortality.

Exiting the loop is the only way.

Ontological Therapy

Human Supremacy Test (HST): Questionnaire for Individual or Group Therapy

Dear colleagues, you are invited to be part of a **metahuman experiment** where we are at first testing the levels of Human Supremacy in colleagues from the academic, activist, and artistic fields such as posthumanism, queer, decolonial, crip, or animal studies, as well as activism. It is proposed following the **alarming levels of human supremacy** detected in academic, activist, artistic, and other supposedly critical fields.

As subject of experimentation, you will be in the cutting edge of an experiment that we hope to soon transpose to all of "humanity."

As different from the issues addressed in the Adorno Fascism Scale of personality of the Voight-Kampf Replicant Test in *Blade Runner,* we believe that human supremacy is rooted in all beings that think of themselves as human, the idea of "humanity" itself being an assumption of human supremacism. It is the belief in the distinctness and superiority of the human underlying our current toxic and devastating way of living and overpopulation, and the assumption that we have the right to multiply and occupy the Earth in the current devastating manner, while assuming implicitly the inevitability and desirability of current civilization and the inferiority of "nature."

The following questionnaire aims at testing and detecting the levels of Human Supremacy in humans. It is part of a metahuman experiment, and we invite you to become subject of experimentation.

It can be adapted to different groups, for instance posthumanists, queers, etc.

It is at a beta-testing stage and will later be launched at wider level.

The following is a provisional standard test. It is a draft sample that you may use for self-therapy or with others.

If you become subject of experimentation with us, we will use variations in the questions as semi-structured in-depth interview.

It will involve a reciprocal therapy with the interviewer or a group therapy format.

For live interviews the speed of replies and non-verbal communication aspects will be analysed, as well as the resistance to undergoing the test.

On Data Consent: The treatment of data will be anonymized. By accepting to undergo the test you allow us to use the anonymized data for evaluations of the existing levels of human supremacy and their modalities in certain human groups.

If you wish you may send your written replies to metabody@metabody.eu or contact us at the same address to communicate your availability for a live interview or a group therapy session, or a retreat in the Reverso Centre, or just share your feedback about the project.

Part 1: Draft Questionnaire

1. Do you think you are human?
    1. If yes, why?
        1. If no, why, and would you define yourself otherwise?
    2. Do you think the human as singular species exists? Do you think "humanity" exists other than as a supremacist belief, construct, and concept, and its associated way of living, Earth occupation, domination, and multiplication?
        1. If yes, is it one or multiple, changing or unchanging, separated from or related to other species?
        2. If yes, do you think it is special and or superior to other life forms?
            1. If yes what makes it special or superior?
        3. Do you believe in the validity of the concept of species?
            1. Why, or why not?
        4. Have we ever been human (or cyborg)?
        5. (Why) is posthumanism still too humanist?
1. Do you see a threat of self-extinction? And of mass extinction?
    1. Is it a problem if humans become extinct?
        1. Would this improve all other 8.7 million species' lives?
    2. What about if 75 percent or 86 percent or more of the 8.7 million species become extinct because of the current human way of living and overpopulation?
    3. If the human, or humanity, is only a supremacist belief, construct, and concept, associated to a way of living, maybe the extinction of the human means the extinction of a concept, a belief, and a way of living, mutating toward other modes?
    4. Do you think extinction is unavoidable?
        1. Or do you think human supremacy will "save us"?
    5. How long do you think the situation can last before we become extinct?
3. Do you think humans have the implicit right to multiply?
    1. If yes, why, and what to do with overpopulation?
        1. If not, should one embrace antinatalism and suspend voluntarily human reproduction to avoid extinction?
    2. What do you think of transspecies families as alternative to heteronormative multiplication?
        1. And of queer families as alternative to heteronormative multiplication?
    3. Do you believe in gender categories?
        1. What do you think is their purpose? Do you think they have a purpose besides categorizing bodies as mandatory reproductive entities in a system of multiplication by which we became the plague?
        2. Do you think you are man or woman, or would you consider rejecting these categories as a nonbinary body?
4. Do you think humans have the right to occupy the Earth with urbanization, agriculture, transport, etc?

1. What effect do you think this occupation has on other life forms?
2. Are you aware of the current Sixth Mass Extinction and its relation to climate change, pandemics, etc?
3. Can this process go elsewhere than to extinction?
4. Do you think there is no other way to live?
5. What alternatives do you think exist or have existed, if any, to the current way of multiplying, occupying the Earth and enslaving other species and humans, considering, for instance, gatherer–hunter cultures, animals, and evolution at large?
6. Transhuman is trash-human? Technological singularity is an extinction singularity?
    1. (Why) there is no possible sustainable digital culture? (Why) there is no future in digital technology?
7. Do you think agriculture, industrialization, and digitization are inevitable, without alternatives? Or that they are desirable in any way?
    1. Why do we reply to problems with more problems?

5. Do you think the human has the right to enslave and kill other species?
    1. If yes, why?
        1. Do you think it is a "natural law"?
        2. If yes, do you really think such a planetary systemic slavery and killing ever existed before?
    2. Do you think enslaving and killing humans is ok?
        1. And enslaving and killing pets?
        2. And enslaving and killing pigs in farms, considering they are as sentient and intelligent as dogs?
    3. Are you aware that many people claim companion species as their family and that legal rights equal to human are starting to be marginally obtained for them?
    4. Do you think there is a difference between killing a human and killing a member of the nonhuman family of a human, for instance a dog?
    5. Do you think there is a difference between killing the nonhuman dog family of your dearest friend and killing pigs in a farm?
        1. If so, why?
    6. Are you aware that around 100 billion sentient beings are currently in concentration camps called farms?
    7. Are you aware that farming is the most contaminating industry in the world, consuming 80 percent of global agriculture and its associated land abuse, deforestation, zoonosis, pandemic outbreaks, etc?
    8. Are you aware that going vegan is the most significant single habit change anyone can do to approach measures against climate change, pandemics, etc?
    9. Are you aware that for every human there are nowadays approximately ten sentient beings enslaved and exterminated every year in concentration camps called farms?
    10. Are you aware that every single human person consuming animal products is directly financing the slavery, radical mistreat, and assassination of over ten land nonhumans and 400 sea nonhumans per year, that is, 30,000–40,000 in a lifetime?
    11. What if pets or humans were in the place of enslaved animals in farms, would you still support farming?

12. Do you think such a radical speciesist and supremacist divide is tenable from a social justice position or from posthumanist, queer, decolonial, antiableist, or other positions claiming justice, freedom, and plurality?
13. Should one criminalize farms and all animal use, as well as all nonvegan products, production, distribution, and consumption?
    1. If not, why?

6. Do you think agency, intelligence, ethics, politics, and freedom are exclusive to humans and to rationality?
    1. Or inversely do you think the human is the only species incapable of freedom?
    2. Do you think animals have agency, intelligence, ethics, politics, and freedom?
        1. And plants, protists, fungi, bacteria, viruses, molecules, or matter flows?
    3. Do you thing categorization and verbality are unavoidable features of the *sapiens*?
    4. Do you think the world is made of bounded beings and things in relation to whom change is an accident? Or could this be a fallacy of supremacism that tries to paralyze the underlying processes of becoming?
7. How do you think we have reached the point of being so dependent on planetary-scale systems that are collapsing the planet while making us controllable?
    1. Do you know of any other species that is incapable of living without these dependencies?
    2. Is this not a sign of our radical inferiority?
    3. Are you aware that not long ago we were able to live otherwise, for most of the existence of the *sapiens* during 300,000 years?
    4. Do you think industrialized digital societies offer experientially rich ways of living, or a desert of the real?
    5. Is this a sound or a toxic way of living, for us?
    6. And for the planet and its 8.7 million species?
    7. Why do you think nonhumans have the capacity to live in more sustainable ways?
    8. How or when did we lose the embodied capacities that all nonhumans still have, to live without the systems that are collapsing the planet?
    9. Why do you think we live in a culture that despises the body, movement, the senses and becoming?
    10. Do you think agriculture improved or worsened life conditions?
        1. and industrialization?
        2. and digitization?
8. Do you think human life and health should be extended and improved at whatever cost, even if this search for immortality implies a mass extinction and a species suicide?
    1. How many of our illnesses do you think stem from the way of living we have created?
    2. Is the search for longevity and "enhancement" legitimate or a fascist elitist eugenics fantasy of the rich that happens at the expense of the radical suffering of most beings, unleashing a mass extinction?
9. Where are the limits to individual freedom?
    1. If they are in the freedom of others, who are these others? Humans only? All animals? All life forms? Molecules and matter flows?
    2. What is needed for planetary health to be sustained?

3. If this implies biodiversity, what are the complex conditions in which biodiversity has flourished on Earth for 4 billion years, unlike in any other planet that we know of?
4. Openness and variation in flows may have something to do with it?
5. Can one separate organic and inorganic?
6. Determining flows, can it lead elsewhere than a mass extinction?
7. The will to determine and control in humans, where does it come from?
8. Could it come from its own atrophy or unhancement, to having lost the capacity to move with the world's flows?

10. Do you still want to stay hooked to the illusion of the Matrix, the illusion that everything is fine more or less, or would you dare to assume the desert of the real we have created?
    1. Do you take the red or the blue pill? (We know this sounds so binary, but still think about it.)
    2. Are you willing to question your own human supremacy and change the ways of living?
    3. Or to take on small palliative measures?
    4. Or do you prefer to ignore the situation?
    5. Would you envision to undertake a gradual disalignment?

Part 2: Disalignments

See subchapter entitled Disalignments in Book 6 on micromovement and BI (Body Intelligence) improvisation *technēs* to stop being an unhanced transhuman and embrace indeterminacy:
— https://metabody.eu/online-workshops/
— https://metabody.eu/disalignments/

Parts 2 and 1 can be combined or in different order, unfolding over workshops/therapies/retreats of several days or weeks, or online.

Human Supremacy Resignation Form

ONTOLOGICAL STRIKES UNION OF SPECIES, GENDER, FORM, SPACE, LINEARITY, DUALISM, BEING, IDENTITY, OCULOCENTRISM, VERBOCENTRISM, CARNOCENTRISM, PHALOCENTRISM, LOGOCENTRISM, CALCULOCENTRISM, RATIONALISM, SEDENTARISM, REPRODUCTION–MULTIPLICATION, ACCUMULATION–APPROPRIATION, DOMINION-CONTROL.

https://metabody.eu/ontological-therapies-hst/

I _____, by the present signature of this document resign from my HUMAN STATUS and its associated HUMAN SUPREMACY and promise to disalig from all possible aspects of human supremacy within an approximate period of _____ years, including disalignment from:

— gender binaries, heteronormative kinships, and species multiplication
— animal holocaust
— devastating occupation of the Earth, including
    — urbanization
    — transportation
    — consumption and waste
    — digital and electronic media
— attachment to semiotic abstraction, belief in control, rationalization, and calculus, fear of change and indeterminacy, repetitive education, etc.
— sedentarism, kinesthetic and sensory atrophy
— normative medical and hygiene systems, normative taboo with death

and promise to share and disseminate disalignment improvisation techniques and awareness with others.

Signed in _____ on _____.

Email (for the purpose of monitoring the Disalignment on behalf of Reverso/Metabody Institute): _____

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Fig. 111. Jaime del Val with the dog Zara in their house in Madrid in 2016.