Digital Ownership and Consumption

Visions of Web3 and the NFT Experiment in Digital Uniqueness

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Introduction

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Introduction

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It's an odd proposition. To own an image or a short video that anyone can see for free. That was my first reaction when I heard about NFTs (non-fungible tokens). It was early 2021, and NFTs were flying high in the lively crypto markets as well as in popular discourse. I kept hearing about NBA Top Shot, a market for "Moments" from NBA games, minted as NFTs and sold to basketball fans as an opportunity to "own a part of NBA history". It felt strange, buying my first Moment. A not uncommon reaction, as it turned out. I bought something and now own it. But what do I own? What does it mean to own an NFT, a digital collectible? Anybody can watch the NBA highlight online. Yet, according to the blockchain, I was told, I am the only owner of my unique "Moment". How is this *unique* digital *thing* different from all the amorphous digital content out there, from the potential copies, from other NFTs? Over the next couple of years, my interest in NFTs grew and occasionally waivered. The media hype and public attention continued for most of 2021 and then swiftly declined in early 2022 after the NFT market reached its hype-induced peak and began to tumble. The last two years have been marked by recurrent obituaries (NFTs are dead!) and resurrections (NFTs are still breathing!), both of which received much more modest public attention (compared to the initial hoopla).

NFTs were always an ambiguous and contentious thing, loaded with marvel and excitement, and fraught by doubt and problems. For some, NFTs symbolized a cultural-economic renaissance, for others the evils of techno-charged turbo capitalism, greed, deceit, vanity, banality, environmental degradation, fascism, you name it. By 2023, the balance seemed to have tipped toward the darker side, and even the promoters started to show some unease in using the term NFT. When attending DCENTRAL Tokyo in 2023, a blockchain and NFT industry conference, I saw one of the executives start his presentation by crossing out the acronym NFT in the title of his talk, replacing it with the more palatable term "digital artifacts". From the thing of the future to a thing crossed out? Enough to make anyone intent on writing a book on NFTs feel a bit queasy.

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Luckily, this is not a book on NFTs. It is a book on digital ownership explored through the prism of ongoing *experiments in NFT ownership*. It is not a guide to NFTs, or even to digital ownership, nor a comprehensive critique or defense of NFT ownership. It is an explorative journey into chosen terrains and dimensions of NFT ownership to see what they might reveal about broader dilemmas of digital ownership. Is there a place for ownership in the digital world? What does it mean to possess something digital? What is the role of uniqueness in digital ownership? How do digital things come to be unique? Conversely, thinking more broadly and more deeply about digital ownership can perhaps bring some answers to dilemmas of NFT consumption and ownership.

I tried to undertake this journey and examine these questions as openly as possible, drawing on various philosophical, sociological, legal and anthropological inspirations as well as paying serious attention to what NFT consumers and industry insiders have to say about digital ownership. Nevertheless, my thinking remains primarily rooted in the field I know best, consumption studies,[1] where the primary audience for this book will probably come from. However, I hope that despite my limitations, diverse readers can benefit from the questions and the ideas I will present and grapple with.

Here is my proposition. Rather than cross NFTs out, or uncritically accept them as digital goods that are evidently ownable, non-fungible, unique, etc. I propose to sample the rich tapestry of NFT ownership, the novel and the familiar, the feats and successes, the failures, tensions and paradoxes, with an eye to enriching our understanding of digital ownership, perhaps even of ownership more broadly. Trying to rise above the "affective actualism" (Reckwitz, 2020) of today's techno-culture, the instant overexcitement followed by promptly forgetting and moving on to the next "new thing". Trying to avoid the quicksand of hasty hysteria permeating both the hyped-up accounts and the quick-to-dismiss accounts of NFTs and NFT ownership. In the ensuing sections of the introduction, I will first briefly discuss what NFTs are, their brief and bumpy history, and what they bring to digital ownership. In the last part of the introduction, I will sketch out the key contributions of this book, organized across the three parts: (1) Digital ownership, (2) Imaginaries of Web3 and (3) Singularized digital possessions.

NFT ownership

In plain terms, NFTs are meant to open opportunities for owning digital stuff that is unique, scarce and exclusive. Much of the digital content available online can be easily reproduced (e.g., right-click and save, copy and paste), and digital copies are usually indistinguishable from the "original". Perfect copies are made all the time when we create, access, move, save, etc. digital stuff. Within closed systems, such as an individual game or virtual world, certain rules and restrictions can be instituted to prevent people from copying, accessing or using digital items. Thereby turning inherently reproducible

information into "virtual goods" (Lehdonvirta, 2012) that can be scarce, exclusive and unique. Yet, this limits the existence, use and circulation of digital items to a single, enclosed environment, in a way constraining opportunities for ownership as consumers cannot freely use, move or sell their digital possessions.[2] NFTs were designed to help solve some of these issues by creating a type of digital good that can be more broadly movable, usable, transferable, in short, more "truly owned" (Tapscott, 2023).[3]

Like most digital inventions, NFTs are difficult to adequately define and explain. A broadly cited "scientific report" on the "NFT revolution" describes NFTs as "digital assets that represent objects like art, collectible, and in-game items" (Nadini et al., 2021, p. 1). The authors also provide a more extensive definition of an NFT as "a unit of data stored on a blockchain that certifies a digital asset to be unique and therefore not interchangeable, while offering a unique digital certificate of ownership for the NFT". In sum, something that is an "asset".[4] Something that certifies digital stuff as unique and non-fungible, and that helps establish the provenance of digital stuff, telling us who created the NFT, who owns it, and who has previously owned it. These "powers" of NFTs are owed to the blockchain,[5] a digital architecture for storing, securing and moving value that allows for NFTs to be recorded, traded online (often with cryptocurrency), and encoded within "smart contracts" – lines of code that can be executed in a distributed manner, across the many nodes of the network (Tapscott, 2023).

Nadini et al.'s approach to defining NFTs is pretty common. Non-fungible, unique, ownership, assets, all the typical ingredients of NFT definitions and explanations are there. Including the often-present whiff of tautology (e.g., an asset that represents assets, NFT as a certificate of NFT ownership), an issue I will return to in Chapter 3. Then there is, in my eyes, the most challenging issue: how to separate "what it is" from "what someone wants it to be". Information scientists have referred this problem as the "inscription error" (Ekbia, 2009), a tendency to first project or inscribe certain ontological assumptions onto a computational system and then read those assumptions or their consequences back off the systems, as if they constitute an independent empirical discovery, the reality of things. For example, as discussed in Part III, while it is true that each NFT is inscribed with a unique identifier on the blockchain, this inscribed "uniqueness" does not automatically make NFTs "functionally" unique in specific social settings (i.e., unique in the terms of people, institutions, apps and algorithms, recognizing them and responding to them as something that is unique). A more precise take would be to say that blockchains and NFTs *afford* digital items to be (recognized as) unique.

Of course, the relevance of this distinction (i.e., technologically inscribed as unique vs. socially unique in the broader, fuller sense) largely depends on how *plugged in* our world is into technologies such as blockchains (e.g., technically, economically, culturally, institutionally, etc.). If we all believe that the blockchain makes digital stuff unique and act accordingly, if our legal

systems, apps and devices recognize the blockchain as the ultimate arbiter of uniqueness, and if this is constantly reaffirmed through the market (e.g., market exchanges, prices, value), then affordance becomes, so to speak, a collectively sanctioned fact.[6] The same applies to ownership as a legally sanctioned arrangement (Watkins et al., 2016). Legal code does not matter much if it is not socially enforced and/or does not translate into concrete social arrangements, practices and actions. This is why understanding the social and historical context is just as important as understanding the technological or legal aspects of digital ownership. Moreover, ownership arrangements can be socially stabilized and sanctioned in absence of any legal basis, or sometimes even in opposition to the law (see Chapter 2).

The first examples of NFTs mentioned in most historical overviews reach back to 2014. Jennifer and Kevin McCoy's generative artwork, Quantum, is commonly cited as the first-ever NFT. The McCoys wanted their artwork in digital form but struggled to find a way of establishing the provenance of their digital piece. They tackled the problem with the help of tech entrepreneur Anil Dash, with whom they together started to explore blockchain technology as a possible solution. Kevin McCoy and Dash minted the visual artworks on a blockchain and "demonstrated how such 'monetized graphics' could be used to establish provenance and sell digital art".[7] As part of a conference presentation, McCoy sold a digital image to Dash for $4 using the blockchain, thus unknowingly kicking-off what would later become a massive market for digital art and collectibles.

However, it wasn't until 2017 and 2018 that NFTs started to get more significant traction, when notable art collections like CryptoPunks (Larva Labs) and popular games like CryptoKitties (Dapper Labs) and Axie Infinity (Sky Mavis) drew broader attention to NFTs and the Ethereum blockchain most of the early projects were based on. Then came 2021, the year in which NFT sales jumped from $22 million (the yearly tally for 2020) to $15 billion.[8] Various factors have been blamed for this explosive rise, to which they most likely jointly contributed: (1) the crypto "bull market" run (September 2020–November 2021) increased the interest and confidence in blockchain technology and all things crypto, while also significantly swelling the wallets of cryptocurrency holders, the prospective buyers of NFTs; (2) by 2020 the visions of Web3 (i.e., blockchain-powered Web) were beginning to bear visible fruit, expanding the infrastructures and opportunities for digital ownership; (3) the pandemic created conditions in which the balance between the digital and analog world (even more) markedly shifted toward the former, with many people spending more time and money online; (4) social and mainstream media were awash with news of the whooping prices fetched by NFTs, such as Top Shot Moments, CryptoPunks, or Beeple's infamous "Everydays", and celebrities and influencers were enthusiastically showing off their trendy acquisitions.

The amalgamation of these and other wider factors (e.g., the growing importance of the digital in how we consume, socialize and construct our identities; the progressive financialization and assetization of (close to) everything and

everyone in the past decade) have resulted in an astonishing spike in demand for NFTs. Famous brands, such as Coca-Cola, Adidas, Taco Bell and Gucci jumped on the NFT train, NFT-based virtual worlds like Decentraland promised to turn visions of the Metaverse into reality, and "profile picture" collections like the famed Bored Ape Yacht Club (BAYC) cemented NFTs as a pop culture phenomenon. While they remained incomprehensible, troubling and cringy to many, NFTs had arrived – in rapidly multiplying shapes and forms: from digital art and profile picture collections to fashion and sports collectibles; from one-of-a-kind (1/1) NFTs often (e.g., digital art NFTs like Beeple's "Everydays") to serial collections of sometimes thousands of visually identical collectibles distinct only in their serial number (e.g., Top Shot Moments explore in Chapter 9); from Etherium-based NFTs to Bitcoin Ordinals and various other blockchain-based NFTs; from human-generated to AI-generated NFTs; from easily-transferable NFTs that can be sold on various trading platforms to the "soulbound" NFTs[9] that cannot be moved from the specific crypto wallet they have been assigned to; from arbitrary to non-arbitrary NFTs (unique non-arbitrary tokens or UNATS) generated from patterns of blockchain data. The experimentation has continued, and new variations of NFTs keep arriving.

However, already by late Spring of 2021, occasional signs of the hype cooling off began to appear. For instance, interest in Top Shot NFTs began to rapidly fall after the astonishing February and March sales (i.e., Top Shot's monthly sales in February were ten times larger than the *yearly* sales in 2020 of all NFTs *combined*). Many NFT buyers would soon learn that most NFT markets tend to be even more volatile than those of cryptocurrency.[10] With the crypto winter arriving at the end of the year (e.g., Bitcoin plummeted to less than a third of its peak value in the 12 months after November 2021), the tide began to turn very notably in the Spring of 2022, when the monthly sales of NFTs dipped from their $6-billion peak (January 2022) to less than a $1 billion by July 2022. The drop has significantly shaken the over-inflated confidence in NFTs (especially of the more financially speculative type) and the winds of social and mainstream media have begun to turn sharply, with reports of financial losses, scams, questionable artistic value, environmental problems, etc. growing louder, occasionally followed by obituaries of the NFTs' demise.

By 2022, critical voices became louder also in scholarly circles, including consumption studies, as philosophers and social scientists began to question the merits of NFT ownership. For example, Slavoj Zizek observed that:

> What is intriguing in NFTs is the idea of taking a digital asset that anyone can copy and claiming ownership of it. An NFT has almost no use-value (maybe it brings some social prestige to owners), and what sustains it is its potential future exchange-value. It is a copy with a price, an item of purely symbolic ownership that can bring profit.

To Zizek, the key (Hegelian) insight was that (like cryptocurrency) NFTs are not an anomaly or a pathological deviation of the 'normal' functioning of

money and commodities but rather actualize a potentiality inherent to the very notion of commodity and money. In other words, they are, in a sense, commodity stripped to its essence: "pure symbolic ownership" of assets (and nothing more). Others have pointed out the vacuousness of NFT ownership from the vantage point of legal rights. For instance, Belk et al. (2022, p. 198) note that "our understandings of money, possessions, and ownership are all changing dramatically", and not necessarily for the better. They stress that it is far from clear what rights NFT ownership really conveys. With most NFTs, ownership rights become unbundled and fractionalized, and the rights consumers obtain fall far short of the rights that ownership of physical property normally conveys. These observations are no doubt important. However, there is more to ownership than legal rights, and reducing digital possessions to "pure assets", the banal face of techno-capitalism for Zizek, risks obscuring other important aspects of digital possession and missing out on valuable opportunities for advancing scholarship on digital ownership.

Overview of key ideas and contributions

I organized this book into three parts that in a way express the overarching ideas of this book. First, the NFT experiment offers a valuable impulse to shake up and re-examine entrenched assumptions about ownership and possession, thus opening potential avenues for alternative ways of thinking and exploring digital ownership and possession. Second, ownership is not just a bundle of legal rights or a social-technical arrangement, but also a powerful force in how we imagine society and the future, all the more so in the context of technology and digital ownership. Third, the NFT experiment invites us to more closely examine the relation between digital ownership and uniqueness and offers valuable insights into the workings of today's digitalized "society of singularities" (Reckwitz, 2020).

Part I – Digital ownership

In the opening part of this book, I first position my focal interests in the broader universe of possible meanings of digital ownership. My primary focus is set on the ownership of digital stuff or more precisely of *digital-virtual goods* that are devoid of a stable, discrete physical shell (not part of a physical bearer-object) and configured as "virtual goods" (Lehdonvirta, 2012) that are designed to be rivalrous and scarce and cannot be copied, edited and shared in the same way as "digital information goods" (see Chapter 2). The developments in blockchain technologies/markets have borne a new generation of digital-virtual goods (NFTs) that are meant to be distinct from other digital goods in ways that are inherently linked to ownership. Namely, NFT producers promise consumers that they will be able to control and move their digital possessions in ways that were unavailable before (e.g., to extract them from the "original" digital environments and use them elsewhere, to hold

them in private wallets, to transfer and sell them, etc.). Belk et al. (2022) rightly point out that these promises and abilities are often not well rooted in law and legal rights. Instead, they largely rely on "the law" of the code (Lessig, 1999) and the techno-economic infrastructures and arrangements assembled around blockchains.

However, extant research has been slow to explore these rapidly multiplying regions of digital ownership. In Chapter 1, I argue that this lacuna is not simply owed to the usual problem of scholarship struggling to catch up to rapid technological and socioeconomic developments but also stems from several "headwind" discourses that have smothered and confined scholarly interest in ownership (e.g., the post-ownership discourse) as well as digital ownership more specifically (e.g., the inferior ownability discourse). I also broach the struggles of consumption scholarship to escape from the long shadow of conventional concepts and logic of ownership of physical goods (Denegri-Knott et al., 2020) and reflect on the intensified discourses of (im) proper ownership that point out the manifold deficiencies of the emergent forms of digital ownership, but often do so from the narrow vantage point of legal ownership rights.

In Chapter 2, I outline a set of conceptual issues that, I propose, obscure open investigation of digital ownership. I leverage existing discussions of the methodological and theoretical obstacles (Watkins et al., 2016, Denegri-Knott et al., 2020) and extend them by pointing out and delving into two key issues: the reduction of ownership to legal ownership (i.e., matters of legal rights) and the polarized distinction between ownership and possession (typically defined in terms of personal meanings and attachment to belongings and/or a sense of something being "mine", aka psychological ownership). The NFT experiment helps me problematize the ways in which we commonly think about ownership and possession, in consumption studies and beyond. In short, I caution both against dismissing emergent forms of digital ownership solely based on the criteria of legal rights and against reducing them to subjective attachments and feelings of something being mine. Instead, I offer an alternative view of ownership arrangement through which possession (i.e., exclusive hold someone has over an object at a particular moment) becomes temporally and spatially extended, socially stabilized and socially sanctioned.[11] The value of this alternative perspective on ownership and possession is that it invites consumption scholars to explore *how* the precarious ownership arrangements are continuously extended, stabilized and sanctioned – i.e., shaped by people, technologies, institutions, discourses and visions (I focus on the latter in Part II).

To own is to own *something*. Chapter 3 examines this something – the object of digital ownership – and the inevitable ambiguities of this (some)thing in experimental digital contexts such as NFTs. The discussion draws on Molesworth and Denegri-Knott's (2012) work on the digital-virtual, which I extend and amend with the help of Lehdonvirta's (2012) distinction between "digital information goods" and "virtual goods". I argue that as virtual goods expand

beyond the traditional domain of digital-virtual goods (e.g., in-game or virtual world tools and wearables), into the broader universes of digital art, profile pictures, fashion and digital sports collectibles, etc., the above-mentioned challenges of socially stabilizing ownership arrangements, are joined by additional challenges of stabilizing the ontologically ambiguous virtual objects. Reflecting on the example of NFTs as virtual art objects, I outline three sets of ambiguities: (1) the concept-content ambiguity (via analogy to the ontological challenges of conceptual art), (2) the ambiguity of token-as-creative-object (i.e., token as both certificate of ownership and "surrogate" art object) and (3) the ambiguities caused by excessive assetization (echoing the Zizek-ian critique of "pure assets"). Working through these ambiguities helps me bring (some) additional clarity to NFT ownership, while also providing potential explanations of the precariousness of digital "objecthood" and digital ownership.

Part II – Imaginaries of Web3

The second part of this book takes me to the idealistic and imaginary regions of digital ownership. The impetus for this journey was two-fold. First, to contextualize NFT ownership in the broader cultural structures of imagination, feeling and thought. In particular, the discourse and visions of Web3 (aka the Ownership Web) that have enveloped NFT production and to a slightly lesser extent also consumption, over the past half a decade. Second, working on the visions of Web3 helped me recognize the importance of ownership in the digital realm, not just as a social, legal or techno-economic arrangement but also as a product of and a powerful shaping force of how we collectively *imagine* our social existence, i.e., how we fit together with others and the place we and the objects and technologies that surround us have in the world. A product of and a powerful shaping force of our sense of moral order (i.e., what is right/wrong, fair/unfair, how things should be) – in other words, our social imaginary (Taylor 2004). In a similar vein, the ideas of digital ownership are both embedded in and formative of how we collectively imagine the future that we wish to obtain (or avoid) with the help of various technologies, in other words, of our socio-technical imaginaries (Jasanoff & Kim, 2015).

After briefly introducing the tripartite theoretical framework (social imaginary – sociotechnical imaginaries – visioneering) underpinning my analysis in Chapter 4, I turn my attention to the evolving visions and imaginaries of the Web. Chapter 5 (re)traces the early imaginaries of the Web (later retronymed as Web 1.0) and of Web 2.0, with an eye to the role they grant to ownership. I show that the early Web had been commonly envisioned as a space in which physical and institutional constraints, including property, can be transcended. The idea of (human) unity and community was central in early visions of the Web as a Commons unfettered by the constraints of ownership, where anyone can enter and freely take what they find (Lessig, 1999). However, throughout its first decade of existence, the Web was becoming increasingly commercialized and the rapidly inflating dot.com bubble burst with a

devastating bang in the early 2000s. In response, a new sociotechnical imaginary of Web 2.0 (aka the participatory Web) emerged around familiar ideas of empowerment, (comm)unity and the Commons, which however were re-envisioned along more entrepreneurial lines. On the surface level, Web 2.0 still appeared much like a Commons (e.g., free access, shareable content), but the "core data sources" below the surface were re-envisioned as corporate assets from which platform owners could extract value. This creative marriage of commerce and Commons (van Dijck & Neiborg, 2009) was far from flawless, however, and the question of ownership would soon resurface.

Chapter 6, "The Ownership Web", rounds up the analysis by unpacking the emergent imaginary of Web3 born out of a profound disillusionment with Web 2.0 and its corporate takeover of the Web. To reclaim the original vision of the Web (i.e., the Web of "the people" controlled by the users and creators who get a fair share of the value they create), the visioneers of Web3 imagined a new kind of Commons that could not be usurped and exploited by Big Tech. The solution was sought in code (blockchain) and in a radical break with the economic innocence of the early Web. Instead of rejecting ownership and commerce, the visions of Web3 embrace them through the power of tokenomics and decentralized token ownership. This ensures, the visions suggest, fairer and more efficient and sustainable management of Web resources and genuine participation of users in the economic rewards and the governance of the Web. The chapter concludes with a comparative reflection on the (d)evolving imaginaries of the Web, the continuities (e.g., the familiar modern tropes of liberty and individual agency, "the people", public space and the Commons), and perhaps even more interestingly, the divergences across the imaginaries of the Web. I show how the visions of individual liberty and agency in terms of freedom of expression and access to information (early Web) became replaced by visions of freedom and agency construed along the lines of economic participation and ownership (Web3). Ownership became re-envisioned as a key to liberation and prosperity, a means of reclaiming control, independence and just rewards. Moreover, code had become more and more fundamental in how ownership was (re)imagined and enacted, with blockchains and tokens becoming the principal means for socially stabilizing and sanctioning ownership.

The final sections of Part II. consider the limitations of research on visions and imaginaries. While what we collectively imagine often has a complicated relation to reality (and truth), imaginaries form an important part of our social reality. For instance, they can legitimate (or delegitimate) technologies, markets and ownership arrangements, endowing them with meaning and purpose. They can engender, or erode collective trust and confidence, for instance, by rallying communities of developers around the idea of building a Commons unrestricted by property, or by making the idea of a post-ownership Commons seem naïve. Finally, I also consider how my analysis of Web imaginaries relates to NFT ownership more specifically. In visions of Web3, NFTs tend to be presented as a subtype of token, as a unique cultural

good and store of cultural value. NFT ownership is prophesized to transform the creative industries, enabling creators to sell directly to their audiences, everyone who creates cultural value to financially benefit from their contribution, and consumers to truly own the digital stuff they pay for. However, while such "appeals" of NFT ownership resonate with some consumers, they sometimes fall on deaf ears or harbor resistance (e.g., opposition to NFTs in the video gaming community). How we collectively (re)imagine digital ownership and how collective visions and imaginaries translate into specific social practices and arrangements remain open questions calling for an investigation.

Part III – Singularized digital possessions

While definitions and explanations of NFTs vary, they are strikingly similar in their characterizing of NFTs as *unique* digital goods that are (as their name suggests) not interchangeable. Unique and non-fungible, in relation to all other tokens, to digital content that is not tokenized (e.g., freely accessible content), and even to any copies that people might want to make (Ball, 2022). In the digital world permeated by replicable code that can be easily accessed and shared online, the proposition of digital objects being in some respect *singular* becomes a key argument for why (singular) digital stuff is worth owning. However, opposite to what their name or the customary definitions and explanations suggest, NFTs are not inherently non-fungible and unique in broader social and cultural terms. Despite their idiosyncratic features (Reckwitz, 2020), such as blockchain-inscribed unique identifiers and records of transactions, they are not automatically and universally recognized and valorized as singular in specific social settings. To explore the social uniqueness of digital objects, we need to first acknowledge the inevitable precariousness of singularity as something that requires ongoing *singularization* – social processes and practices through which stuff becomes recognized and valued as a unique object with a distinctive cultural biography (Kopytoff, 1986). Singularization is an exceedingly challenging and uncertain prospect when it comes to digital stuff due to the lack of physical cues and markers, the absence of familiar (analog-world) practices of singularization, and the always looming threat of reproduction (Mardon & Belk, 2018). Yet, the NFT experiment shows that digital technology brings both challenges and potential solutions.

Chapter 7 delves into Kopytoff's (1986) seminal treatise on the cultural biographies of commoditized/singularized objects and the subsequent work on singularization in consumption studies. I point out several important gaps, such as the limited attention to: (1) *collective* singularization (as opposed to personal singularization that dominates past research), or how objects become collectively recognized and valued as unique (as opposed to being unique to me personally), (2) the contributions of diverse actors to singularization (beyond the individual consumer/owner), and (3) singularization in digital contexts as well as the role of technology in singularization. Filling

these gaps is a crucial step in advancing the study of singularization and digital ownership. The NFT experiment reveals concerted efforts to collectively singularize digital stuff, in an important part by turning to technologies like blockchains. I leverage nascent work on digital collecting (Mardon & Belk, 2018) and recent advances in the sociology of singularities (Reckwitz, 2020) to clear the way for exploration of the sociotechnical processes of singularization in the emergent contexts of digital ownership, such as NFTs.

I dive into Andreas Reckwitz's recent contributions in Chapter 8. His socio-historical analysis helps me open up singularization research to the realities of late-modern society, which Reckwitz tellingly dubbed as "the society of singularities". The sociology of singularities encourages singularization scholarship to (re)consider the role of digitalization and technology in processes of singularization. For example, Reckwitz shows how digitalization became a key structural driver (together with culturalization) that propelled society from the industrial modernity governed by the social logic of the general to today's society of singularities governed by the social logic of the singular. The contrast between these two divergent social logics provides me with a fresh vantage point for further reflection on the evolution of Web imaginaries covered in Part II of this book. Finally, Reckwitz's work provides useful tools for exploring the practices and processes of (collective) singularization to which I turn in Chapter 9.

The final chapter of this book, "Singularizing Moments", builds on Reckwitz (2020), Mardon and Belk (2018) and the empirical research I have been conducting with Kostas Lianidis and Mikkel Nøjgaard, to examine the singularization dynamics unfolding in one of the most influential contexts of NFT ownership, NBA Top Shot. The analysis, based on interviews with collectors, participant observation and archival data, reveals the multidimensional nature of collective singularization in this dynamic digital context. First, blockchain/NFT *technology* plays a key role in affording opportunities for singular biographies of digital objects, not only in ways that have already been theorized by Mardon and Belk (2018) but also by affording "automated singularization" (e.g., inscription of unique identifiers into digital objects, automated records transactional biographies). In contrast to Reckwitz's account (2020), automated singularization does not operate in the techno-economic background, but also plays an important role (e.g., as a narrative resource) in how actors construe digital singularity. However, despite this important infrastructural and phenomenological role of technology, three other dimensions of singularization are also vital in generating and sustaining the precarious singularity of the explored digital objects.

First, singularization is bolstered through *narrative*s, such as those that tell collectors how the blockchain "makes" digital stuff unique, as well as through many other kinds of shared stories that imbue digital collectibles with iconic meaning (e.g., NFT Moments as authentic representations of special moments of basketball "history") and indexical meaning (e.g., NFT Moments as markers of collectively significant events). Some of the storytelling is orchestrated by

the producers (Dapper Labs), but other actors, such as collectors and influencers also vitally contribute to the narrative singularization of digital objects. The third dimension of singularization pertains to the singularizing *design* of digital objects. I show how producers utilize familiar cues for singularity, rarity and authenticity by mimicking features of established physical collectibles (i.e., trading cards) and practices of analog collecting (i.e., opening packs). Lastly, the singularization of digital collectibles is bolstered by developing different forms of *utility*, such as ludic, social and fandom utility. These special forms of utility are available only to owners of digital objects, thus bolstering the objects' exclusivity and their distinctiveness from generic digital content.

Across the four mutually reinforcing dimensions of singularization, various actors contribute to ongoing processes and practices of singularization. However, despite these multidimensional concerted efforts, singularity remains precarious and contested. As Dapper has been learning, singularity can be eroded by oversupply. For instance, when too many moments are minted (both in the sense of too many moments per game and too many versions of each game moment), makes it harder for moments to be construed as singular. When the skeuomorphic design is taken too far, digital collectibles risk being construed as mere digital copies of analog "originals", and an excessive focus on added utility might erode the intrinsic value of digital objects qua collectibles. There are rich opportunities for future consumption research to explore these and other possible dimensions of singularization, their limitations, and their interrelations.

The Conclusion, "Prospects for Digital Ownership and Singularity", briefly wraps up the three parts of this book, provides some overarching reflections on this book as a whole, and touches on some speculative ideas and opportunities for future research. For example, one of the bigger-picture questions posed, paraphrasing Reckwitz, is to what degree do digital-virtual goods like NFTs become singular complexities with genuine inner density? While the industry focus has so far largely been on technological innovation and the generation of hype and financial interest, the longer-game challenge is to find viable ways for cultivating the inherent complexity and inner density of digital goods like NFTs. Moreover, the NFT experiment seems set on translating the maxim "Code is law" also into "Code is economy" and "Code is culture", intertwining the economic logic of assets and ownership with the cultural logic of the singular. The thrust and limitations of such "translations", and many other dilemmas that the NFT experiment surfaces call for further investigation and critical reflection in consumption studies and beyond.

Notes

1 In particular, the interpretive tradition, dubbed consumer culture theory (Arnould & Thompson, 2005).
2 Legally speaking, the digital items we "own" in games and virtual worlds are licensed to us (i.e. permission to access and use), as is commonly the case also with e-books and software (Albrechtslund, 2020).

3 At least that is what the proponents of NFTs envision (see Chapter 6). As Belk et al. (2022) point out, it remains a question how "true" the ownership of NFTs is in terms of legal rights.
4 A term that appears a whooping 32 times on the 11-page report, but is never defined. As commonly found in discourse on NFTs the term asset is used as something self-evident – seemingly as a shorthand for something of value that can be owned (Tapscott, 2023) and that generates economic benefits down the line (e.g., when sold or otherwise used).
5 The early NFTs were mostly recorded of the Ethereum blockchain, but in the subsequent years several blockchains have been developed to "host" NFTs (e.g., Polygon, Solana, WAX or the Flow blockchain presented in Chapter 9), and new ooportunities have also been developed on established blockchains, such as Bitcoin (i.e., Bitcoin Ordinals).
6 What Searle (2010) refers to as institutional fact. For example, it does not matter that paper bills are just (monetary) tokens, as long as everyone believes and acts as if they have value.
7 https://nftnow.com/art/quantum-the-first-piece-of-nft-art-ever-created/.
8 https://www.cryptoslam.io.
9 https://opensea.io/learn/nft/what-are-soulbound-tokens.
10 Which should not be surprising, given two factors. First, it seems to me that NFT markets are exposed to similar risk factors and fluctuations, plus they tend to be rocked by any quakes in the premium cryptocurrency markets (e.g., drops in the value of Bitcoin). This means that much of crypto-currency volatility tends to translate into the NFT volatility. Second, most NFTs operate in what Reckwitz calls "singularity markets" (i.e., in contrast to the fungible cryptocurrencies, NFTs are meant to be non-fungible and unique). Singularity markets are profoundly unpredictable, winner-takes-all kind of markets. Only a fraction of the masses of cultural products vying to be recognized as singular and unique obtain this status and the economic rewards that accompany it. When Bitcoin goes up all holders of the currency benefit as the coins they hold are fungible. When an NFT market like Top Shot goes up or down the increase or drop-off will not be equally distributed across all holders of Top Shot NFTs. Some NFTs will be affected much more than others (e.g., the blue-chip NFTs tend to retain more value than the more "average" ones). To use a loose analogy, investing in art (singularity market) is not the same as investing in gold.
11 Wherein the "social" is not limited to human relations only, but pertains to non-humans, such as material objects and technologies (Latour, 2007).

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