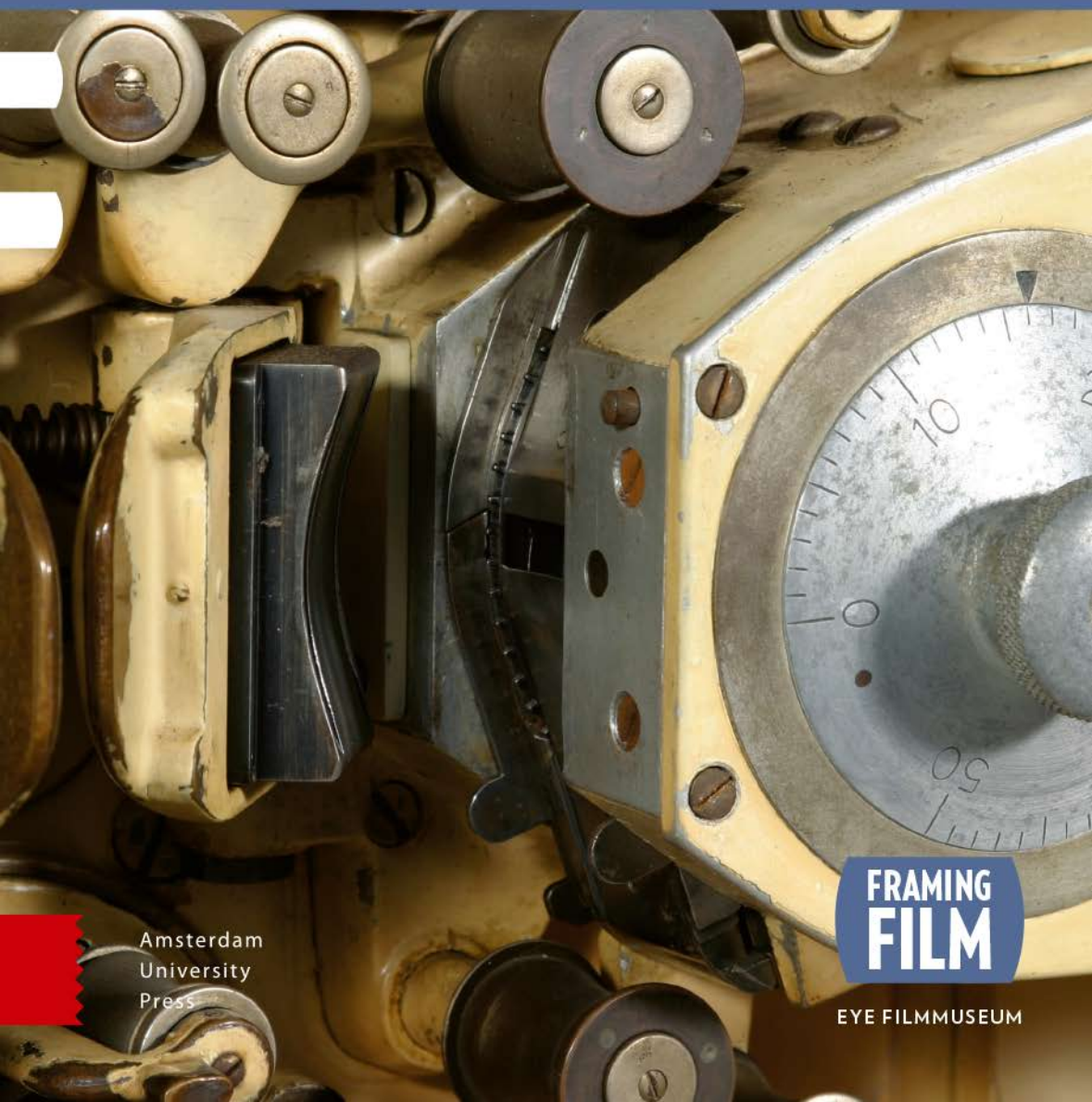


GIOVANNA FOSSATI AND ANNIE VAN DEN OEVER (EDS.)

EXPOSING THE FILM APPARATUS

The Film Archive as a
Research Laboratory



Amsterdam
University
Press

FRAMING
FILM

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EXPOSING THE FILM APPARATUS



FRAMING FILM is a book series dedicated to theoretical and analytical studies in restoration, collection, archival, and exhibition practices in line with the existing archive of EYE Filmmuseum. With this series, Amsterdam University Press and EYE aim to support the academic research community, as well as practitioners in archive and restoration.

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Exposing the Film Apparatus addresses the keen awareness of the prominence of media technologies in the last two centuries, while also focusing on how such an awareness is impacting the curatorial consciousness of those working in film archives, technology, and media museums today.

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To evoke the richness of the topic, *Exposing the Film Apparatus* deliberately offers a variety of approaches to the subject matter by tapping into the perspectives of professionals working in very different ways on a wide range of film technology-related issues—from archivists, curators, projectionists, theorists, and film and media historians to new media specialists, media archaeologists, and educationists. It does so in the spirit of the book series entitled *Framing Film*, which focuses on theoretical and analytical studies in archival practices (i.e., collection, restoration, and exhibition), and which aims to support scholars and practitioners involved in archival research or work in film archives and museums as well as those interested in gaining knowledge about film archival practices and related topics.

After launching the *Framing Film* series, a book on the film apparatus seemed paramount not only because the topic of technologies is debated so often and so passionately in the field of film history—and in particular in new film history—but also because, in this time of technological transition and mass digitization, museum curators and audiences seem to be developing a renewed awareness of their collection of objects, particularly their apparatus collections. We are grateful to the series editors for supporting this publication.

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Giovanna Fossati, Annie van den Oever
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INTRODUCTION

Exposing the Film Apparatus

Giovanna Fossati and Annie van den Oever

The technology of the modern media has produced new possibilities of interaction. [...] What is needed is a wider view encompassing the coming rewards in the context of the treasures left us by the past experiences, possessions, and insights.

—Rudolf Arnheim, 2000.¹

PART I THINKING ABOUT TECHNOLOGY

| 13

This book is not about the philosophy of technologies but rather about the film apparatus and its exposure in past practices of use and archival practices today. Nonetheless, it seems appropriate to recall here the claim made by philosophers that “it is largely by technology that contemporary society hangs together.”² Unsurprisingly, technology’s impact on society has been debated for more than a century by philosophers. From the start, the young institution called “cinema”³ has also received much attention from a number of thinkers. There have even been film scholars who have argued that film history is the history of its technology.⁴ And it is evident that the history of film theory has been punctuated by theories of technology. In many of these theories, the (experiential) impact of film on the viewers plays a crucial role. One need only look at the considerable number of thinkers (some of them filmmakers too) who theorized on technology to see the extent of its influence: Louis Delluc, Germaine Dulac, Jean Epstein, and others on *photogénie*, enlargement, and the close-up; Sergei Eisenstein, Vsevolod Pudovkin, and Dziga Vertov on montage; Rudolf Arnheim on techno-perception; and André Bazin on the aesthetic impact of film technologies such as 3D. These theorists affected film studies in major ways. More recent examples are media archaeologist Erkki Huhtamo—who keeps a collection of apparatuses himself—and philosopher Stanley Cavell, who helped establish the Harvard Film Archive. Both have written about the experiential qualities of film technologies—Huhtamo on failed technologies and small and big screen technologies,⁵ and Cavell, most importantly, on the typically powerful and shared “big screen” experience.⁶

Exceptionally influential were Jean-Louis Baudry and Christian Metz, who developed the so-called “apparatus theory,” which states that the cinema is ideological by its very nature precisely because films seem created to represent reality and yet the apparatus of the cinema is used to induce a passive, defenseless, dream-like state in viewers. From the 1970s onward, the theory of the apparatus has been widely discussed by many: Jean-Louis Baudry has problematized “*l’appareil de base*,” or the basic equipment of the cinema, coining the term “dispositif” in his famous 1975 article;⁷ Jean-Louis Comolli and Giorgio Agamben have reflected on technology and ideology; Christian Metz has dissected the psychoanalytical mechanisms underlying cinema viewing; and Laura Mulvey has analyzed the Hollywood-induced “male gaze.”⁸

14 | Not only film scholars but also major 20th-century philosophers were prompted to rethink the impact of (media) technologies on culture, which had a considerable impact on the field of film studies. The most obvious example is Walter Benjamin. He responded to Paul Valéry’s thoughts on the “profound impact” of the “birth” of film on the arts and the techniques used in the arts.⁹ Benjamin reassessed the “rupture” in perception and aesthetics created by the new cinema machine and, more generally, the effects of mechanical reproduction on the “aura” of the artwork.¹⁰ Another obvious example of an influential writer was media theorist Marshall McLuhan, whose work was as much inspired by the new era of television as it was by Harold Innis.¹¹ A third example—this time from the era of digital media—is Friedrich Kittler, who inspired attention for the medium’s materiality and the distinction between *technische Medien* (technical media) such as photo and cinematographic media, and other communication media such as language.¹² Yet others have had a considerable impact on the field of film and media studies such as Bernard Stiegler, who constructed a post-phenomenological account of the mediated experience,¹³ and Paul Virilio, who explored the “logistics of perception” and the ways in which media technologies and wars are tied together.¹⁴

More recently, an overall concern within media studies has been how the philosophies of technology created in response to major technological transformations—by Benjamin, Heidegger, McLuhan, Kittler, Stiegler, Virilio, and others—might have contributed in turn to the modification of media studies and film and media archiving and some of its key concepts. A second concern has been whether there is perhaps something distinctly cyclical to this in the sense that the intervals in which theorizing on technology took priority came after major technological inventions and were intercut by intervals of relative silence with regard to the question of technology (e.g., the decades in which author theories or narrative theories dominated). A third concern has been whether and how the theoretical shifts instigated by Benjamin, Heidegger, Kittler, and others could be made productive for the field of media studies as

well as the fields of media art and media heritage studies, and film and media archives.¹⁵ If cinema—which as a practice is ruled by hardware—is affected at a very practical level by the introduction of new technologies, these concerns and questions are even more pressing. Since the beginning of the digital era, contemporary scholars have been preoccupied by theoretical and philosophical issues related to the context of (digital) media technologies, thereby reassessing film history and film theory once again. It is the objective of this book to contribute to this enterprise by taking the perspective of the film archive into account from the practical side of the collections of apparatuses stored in them. More specifically, it is this book's aim to do this by “exposing” the apparatus, that is, by presenting a myriad of reflections on a great variety of devices stored in the film archive. This is part of the larger enterprise of reframing and reassessing the history of film and other audio-visual media as closely connected to both the history of technology and the history of art.

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FILM HISTORY AND THE HISTORY OF TECHNOLOGY

It has been noted many times before that the history of the cinematic medium has established itself from the very beginning as a technological history. However, when one studies the historiography of the cinema from the outside, as Benoît Turquety has done in a series of studies,¹⁶—that is to say, when one re-establishes it within the context of the social sciences of the time—an “odd coincidence” emerges.¹⁷ As Turquety indicates, the reasons for cinema to originally perceive of itself as primarily technological were numerous and complex: patents were formulated in technological terms, and so were their economic implications. Moreover, from early on the teaching focused on the mechanisms of illusion which the new moving-image technologies allowed. Between approximately 1895 and 1925, essayists writing about “moving pictures” saw it as their task to describe “the evolution of the machines” as well as “the historical-ideological determination of the important innovations.”¹⁸

It is one of the ironies of history that during the interval in which film was perceived as technological, the history of technology as a discipline was not yet founded. The very rise of technology as a discipline only took place during the early 1930s. That was the time when technology entered the sciences as a major topic in nearly all disciplines. Meanwhile, film began to perceive of itself more as an art form rather than a technology. A strange coincidence indeed, this discrepancy between the histories of film and technology.¹⁹

How could it happen that the history of film lost interest in technology precisely at that moment when technology attracted the attention of (cultural) historians, philosophers, and scientists simultaneously? This is a crucial

question. It hints at the extraordinary link between film and technology at that point in time: cinema providing the cultural model for technology that itself was perceived within a conceptual sphere centered on film, which embodied some of its most characteristic features: “the mechanical, the modern, involving speed and vision,” as Turquety wrote.²⁰

Digitization profoundly changed our relation to technology once again. Turquety came to the conclusion that if film still is a “technological art” today, it may well be “that what we mean now by *technology* is not what was meant by the term when the cinema was institutionalized,” because today “our contemporary concept of *technology* has shifted to another conceptual sphere,” that of computers, and cinema’s place in it “is not central—if it exists at all.”²¹ He continues:

At the time of mechanization, *technique* and *technology* were cinematic notions; in the digital era, the link between the *cinema* and those concepts has changed, because the paradigms have changed around them, perhaps the *episteme* itself.²²

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What may we learn from this? Perhaps that, although the very beginning and the very end of the 20th century have often and illuminatively been described as historical moments in which the “new media” changed the cultural landscape,²³ we should not speak of the similarities between the two all too easily. Rather, we must understand that the transition from analog to digital in cinema created uncertainty once more about the identity of cinema and an epistemological shift, which was disorienting for the field (notable in the use of our concepts and terms) and from which we have not yet fully recovered.²⁴ Conjointly, the term “media” won prominence. Rather than “new technologies,” the label “new media” has been in use since the 1990s. A renewed interest is currently emerging among media scholars for film heritage and film archives. Their objects of research are old and often obsolete media (historical collections) as well as new media devices (contemporary collections). Similarly, film archivists are turning to media scholars to help them redefine their role in today’s media landscape as they seek to reframe the role of their collected objects (films as well as special collections, including apparatuses) in a time of technological transition in which such devices are changing so radically. Obviously, with such interplay, the way in which the shift to digital is interpreted has a great impact on the way a film archive defines its role today. Embracing the shift to digital as the “death of the cinema”²⁵ could lead to an archiving policy focused on collecting and exposing the past 120 years of celluloid cinema and its related technology. But if one considers digital cinema as the inevitable next step in the development of a medium which is *inherently transitional*, this may lead to a new archiving

policy which is focused on showing the medium, that is, the film apparatus, as indeed inherently transitional.²⁶

TERMINOLOGICAL PROBLEMS

Creating terminological clarity in this field may be problematic for at least two reasons. First, due to the conceptual confusion created by the epistemological shifts that marked the development of the field in the past century, a word (cinema, machine, screen) may still be the same but its network of meaning may well have completely changed over time, affecting the meaning of the term in profound ways. And second, the constant transitions in these media practices have caused names to change frequently—from patent name to firm name to brand name to type name or generic name and so on—making terminological instability an undeniable fact. Therefore, some clarifying words are needed here before we can take a closer look at the technical devices in the film archive. We will focus on the key terms (technique, technology) used in this book.

The word *technique* (derived from the Greek word *techne* for art or craft) originally indicates ways of doing. The Greek word τεχνικός (technikos) means “of or pertaining to art, artistic, skilful.” The term “technikos,” which is the etymological root of “technique,” situates the technical in the field between art and hardware—in other words, between technology (as knowledge of techniques) and knowledge of a skill or art.²⁷

The word *technology* first entered the English language in the 17th century and referred to a field of study, not an object of study.²⁸ What was considered to be the object was, in fact, the machinery, the *mechanical* devices to be studied at that point in time.²⁹ In other words, the term *technology* refers to the knowledge or *logos* [literally the *words*] needed to study, invent, develop, produce, and use the material devices. Whereas the word *technique* strictly refers to the method or procedure and not the hardware, as we call it today, the term *technology* relates to the discourses about techniques, whether scientific or prescriptive, discourses which can be studied as cultural objects in themselves.³⁰

However, thanks to the technological revolutions of the 18th and 19th centuries—which brought us the elevator, the steam engine, the train, and last but not least the photo camera and the new “cinema machine” or “cinematograph”—the term *technique* came to connote both the machine and the way in which this machine was used. It is for this reason that restricting the definition of technology to simply the knowledge about technical inventions now sounds obsolete in English.³¹ Technique and technology are now often used as synonyms, but from a scientific point of view, it is important to also acknowledge that the understanding of the specific dialectics between the

knowledge and development of machines and the development of their (artistic) use is nullified from the start “by any theory which reduces to one those practices that interact as two,” as Rick Altman has convincingly argued for the fields of film theory and the theory of cinema history.³²

Clearly, the histories of technological inventions and the histories of their use can only partly be written separately.³³ Source material may reveal that the reflections on the procedures of use by engineers invited new technologies.³⁴ Similarly, it may uncover the often unexpected ways in which a new device was turned into a valued medium. Let us clarify this with an example.

The Cinematograph

18 | The cinematograph invented by the Lumière brothers is an example of a turn-of-the-century technological device which is known to have spurred the technological imagination of engineers.³⁵ In a Surinamese newspaper of February 25, 1898,³⁶ an anonymous journalist summed up the more than fifty different terms that were used by technicians to label the new technical inventions and patents. The extensive list of terms clearly indicates the powerful impact of the new Lumière technology on other technicians’ imaginary:

[...] kinegraaf, kinetograaf, kinematograaf, kinematoterm, kineoptoskoop, kineoptikon, kinematoskoop, kinebleposkoop, kinegrafoskoop, kinevivagraaf, kinesetograaf, photokinematograaf, fotoskoop, motophotoskoop, phoiotroop, mutoskoop, motorgraaf, movendoskoop, mouvementoskoop, manimatoskoop, theatograaf, vitagraaf, vitaskoop, vitaphostoskoop, eieroskuop, kathoskoop, magniskoop, mutoskoop, phonendoskoop, geriaalgraaf, sterioptikon, fammograaf, zoograaf, biograaf, heligraaf, velegraaf, rollograaf, artograaf, vivendograaf, vitamotograaf, kinestereograaf, badizograaf, heliecinograaf, phautograaf, panoramograaf, pantobiograaf, pantomimograaf, chronophotograaf, photochronograaf, scenamatograaf, pictoriallograaf.³⁷

We can learn several things from the journalist’s long list of names. First of all, it indicates how difficult it was for journalists at the turn of the century to get a firm terminological grip on the new invention and the new experimental and performative practices of showing moving images to audiences, which were even more ephemeral and short-lived than some of the inventions themselves. The problem surfaced as part of a new media practice and it would take decades before the list would crystallize into the handful of names audiences use as labels for established media practices today: cinema, cinematography, film,

film show, movies. That these names have stood the test of time indicates, in retrospect, that the practices of use to which they refer somehow stood out, in economic or other terms. The journalist's problem also hints at the complexities of the use of terminology experienced by writers, researchers, and archivists today: the list of terms that remains after some months, years, or decades have gone by differs considerably from the list of terms that is available and valued at any particular moment or in the earliest phase of conception. An evident example is provided by the terms used to refer to head-mounted displays, which have been reframed and renamed many times since the early 1990s. Depending on their source material and perspective—be it retrospective or contemporary—archivists and scholars will have to pay attention to the use of brand names versus type names, generic names, or names referring to certain formats,³⁸ as is done in several contributions in this book.³⁹

The long list of names also suggests that the Lumière cinematograph deeply affected and inspired other turn-of-the-century inventors, who hoped to profit from this lucrative invention themselves by slightly changing the new technology and putting the seemingly new invention under the protection of a patent of their own! Moreover, the cascade of minor and major inventions created at that point in time indicates the many different ways in which technicians envisioned the new technology to be further developed for a great variety of potential future uses. Many of these would inevitably fail to be profitable. In this sense, the list of names may also remind us that the path of development from new technology to valued and established medium is long and rocky. As C.W. Ceram states in his classic exposé of the “archaeology of the cinema”: “What matters in history is not whether certain chance discoveries take place, but whether they take effect.”⁴⁰

His statement reveals a very specific position in media studies. Obviously, Ceram was also aware that there was a long list of now forgotten, old, lost, and obsolete technologies, but to his mind, only the ones which had not been forgotten and/or had been or still were successful deserved a proper place in the history of film:

Knowledge of automatons, or of clockwork toys, played no part in the story of cinematography, nor is there any link between it and the production of animated “scenes.” We can therefore omit plays, the baroque automatons, and the marionette theatre. Even the “deviltries” of Porta, produced with the camera obscura, the phantasmagorias of Robertson, the “dissolving views” of Child, are not to the point. All these discoveries did not lead to the first genuine moving picture sequence.⁴¹

Ceram's position was to be famously inverted by Errki Huhtamo, as he clarified what he himself understood to be a proper "archaeology" of the media, which is an archaeology in the sense of Michel Foucault's *Archaeology of Knowledge* and Walter Benjamin's idea of a cultural history: an archaeology countering ideas of technological and historical progress.⁴²

Contrary to Ceram, then, Huhtamo suggests one should "embrace all forms of cultural artifacts as material for theory." Indeed, his view of history explicitly included "discursive production" and in particular "the historically recurring discursive patterns" which he labeled "topoi."⁴³ These topoi, he argued, help to lay bare lost and forgotten futures of media which had never crystallized yet properly express the (lasting) desires and visions that are as much a part of a history of culture (in the sense of Benjamin) as are the material media objects used, stored, and studied.

20 | It seems to us that, in terms of the film archive, the long list is indeed of great value to the archivists as well. Although such a list may not be on a par with a material collection of over fifty objects that can be physically studied, it does provide inside information needed to contextualize the archival objects in the collection as part of a dreamscape of media, envisioned for future use. Or, in Huhtamo's words:

[T]he "excavation" of the ways in which these discursive traditions and formulations have been "imprinted" on specific media machines and systems in different historical contexts, [contributes] to their identity in terms of socially and ideologically specific webs of signification.⁴⁴

Such excavations provide the valuable discursive landscape that hints at the user's desires and motives driving the development of media culture.

THE TREASURES LEFT TO US

In an interview in 2000, Rudolf Arnheim expressed an acute awareness of the importance of a vision on media technology by stating that "the technologies of modern media" had produced new and rewarding forms of interaction. He also envisioned new research agenda. What was needed, to his mind, was a vision on media technologies which would encompass "the *coming rewards* in the context of the treasures left us by the *past experiences*, possessions, and insights."⁴⁵

It seems to us that in order to understand the future rewards of the new technologies which are currently and rapidly flooding the market, we must study the archival collections of technological objects in context, as the his-

torical apparatuses may provide insight not only into unexpected past media experiences but also, when properly contextualized, into past media practices and unexpected and forgotten forms of use.

From a film archival point of view, we may add that film technologies uniquely invite the study of the one medium that affected the audiences of the last century perhaps more profoundly than any of the other visual media to date. It is now common sense to speak of film as the visual medium of the 20th century. Somehow, film was able to reach audiences at a size and scale never before seen in history (and this includes the newspapers and the popular novel of the 19th century), thus paving the way for TV as a mass medium.

Why did this new visual medium captivate the audience's imagination so easily and take hold of it so profoundly, and for such an extended period of time? And to what degree may these effects be ascribed to the way in which these new moving-image technologies were used? Early cinema studies is one of the sub-disciplines in media studies which was tasked with providing answers to these questions, thus helping to rewrite history under the label of a New Film History. Unsurprisingly, perhaps, early cinema studies came into being more or less simultaneously with new media studies, which was picking up on the impact of new digital devices since the late 1980s. These new disciplines were able to lay bare some of the effects and affects created by the new visual technologies in their early days. Like digital information and communication technologies today, the new cinema machine had sensitized turn-of-the-century enthusiasts to the properties of the new medium and to having notable so-called *media experiences*, which is to say, experiences triggered by the performance of the apparatus itself, including the machine's infamous limitations, such as the grayness of low-contrast images, the baffling lack of sound, the weird movements of humans walking, the unusual proportions of humans and things, and so on. All these features were carefully framed by the projectionists to exploit the audience's enthusiasm by deepening the experiential effects.⁴⁶

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Today, much is known about the interaction of past audiences with new media, but what about future media experiences and insights? Perhaps, like Arnheim, we should ask ourselves what we can learn from these past interactions in terms of the coming rewards of today's new media? And who better to reference if not Arnheim, who, born in 1904, lived through an entire century of technical innovation? He began writing his now famous essays on film in 1925.⁴⁷ From the start, his focus was on two eminently important things: the visual media in general (and the film apparatus in particular); and the technologies of vision, that is to say, the perceptual and cognitive techniques used to process the visual information.

As early as the 1930s, Arnheim articulated the connection between the

limitations of the new cinema machine, which could *not* flawlessly represent reality (as many euphorically claimed), and *film as art*, as his book title would have it. His interest in film stemmed from an enthusiasm for the “expressive capabilities of the visual,” and film, in this regard, offered a wealth of new examples, as he recounted in an interview in 2001. He was primarily occupied with the question of how the new cinema machine could represent the world through moving images, which is to say, a representation of the world “limited by the screen,” as he would have it. These very limitations allowed him to conclude that:

[F]ilm could never be a simple reproduction of reality. On the contrary, filmic images have the ability to shape reality and produce meaning.

Film *interprets* the visible world through authentic phenomena from this world and *thus takes hold of experience*. Film is not a direct representation in contrast to the indirectness of art; rather, it is a form of artistic expression.⁴⁸

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In retrospect, it is obvious that Arnheim was pointing at the very quality, born from the technological limitations of the new cinema machine, that would help it to reach audiences on a unprecedented size and scale: its power was to take hold of the viewer's experience by shaping reality and producing meaning. That is to say, part of its captivating power was that it blurred the line between representation and expression. To many, movies had succeeded in bringing one closer to reality than any other technology before, including photography. In fact, movies came confusingly close to the real perception of reality. Indeed, one need only read Maxim Gorky to realize that a certain amount of confusion was part and parcel of those early viewing experiences.⁴⁹ Unsurprisingly, then, contemporary artists were quick to pick up on the very specific expressive qualities and experiences the new moving-image technologies provided.⁵⁰ Hence, they started experimenting with them, integrating them into their own art practice. According to Tom Gunning, it was the young artists from the historical avant-garde movements in particular who were interested in experimenting with the transformations in experience these new technologies could provide.⁵¹ Furthermore, as early as the 1910s, they had started doing avant-garde “performances” or “manifestations,” which were in some ways quite similar to the early film shows, as these typically provocative and evocative public meetings also aimed at eliciting strong experiential effects in audiences.⁵² Interestingly, appropriations of this kind resurface through time. Comparable avant-garde performances (such as the ones created by Andy Warhol), for instance, followed the introduction of TV as a (mass) medium in the late 1950s and early 1960s, triggering a new, post-war avant-garde move-

ment. Two decades after that, in the 1970s, a new invention called “video” spawned a new art form called “video art.” And more recently, the new media of the 21st century has resulted in artistic “experiments” that are now labeled “media art,” which is perhaps the most productive art form in museums at this point in time.⁵³

THE GENEALOGIES OF ART AND MEDIA ARE INTERTWINED

It has been argued before that the genealogies of art and media are intertwined, as they are inherently connected.⁵⁴ Our main point is that artists, in addition to engineers and technology developers, also tend to experiment with the effects of technologies, and that they too play an important role in the process of appropriating new technologies in culture. It seems that innovations in one field may easily trigger innovations in the other. This phenomenon obviously is of great interest to all who want to know more about the coming rewards of new media technologies that Arnheim talked about. If we want to follow up on his imperative, we should start identifying art museums, specifically those marked as modern art museums, as treasure troves of media objects and media experiments. It is then up to media scholars to contextualize and historicize these collections as part of media history. Art museums are treasure troves for more than one reason: only a very small part of the intertwined family histories of art and media have been studied in academia by film and media scholars and art historians. Ostensibly, a collaboration between these fields could be highly productive. So far, different types of experts (be it in the fields of art, technology, or media) have framed their research questions within very different approaches to art and media respectively.⁵⁵ But were we to combine questions from different fields the way Arnheim proposes, the results could be very rewarding.⁵⁶ Such a cooperation may include film archives, media archives, media museums, and technology museums. Science museums also contain huge collections of apparatuses, many of them used for communication and information purposes (e.g., the Science Museum in London before it reorganized its collection and stored its media objects in the National Media Museum in Bradford). Unsurprisingly, perhaps, art and technology museums as well as film and media archives have had very different attitudes and approaches towards their collections of (media) objects, and in particular towards the apparatuses in their collections. The reason is simply that “film,” “technology,” and “art” have been framed in entirely different epistemological realms. Moreover, these fields themselves have changed over the course of a century and indeed have done so quite profoundly, as Paul Valéry predicted, recalling that the “fine arts were developed, their types and uses were established, in

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times very different from the present.”⁵⁷ He envisaged that given “the amazing growth of our techniques” and the new “ideas and habits they are creating,” some profound changes would take place:

We must expect great innovations to transform the entire technique of the arts, thereby affecting artistic invention itself and perhaps even bringing about an amazing change in our very notion of art.⁵⁸

Though Valéry articulated his prediction in the context of the changes of the last century, his words seem to fully apply to the situation today. When basic notions such as “art,” “technology,” “film,” or “media” change considerably—even to such a degree that the word *media* no longer refers strictly to newspapers—then inevitably the archival enterprise with regard to apparatuses may be expected to change too, in ways we will take into consideration when reframing the basic value for media and media heritage studies of collections of apparatuses in archives and museums, as is done in the rest of this book.

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PART 2 THE ARCHIVE AS A RESEARCH LABORATORY

[T]o imagine an old technology as something that was once new means, therefore, to try to recapture a quality it has lost.

—Tom Gunning, 2003.⁵⁹

One of the prerogatives of university-embedded apparatus collections is that they exist mainly for research and education purposes. Universities, unlike museums and archives, are not focused on collecting unique objects; their main concern is (hands-on) research and education. Such archival conditions, which allow for work on replicas and redundant devices, invite a hands-on experimental approach that is practical by its very nature. Proceeding from an archaeology which is primarily discursive in its focus (as in the Foucauldian / Benjaminian tradition), the experimental and practical nature of these conditions calls for a new archival practice. In this book, we propose to reframe the archive as a *research laboratory*, that is, a place that allows hands-on research on its objects and enables us to study the materiality of the medium,⁶⁰ the specific formats used, its experiential impact, and its discursive context. The “laboratory” is a place where old media can be tested and where historical practices of use can be taken into consideration by simulating them in order to study effects as part of research.

The technological and cultural transitions of these last decades invite us to rethink the current position of the film apparatus in the archive and, more broadly, the technological objects in media archives and art and technology museums and their value in presenting a wider vision of the technology of modern media today. In this regard, the treasures left to us in archival collections are truly indispensable: by understanding the way they operate and the cultural role they used to have, and by using them for reconstructions of past experiences, we may help to envision what is to come for modern media technologies. The focus on the apparatuses and the corresponding essays collected in this book all originate from this very idea: to reconstruct the use of apparatuses and to rethink their cultural impact and archival significance from various academic disciplines by simulating a laboratory research environment in the *presence* of the apparatus.

This second part of the introduction will primarily address the background, aim, scope, focus, and structure of this book, situating it in our wider aim of reframing the archive as a research laboratory. In the first part, we have sketched the broader questions this book aims to address and the discursive tradition it maintains a dialogue with, and we have hinted at a new research agenda. Here we want to address the background of apparatus collections. We will focus in particular on the collections held at the Film Archive Groningen and the EYE Filmmuseum. Both institutes have been instrumental in how this project started and took shape through a number of initiatives and plans, including the Symposium *The Film Archive as a Research Laboratory* (Groningen, February 15, 2013), which was hosted by EYE and the University of Groningen.⁶¹ In line with the plea for new experimental directions as expressed in the book *Technē/Technology*,⁶² we invited scholars and archivists to let themselves be inspired by the apparatuses they encounter in the film archive, choosing its materiality and practice of use as the central focus of their analysis. From the start, our objective was to promote a renewed dialogue between media scholars and archivists (which we think is crucial for the future of our field of studies) by initiating new research in which the interplay between media theory and archival practice is central.⁶³

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THE APPARATUSES IN FILM ARCHIVES AND MUSEUMS

An object-driven approach to the study of apparatuses held in film archives, strengthened by a close dialogue between archivists and scholars, is particularly urgent today for a number of reasons.

In the world of film archives, many changes are taking place due to the shift to digital technologies (as means of production, distribution, and access

and as instruments for research). Therefore, the questions about the role of the equipment in the history and development of film and cinema are ever more relevant today. As not only the technologies but also the practices of use and their conceptualizations are rapidly changing, exploring the significance of the past and present of the media apparatuses becomes essential to reflections on how to preserve, restore, exhibit, and research them.

The way apparatus collections have come into being is partly subject to the same mechanisms used to build any other collection. As eloquently discussed by Derrida in his seminal work *Archive Fever* with regard to the archival practice in general, logics of power have, directly and indirectly, dictated collection policies and selection criteria throughout the first century of film history.⁶⁴ Obviously, this includes the archival activities with regard to the film apparatus. Moreover, apparatus collection is, like any other collection, also subjected to factors leading to fragmented, inaccessible, and filtrated archives, as discussed by William Uricchio.⁶⁵

One more element to be taken into the account is that, other than film reels, which have often been collected and archived as “carriers of information” rather than as “material artifacts,” collections of film apparatuses can be more easily compared to other forms of museum collections where the material artifacts are central and where collection criteria are different and typically stricter. This includes the (media) objects collected by museums of modern art and the technological devices gathered in technology or science museums already mentioned here.⁶⁶ Whereas archives tend to be as complete as possible in their collection and preservation activities with regard to the scope of their collection (e.g., all films or books produced or published in a certain nation or related to a certain theme), art museums typically have a more restrictive selection policy based on historical and aesthetical criteria. Other aspects of selection criteria in art museums are, for instance, the exemplarity (choosing one object as exemplary for many similar ones) or the curatorial propensity for certain objects.⁶⁷

Additionally, it is particularly important to bear in mind that apparatuses, and all film-related or special collections, have commonly had a peripheral role in the tradition of film studies and archival practice. In the study of film as well as in the practices of collecting and archiving film, the moving image (what today is often referred to as “content”) has been central, in as far as the focus was mainly on film aesthetics and textual analysis. Less attention, however, was given to film artifacts and lesser still to film-related artifacts, which, as the name suggests, consisted of nearly everything that was related to the film experience (think of cinema posters, decors, stills) as well as that which made the production and projection of films possible (cameras, laboratory equipment, projectors, sound systems, etc.). There were, of course, exceptions to this approach to film study, in particular in the stream of research

that has focused on the history of film technology.⁶⁸ Furthermore, two influential events should be mentioned here that have played a seminal role in how we approach film theory, film history, and archival practices today. With the emergence of the so-called New Film History in the late 1970s, a new generation of historians dissatisfied “with the surveys and overviews, the tales of pioneers and adventurers that for too long passed as film histories”⁶⁹ emerged that would revitalize the study of early cinema. Additionally, the conference of the International Federation of Film Archives (FIAF), held in Brighton in 1978—which has since become emblematic of the renewed dialogue between film archivists and scholars, and early film scholars in particular, focusing on the archival treasures to (re)write film history⁷⁰—was an important turning point. After this landmark conference, a shift took place away from film theory, dominant during the 1970s, to film history, or rather New Film History, which famously led to a reinvestigation of what has come to be known as “early cinema.”⁷¹ Several early cinema scholars—Ian Christie, Frank Kessler, Sabine Lenk among them—have contributed to this book. The strength of the new scholarship, in our opinion, lies in the ability to fuse film theory and film history, “bringing the insights of theory to history and vice versa,” as Joshua Yumibe, a contributor to this book, put it only recently.⁷²

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These new approaches challenge the film-centered approach, which has been adopted by film archives since the 1930s. Within that older framework, collecting so-called film-related material (i.e., posters, stills, and company archives) was usually done as a source for research, typically aimed at learning more about the films in the collection. The same applied to film equipment, such as cameras, projectors, and so on, which was either used for research or because the historical equipment could still be used for projecting obsolete film formats. In some cases, archives gathered apparatuses and related documentation with the intention of illustrating the technological history of film.⁷³

The position of film-related collections—and particularly apparatus collections—within film studies and film archiving has changed in the last twenty years. As already discussed here, with disciplines such as media archaeology becoming an integral part of media studies programs, and film museums displaying their collections in new forms of exhibitions, the shifting role of apparatus collections, from the periphery to the center, is quite palpable. In this regard, it is also worth referring to a general phenomenon that has been taking place for some years now in various disciplines, including museum and media studies: the “material turn.”⁷⁴ Identified by some as a *counter effect* to large-scale digitization, this renewed longing for the experience of the materiality of the medium rather than its virtual representation can be found in work by filmmakers and artists alike.⁷⁵ Seminal examples of artists and filmmakers who have prioritized the “material” in their work are Gustav Deutsch,

Bill Morrison, and Tacita Dean—in particular her exhibition *FILM* (Tate Modern, 2012). Many more could be added to the list. As Erika Balsom points out, with digitization, “[a]nalog film found itself under threat of obsolescence and reappeared as a major component of artistic practice for the first time since its displacement by video.”⁷⁶

Clearly, the “material turn” can be interpreted as a reaction to the digital turn, emphasizing the haptic interaction with the material as opposed to the experience of the virtual immateriality of digital access. There is a nostalgia to the here-and-now of the physical, material experience as opposed to the deferred possibility of ubiquitous online access.

28 | Additionally, today’s general public has a much closer and more physical relationship with the technological devices for filmmaking than ever before in history, because we now all make, edit, and distribute films, simply because most of us carry such technologies with us in the shape of the extraordinary invention called the *smartphone*, in which the integration of film apparatus and moving image archive is realized, as is aptly pointed out by Roger Odin in the first chapter of this book.

Besides the various collection mechanisms that could determine what item or device should be included in an apparatus collection or film (reel) collection, it should be noted that in practice, apparatuses have more often than not reached archives by chance, as a donation of passionate collectors and their families. In others cases, the personal interests of curators were a driving force for the acquisition of a device or collection. Apparatus collections have rarely been determined by a canon, nor have they been strictly driven by explicit policies. By contrast, films have been, and still are, often collected and preserved based on cultural canons (a well-known example being the Anthology Film Archive’s *Essential Cinema*) and/or institutional collection policies often related to implicit or explicit frameworks of reference.⁷⁷ In the worst case, the collections were removed, either due to the lack of a policy or for practical reasons such as lack of storage space or budget for professional, technical, and curatorial support. These premises are true for the apparatus collections at the Film Archive Groningen and EYE as well. Before sketching the background of these two collections, let us briefly look at what has made these archives come together to form a collaboration concerning their apparatus collections.

THE APPARATUS COLLECTION COLLABORATION

The Film Archive embedded in the University of Groningen and EYE are naturally drawn to each other due to a shared history with regard to their collection and a shared ambition with regard to what to do with it. These shared histories

and ambitions go as far back as the early 1990s when a group of pioneers—among them Eric de Kuyper, Emile Poppe, Tjitte de Vries, and Ati Mul—in the adjacent fields of film studies and film archiving and collecting brought the film archive into the university for students to be engaged, hands on, with the object of their study. Thus, a new generation of film scholars and archivists was born, and today they work as film scholars and archivists. We feel we are part of this generation and with this book wish to contribute to this tradition by revitalizing it once again, taking it into new directions. By focusing on the margins of discourse, we hope to draw attention to the apparatus collection, a topic which has long been neglected by media scholars and archivists alike.

It should be mentioned that there are a number of important scholars, archivists, and curators who have indeed dedicated their work to the collection and study of the media apparatus, focusing especially on the pre-cinema. We have already mentioned several scholars in part one who have demonstrated the value of knowledge of technologies as well as apparatus collections. Other film archivists and curators who need to be mentioned in this regard are Laurent Mannoni at the *Cinémathèque Française*, Donata Pesenti Campagnoni at *Il Museo del Cinema* in Turin, and Nikolaus Wostry at the *Filmarchiv Austria*. They, along with a number of notable archives such as those at the *Museu del Cinema* in Girona, the *Museum of the Moving Image* in New York, the *Film Archive* in Frankfurt, and the *Media Museum* in Bradford have all focused on the apparatuses in their collection and have been initiating special exhibition and research activities for several decades now. Within academia, Humboldt scholars in the Kittlerian tradition experimenting with digital apparatuses need to be mentioned too. And we would be remiss if we did not acknowledge Erkki Huhtamo, who not only helped to establish Media Archaeology as a practice or subdiscipline within film studies⁷⁸—succeeding where others before him failed in shifting the focus of study towards the apparatuses—but who also collected apparatuses and works hands-on, as we do, on his collection with his students. As we mentioned before, it is indeed one of the privileges of university-embedded apparatus collections that they can be used for hands-on research and education.⁷⁹

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The Film Archive at the University of Groningen

Due to a generous donation,⁸⁰ the library of the University of Groningen has had an extensive film archive at its disposal for several years. This archive offers a remarkable display of the developments that professional and amateur film have gone through.⁸¹ Around 2,800 films dating from as early as 1907 can be found in the archive. Most of these are 16mm, but there are 8mm and 35mm

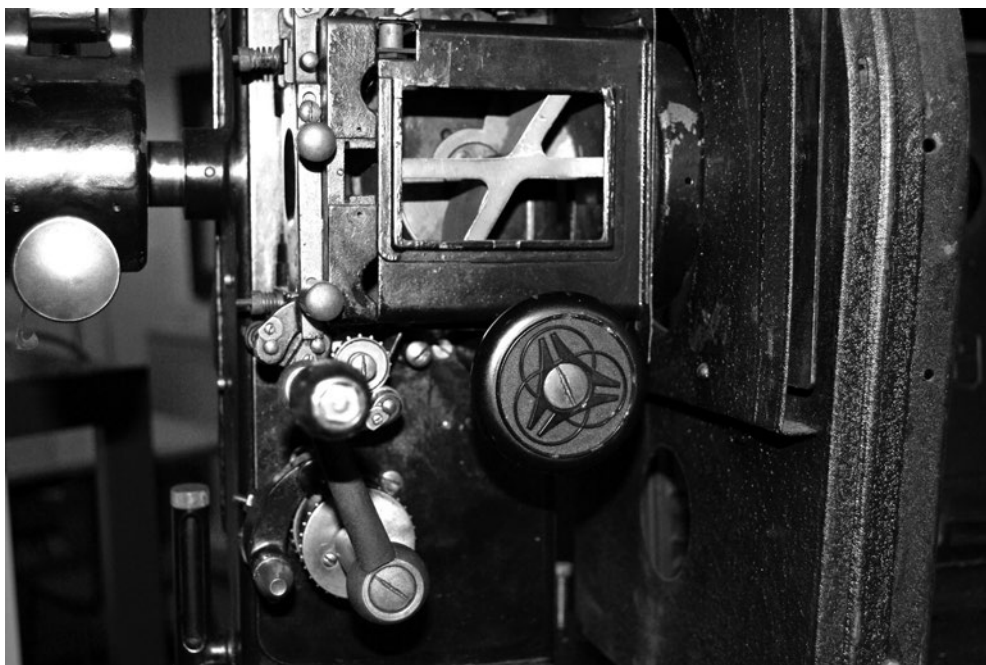


Fig. 1: Details from a Zeiss Ikon 35 mm projector.
Photo by Johan Stadtman, courtesy of the Film Archive,
University of Groningen.

films as well. Part of the collection is rare material, such as the Marshall plan propaganda films. These films are available for viewing, consulting, and analyzing; the archive contains editing tables and a projection room. There is also a considerable amount of literature available in open access. Furthermore, there is an elaborate and diverse collection of film posters. As impressive as the paper collection is, the collection that really stands out is the collection of apparatuses. The archive has hundreds of cinematic devices such as film and photo cameras and a wide range of film projectors as well as editing tables, one of which belonged to the Dutch filmmaker Bert Haanstra. It now even boasts rare historical film projectors, such as a Zeiss Ikon 35 mm, which was used to explain how the internal mechanisms of film transport worked (see fig. 1).

Also part of the collection are several pre-cinema devices, among them a series of mostly local hand-made magic lanterns, and hand-painted glass plates used for magic lantern projection, some with small hand cranks to make tiny moons magically move from one side of the painted landscape to the other during projection. The archive also contains replicas of pre-cinema devices such as a thaumatrope, a praxinoscope, and stereoscopic devices developed and used in the 19th century. Moreover, the archive keeps a collection of present-day optical toys which are used in educational practices as

cheap and easily assessable “replicas” of historical devices, view masters, and other simple stereoscopic devices among them.

The collection of film cameras—mostly 8mm, super 8, 9.5mm, and 16mm amateur cameras—originate from different contexts and decades. In addition, there is a subcollection of lenses, among them anamorphic lenses used for widescreen projection. Some of these devices are fully intact and still functioning, like the Bolex H16 Reflex camera (see fig. 2).

Another example of a device which tends to captivate the imagination is the 16mm Bell & Howell Filmo camera once owned by the eminent Dutch filmmaker Joris Ivens, a rather heavy portable camera which was typically used during the Spanish Civil War by documentary filmmakers who wanted to shoot on location (see fig. 3).

More recently, video cameras such as the Portopak and now obsolete television sets have become part of the collection in an attempt to broaden the scope of the archive as a laboratory used for research and educational purposes. Apart from rooms for storage and all sorts of archival work, there is educa-

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Fig. 2: The Bolex H16 Reflex camera. Photo by Johan Stadtman, courtesy of the Film Archive, University of Groningen.



Fig. 3: Robert Capa with a 16mm Bell & Howell Filmo camera. The photo was made by Gerda Taro during the Spanish Civil War, May 1937.



tional space in the archive used for screenings, seminars, and staff-assisted hands-on demonstrations and experiments with apparatuses. It is primarily thanks to staff members—the late Johan Stadtman, Jaukje van Wonderen, Bernd Warnders, Erik Buikema, and Tom Sloodweg (a contributor to this book), who help to unpack gifts, catalog and photograph objects, and prepare them for exhibition—that apparatus-oriented seminars could be developed as part of the Groningen University curriculum.⁸²

EYE

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Similar reasons to those discussed above have led the Nederlands Filmmuseum (today EYE) to collect and preserve historical devices since its establishment in 1946. Today, EYE's apparatus collection features approximately 1,300 items, including a number of pre-cinema devices.

It is thanks to the archive's pioneers, such as its first director Jan de Vaal and long-time collection specialist Henk de Smidt, that this collection came to be. In the last couple of decades, EYE's apparatus collection has been cherished and ably taken care of by Soeluh van den Berg, Curator of Film-related Collections and contributor to this book, and film apparatus specialist Hans van der Kraan. They have preserved, restored, and helped define the profile of the apparatus collection.

In terms of policy, it was only in 1957 that the Nederlands Filmmuseum's film-related collections were explicitly referred to in an official policy document.⁸³ As Van den Berg and Albers discuss in their contribution to this book, EYE's apparatus collection has grown organically throughout the seven decades since the museum was founded, mostly thanks to donations. In 1995, a few general collection criteria were formulated based on the uniqueness, national specificity, or relational nature of the objects to the museum's film collection. It was only in 2004 that EYE's apparatus collection was more critically described and its policy more accurately defined, which resulted in a de-accessioning project during which some redundant items were donated to other archives.⁸⁴

It was only recently that EYE decided to have a more integrated approach to film and film-related collections, looking at films in direct conjunction with relevant other collections and promoting a more active presentation of such related collections. One of the reasons for this change in collection and presentation policy has been the move to the new EYE building, which invites new opportunities to exhibit the collection and engage audiences in other ways. In the new building, EYE organizes film screenings, festivals, and events as well as temporary exhibitions on themes that vary from film histor-

ical subjects—such as *Jean Desmet's Dream Factory*, *The Adventurous Years of Film (1907–1916)*, *Stanley Kubrick*, and *Fellini*—to art exhibitions exploring the borderline between film and other arts (*Found Footage: Cinema Exposed*, *The Quay Brother's Universum*, and *Expanded Cinema: Isaac Julien, Fiona Tan, Yang Fudong*). Additionally, in the EYE Panorama, aspects of the collection are exhibited making use of interactive installations.

One recent result of the current collection policy adopted by EYE is the permanent exhibition in the museum's basement known as the EYE Panorama,⁸⁵ which has since December 2014 been exhibiting a number of film devices from the EYE apparatus collection that mark pivotal moments in the history of film. By means of projections on the wall that showcase the kinds of films these devices used to make (in the case of cameras) or show (in the case of projectors), the Panorama offers new and interactive ways of exhibiting the EYE apparatus collection.⁸⁶

The apparatuses included in the Panorama exhibition are a Magic Lantern with double optical system (Watson & Sons, c. 1880), a Mutoscope device (American Mutoscope and Biograph Company, model DL, nicknamed “The Iron Lion,” c. 1900), a Kinamo camera (1924), a 35mm Mitchell camera (Mitchell Camera Corporation, type D, with film magazine, tripod and director's viewfinder, 1935, also known as the “Mitchell Standard”), and, finally, an iPhone 3G (Apple Inc., 2008, the first iPhone equipped with video camera).

From the perspectives of both EYE and the Film Archive at the University of Groningen, we felt the urgency to start an international discussion on film apparatuses, combining the point of view of media scholars and that of media archivists. The symposium, *The Film Archive as a Research Laboratory*,⁸⁷ was the first result of the collaboration between EYE and the Film Archive at the Uni-

Fig. 4: The EYE Panorama. Photo by Mike Bink, courtesy of EYE.





Fig. 5: The Magic Lantern with double optical system (Watson & Sons, c. 1880) in the EYE Panorama. Photo by Mike Bink, courtesy of EYE.

versity of Groningen and the starting point of this book and other international ongoing projects. At the symposium, a number of international speakers were invited to reflect on the film apparatus. Among the speakers were Susan Aasman, media historian and amateur film expert; Ian Christie, film historian and former BFI archivist; Andreas Fickers, media historian; Jan Holmberg, head of the Ingmar Bergman Archive in Stockholm; Heide Schlüppman, former head of the university archive at the Goethe University in Frankfurt; Frank Kessler, early cinema scholar and media historian; Sabine Lenk, archivist, scholar, and former director of the Filmmuseum Düsseldorf; Eef Masson, non-theatrical film practices scholar; Roger Odin, film scholar and amateur film specialist; Emile Poppe, archivist at the Cinematek de Bruxelles; and Eric de Kuyper, former adjunct-manager of the Amsterdam Filmmuseum. In retrospect, the symposium was a starting point in many ways, for in the months following, we kept receiving many questions about follow-ups, both from participants and international colleagues. This made us realize that what was needed was a book on the subject. And here we are. In keeping with the general line of the symposium, the book offers reflections on media apparatuses by experts from different perspectives and disciplines and is organized as an archive, that is to say, an archive that functions as a research laboratory.

The contributions in this book focus on various apparatuses, from the

pre-cinema to the digital era. Together, they present a crossover of media technologies (film, video, and digital, touching on both image and sound), production phases (recording, post-production, distribution, and projection), and dimensions (2D, 3D, full-immersion). Each contribution is introduced by a full-page photograph of the apparatus under discussion, its technical description, and the theoretical framework in which the apparatus is placed.

PART 3 JUST IMAGINE...

There is a famous conundrum when observing the earth by satellite: the higher the resolution, the less information we have about the location imaged. The extremely high resolution of the *anecdotal method* provides depth and colour to the generalist findings of methods that deal with multiple instances and large-scale tendencies. Anecdotes test such large hypotheses against the unique qualities of artworks and experiences. The anecdotal method does not abandon the project of making statements about larger, more abstract formations like “society” or “cinema”—it grounds them in the specific instance.

—Sean Cubitt, 2013.⁸⁸

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Just imagine opening the gates to an imaginary vault of a media archive. There you would find heterogeneous objects provisionally stored based on their material aspects. Imagine having gathered a team of 30 international scientists from different disciplines whom you let loose on this collection. Each scientist can choose an object, and he or she can examine it from the perspective of his or her specific discipline and carry out hands-on laboratory research. Scholars will, of course, bring their theoretical perspective to the table, whereas curators and archivists will contribute with their professional curatorial knowledge and experience. Imagine that, based upon close inspection of the object they have chosen to analyze, they are allowed a limited time to carry out their analysis, to expose, to illustrate their findings, and to make their case. The question they have been asked is: Is this object worth preserving, and if so, illustrate what can be said about it that makes it so interesting and relevant for your specific field of research and expertise.

Big Data, Small Data

Here we embrace Cubitt's emphasis that "[t]he anecdotal method does not imply abandoning other tools."⁸⁹ In this line, we intend to complement the current, very relevant and important scientific trend of *big data* quantitative research with a thorough, qualitative analysis of the singularity and materiality of media apparatuses that have been kept in the archival vault, which provides research with "depth and color."⁹⁰ It also provides a richness of detail without which histories—be it of art, technology, media, or cultures at large, as stories of our own past we can relate to—can barely exist. Furthermore, singularities and details also help to evoke the questions without which good research cannot exist. With Cubitt's views in mind, we set out to make a book that reveals such "depth and color" in the topics discussed by the thirty contributors to this book.

36 | By way of visualizing what it means to provide a depth and richness to the study of an often obsolete object, let us recall the hampering sound and poor visual quality of those small yet expensive TV sets of the late 1950s with tiny screens, encased in precious wood. From oral records, we know these TV sets could keep entire families in awe in front of them, watching the test signal, minutes at a time, in anticipation of the start of the evening program as if they were waiting in the theater for the curtain to rise. In our experience, it is the mental reconstruction of such a situation as well as the material simulation with these objects that may provide researchers with the oral (family) histories, anecdotes, and documents—from family photos to printed user instructions and other *small data*—which are so valuable for the reconstruction of media history in particular, and of history in general, as such simulations help to reconstruct the cultures these objects emblematically represent.

Of course, we also believe, as Cubitt does, that *big data* research is of great importance, as it offers the ideal complementary source of knowledge to the *small data* kind of approach that we present in this project.⁹¹

Despite the considerable number of contributions to the book, we did not strive for exhaustiveness. Thus you will find in this book no observation of planet apparatuses by satellite (to use Cubitt's conundrum about observing the earth by satellite, "the higher the resolution, the less information we have about the location imaged"). Instead, we chose to avoid a historical or chronological approach to the apparatuses discussed in this book as well as any form of teleological approach. We chose not to limit the scope of the book by addressing only one specific audio-visual medium; instead we opted to include pre-cinema, video, film, and digital technologies. We also preferred to use an open and explorative attitude towards the selection of the apparatuses and the theoretical framing of each apparatus. We based these choices on the

idea of the archive as a research laboratory, and of course we were inspired by the apparatus collections held at the Film Archive in Groningen and at EYE. As mentioned earlier, both collections, like many apparatus collections held by other archives and museums, have a random and at times pragmatically driven background.

It should be noted that we deliberately chose not to use a single research practice or a single theoretical framework for this book, as we felt that it would go against the ambition of opening up the field for further experimental research. Indeed, we recognize that theories are reassessed in the light of new realities and that archival realities are very much in transition at this point in time, as are their conceptualizations. Therefore, we find that an investigative and explorative flexible approach to apparatuses is most suited for this transitional phase of archival practice and related hands-on research.

The format and order of succession of the essays collected in this volume represents what we thought would be the closest realization of an object-driven, hands-on, experimental laboratory in book form. We have chosen the object's size to designate its place in the general order of the book, from the smallest to the largest, labeling them as small, medium, or large. In this classification, the main aspect of the apparatuses that we wanted to highlight is that of its transportability. All objects that are small enough to be carried around and that are in fact made to do so fall into the category "small." Those that are not meant to be carried around regularly but can be transported when needed are collected under the label "medium." Finally, all other apparatuses, some of which cannot be even contained in an archival vault because of their shape or size, are labeled "large." Again, we are opening the gate to an imaginary archival vault where apparatuses have been provisionally stored; therefore our organizational criteria are merely practical and fundamentally random.

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HOW TO USE THIS BOOK

Apparatuses and Approaches Included in This Book

The different approaches in this book correspond—not systematically but in a random or symptomatic way—with the sampling of perspectives on film study and on film archival practice, including academic research practice or active adjacent and overlapping practices.

Some film archivists and curators have chosen some of the apparatuses from their everyday practice, as they felt they needed to reposition them within the archive and reconceptualize them in the discourse on media studies. Some scholars have chosen apparatuses that already have an important place

in their specific field of research or should gain such a place in the near future. Following our organizing principle, from small to large, we have collected the contributions to this book as follows.

Small and Portable

Film theorist Roger Odin's chapter opens the section on small portable devices with today's ubiquitous smartphone. Odin addresses the question why the smartphone belongs in the film archive by arguing that this new device has changed our relationship to cinema in radical ways.

38 | Film and visual media scholar Martine Beugnet combines an analysis of a smartphone—a contemporary iPhone, to be specific—with that of an early 1900 Debie Parvo camera. Beugnet analyzes the two apparatuses as they are portrayed in the award-winning film *UNTITLED* by Daniel Szöllösi's, created as part of the 2012 “celluloid remix” online competition.

Film archivist, researcher, and projectionist Leenke Ripmeester focuses on the 35mm film. Although the vast majority of films held by archives all over the world was shot on and projected as 35mm film, it is rarely discussed as an apparatus. Ripmeester looks at 35mm film reels by taking into account the perspective of the projectionist.

Film producer and lecturer Marek Jancovic looks at the hand-cranked projector. He analyzes the variable frame rates in hand-cranked projection practice in contrast with the later standardization of frame-rates projection and contemporary norms for digital cinema, television, and streaming video.

Film researcher Guy Edmonds draws from his experience as a filmmaker to define a hands-on method of exploring the functionality of the compact 16mm Movie Maker camera. By interpreting the films made with this camera, Edmonds discusses the effects of technology on aesthetical results.

Media theorist William Uricchio analyzes the film-apparatus catalog section of one of the largest American department stores in the late 1800s, Sears, Roebuck & Co. Using the 1898 *Sears Consumers Guide*, Uricchio looks at the exhaustive section dedicated to film apparatuses just a few years after the introduction of the medium, and discusses how the catalog helps us understand the expectations of millions of readers toward the new medium.

Film researcher Steven Willemsen discusses the prismatic Hilux 264 lens, a fixed anamorphic lens for widescreen projection, which is currently stored at the University of Groningen Film Archive. Willemsen examines how anamorphic widescreen technology impacted film aesthetics in the late 1950s, focusing on the technology's affordances and limitations. Furthermore, Willemsen argues that Sergio Leone introduced a new close-up aesthetics to the

widescreen in the 1960s, in a dynamic relation with mainstream television aesthetics.

Media historian Susan Aasman focuses on amateur filmmaking and on the role of the Ciné-Kodak system introduced by the Eastman Kodak Company in 1923 for amateur use. Aasman aims to re-evaluate Kodak's role in shaping everyday life and, consequently, reassesses its position in the history of amateur media.

Film researcher Annelies van Noortwijk addresses the Orbit apparatus, a newly invented portable camera stabilization system, suitable for cameras with different film formats. Van Noortwijk explores in detail this unique apparatus, developed and patented in 2014 to meet the needs of independent filmmaker Leonard Retel Helmrich to help him realize his "Single Shot Cinema" style.

Media researcher Ari Purnama analyzes the optical video compact disc (VCD), introduced by Sony and Philips in 1993. Purnama discusses how this small apparatus, which has dominated the Asian market in the 1990s, has played a huge role in the (illegal) distribution of international films in South-east Asia.

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Film and television scholar Barbara Turquier approaches the Bolex camera, originally produced in 1928, by focusing on the camera's crucial role in post-WWII American avant-garde cinema up until the 1970s. Turquier discusses the interplay between amateurism and professionalism in the avant-garde-style filmmaking produced with this very popular portable camera.

Media archaeology scholar Alexandra Schneider opted for an apparatus everybody is familiar with but which has rarely been discussed: the tripod. Schneider focuses on the Kino-Pano-Tilt-Tripod for 16mm movie cameras, which gives her the opportunity to approach the history of amateur filmmaking as a history of material objects and devices that can be interpreted as an archaeology of the amateur digital video.

Media historian Tom Slootweg discusses Sony's Video Rover Ensemble, also known as the First Consumer Portapak, which triggered a state of euphoria at its moment of introduction. Slootweg argues that the Portapak video system in the late 1960s and early 1970s had the potential to be used for educational purposes and guerrilla journalism.

The last of our portable apparatuses is the Edison Ideal kinematograph, analyzed by film scholar Gert Jan Harkema and visual media expert Amanda du Preez. They argue that any discussion of this apparatus, with which Christiaan Slieker set up his Grand Théâtre Edison attraction across fairgrounds in the Netherlands from 1896 to 1907, should take the interaction with the audience into account.

Medium and Not Easily Portable

Film scholar Eef Masson discusses the 16mm projector and its educational use. Masson addresses the “Specto 500” Cine Projector, released by the British company Specto Limited in 1951. She promotes the notion of the *dispositif* to analyze screening conditions and actual viewing practices in the research on classroom films.

A different 16mm projector forms the focus of digital-heritage scholar Julia Noordegraaf’s chapter, namely the EIKI 16mm Film Projector used by film artist Marijke van Warmerdam for her film installations. Noordegraaf discusses the consequences for Van Warmerdam’s work when the 16mm projector was replaced altogether by a digital projector.

40 | Film technology expert Benoît Turquety chooses a specific Kinemacolor projector held in the Will Day collection at the Cinémathèque Française. Turquety adopts an archaeological and epistemological approach to discuss Charles Urban’s Kinemacolor projector. Through a precise technological description of this apparatus, he aims to reveal the technical, economical, aesthetic, and political aspects of Charles Urban’s activity.

Film historian and early color specialist Joshua Yumibe analyzes an early post-production apparatus: the Pathé Frères’ stencil-cutting machine dated from around 1909. Yumibe looks at the technical history of film stenciling from a media-archeological perspective, focusing on aspects of hybridization typical of stencil-colored images that combine mechanical, manual, photographic, and animation techniques.

Film scholar and early sound specialist Sonia Campanini focuses on the Biophon system, an early sound system displayed at the Deutsches Museum in Munich. The Biophon system consists of two apparatuses: the film projector Panzerkino and the gramophone Biophon. Campanini relies on concepts such as device, *dispositif*, and system to discuss the characteristics of recorded sound-on-disc for film exhibitions, including the performative dimension of exhibitions in her analysis.

Film historian Ian Christie addresses the widely used DLP Digital Cinema Projector, equipped with a Texas Instruments 1.2 inch 2K 3-chip DMD DLP chip. Focusing on the 2K resolution this projector can provide, Christie argues that the combination of such resolution with the potential of 3D has been essential to the replacement of the 35mm film projection standard, a true technical revolution worthy of academic reflection.

Large and Not Portable

Film curator Martin Koerber has chosen a kind of apparatus that has seldomly been studied and written about: the film post-production equipment. Koerber looks at the Geyer “Rekord” printing machine, a continuous contact printer for 35mm film produced in the 1930s. Koerber argues that, with the demise of celluloid film in the current film production and distribution and with the sudden disappearance of film laboratories, the “Rekord” is at risk of disappearing at this point in time if its importance is not argued by archivists and researchers.

Focusing on Jean-Luc Godard’s Steenbeck editing table installed in his home in Rolle, France, film scholar and Godard specialist Céline Scemama demonstrates how the fictional and archival material in Godard’s HISTOIRE(S) DU CINÉMA (1988-1998) has been processed to reflect the filmmaker’s specific conception of history through images.

Archive curator and film researcher Jan Holmberg focuses on the close-up and, more specifically, on the debate on closer framings on bigger screens as discussed in the international film-trade press between 1908 and 1912. Holmberg argues that the close-up was already used in earlier cinema but became a dominant stylistic device only after 1908.

Film historian Frank Kessler and film curator and archival researcher Sabine Lenk look at the recent conversion of cinemas to digital projection (the so-called *digital roll-out*) by addressing the question to what extent the cinematic *dispositif* is actually affected by the shift from celluloid to digital.

In his discussion of 3D-imaging technology, film scholar Miklós Kiss retraces the cinematic history of stereoscopy, from Charles Wheatcroft’s 1838 stereoscope to the current debate on 3D technology. At the heart of Kiss’s analysis lies the question whether the 3D revolution will happen. Kiss, however, does not exclusively focus on the well-known debate but also explores the affordances of the new 3D technologies for narrative cinema audiences.

Media researcher and curator Caylin Smith discusses the EYE 360° Panorama based on her first-hand experience working directly with this apparatus. Comparing the 360° Panorama with installations such as Gustav Deutsch’s FILM IST. Smith analyzes the 360° apparatus as the instrument through which EYE explores new ways of exhibiting its collection.

Film curators Rommy Albers and Soeluh van den Berg chose to discuss the relational database, specifically the Collection Management System Collection EYE. A crucial apparatus in today’s archival practice as well as in research projects, the database has a history that will influence any research based on the information they contain, as Albers and Van den Berg very clearly demonstrate using the apparatus collection as example.

Movie theater setups are rarely conserved and exhibited in film archives. Film scholar Julian Hanich discusses the Invisible Cinema, the movie theater designed by experimental filmmaker Peter Kubelka and realized in the early 1970s at the Anthology Film Archives in New York and at the Austrian Film Museum. Hanich discusses the aims of the Invisible Cinema's interior design as envisioned by Kubelka, and presents a phenomenological reception study of the specific viewing experiences it offers.

The last contribution to the book is from media theorist Nanna Verhoeff, who presents the largest and least portable apparatus discussed: the augmented reality (AR) installation, which comprises an entire city square. Augmented reality is a digital technology that allows users to add layers of (visual) information to the actual location they are looking at. Verhoeff focuses on so-called AR browsers for outdoor navigation (developed since 2009) and discusses them as mobile archival laboratories where experimentation is carried out in order to make cultural collections accessible on location.

PART I

SMALL AND PORTABLE



Fig. 6: The Cell Phone.

Cinema in My Pocket

Roger Odin

THE CELL PHONE

The world's first call from a cell phone—a Dyna Tac—was made in 1973 by Martin Cooper, head of communications systems at Motorola. With dimensions of just under 10 inches (25 cm) long (without the aerial) and weighing 1.5 lbs (790 g), the Dyna Tac was considered small and compact at the time. Since then, cell phone technology has advanced rapidly. Devices have not only become smaller in size and lighter in weight, they have also become a multi-purpose part of everyday life. The device featured in this chapter weighs less than 7 oz (200 g) and measures less than 5 x 2.5 inches (13 x 7 cm).

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THEORETICAL FRAMING

The multi-purpose nature of the cell phone—it is a digital personal organizer, an internet-enabled computer, a geolocation system, a games console, a sound recorder, a (video) camera, a screen, etc—and in particular its combination of cinematographic tools and computer features open up all kinds of interesting possibilities of integrating cinema into the cell phone. In a clear, point-by-point discussion of the cell phone's functions and uses, Roger Odin explores the assertion that the cell phone, more than any other device, has transformed our relationship to cinema.

CINEMA IN MY POCKET

The object I am going to talk to you about is a telephone—a cell phone to be precise. History tells us that the world's first call from a cell phone was made in 1973 by Martin Cooper, head of communications systems at Motorola, using a device—a Dyna Tac—that was just under 10 inches (25 cm) long (without the aerial) and weighed 1.5 lbs (790 g). The device I have in my hand today weighs less than 7 oz (200 g), with dimensions less than 5 x 2.5 inches (13 x 7 cm).

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But what is an object like this doing in a cinema archive?

In answer to that, we can start by saying that the telephone, whether cell or landline, has become one of cinema's most ubiquitous themes. In fact, it is harder to find films in which the telephone is not present than to find one where it plays a central or episodic role. So the telephone has earned its place in a cinema archive. We can even dream of an archive devoted to the telephone alone—and in fact, some websites already offer such archives in embryonic form. The third set in the series “Objet star de cinéma”¹ shows film extracts arranged according to the type of phone used: “Each mutation brings its share of fictions.”² Another site, *phonesinmovies*,³ is more complete in terms of items cited and is arranged by brand of phone, in alphabetical and chronological order. And, in a curious *mise-en-abyme*, these archives can be consulted using your cell phone.

But a very different—and to my mind far more important—reason why cell phones should feature in a cinema archive is that, more than any other device, they have transformed our relationship to cinema. It is this assertion that I shall seek to develop in the following discussion. But first, let me provide a technical description of the device I have in my hand.

Since the phone became portable, it is no exaggeration to say that its

domain has expanded to an incredible extent—so much so that the Italian philosopher Maurizio Ferraris sees it as “the absolute tool, the machine that puts an end to all other machines because it summarizes them all within itself.”⁴ The cell phone I have now is at once a digital personal organizer, an internet-enabled computer, a geolocation system, a games console, a sound recorder, a camera, and more. Where its relationship to cinema is concerned, it has a screen and features that enable me to watch films and television programs on that screen—some cell phones come with a handheld projector that can be used to project images on to an external screen or any other surface. Lastly, my phone also has a video camera. To fully grasp the significance of having all these things contained in such a small device (that is now such a part of everyday life that we no longer pay any attention to it), we need simply imagine what all this equipment would look like laid out, for example, on the shelves of an archive. A very short film by Delphine Marceau (shot on a cell) gives us an idea. We watch as the different objects that the cell phone has replaced are piled on top of each other to create an impressively tall *Totem* (the title of the film). But the real specificity of the cell phone lies elsewhere: in the convergence of cinematographic and non-cinematographic tools, and notably in its combination of cinematographic tools and computer features, opening up all the possibilities of downloads and communication.⁵

This description leads me to pose two questions:

1. What gave rise to the—at first sight rather strange—idea of enabling everyone to watch films on their cell phones?
 2. Equally improbable, what made people think of turning the cell phone into a camera?
- The answers to these questions will lead me to highlight the transformations brought about by cell phones in our relationship to cinema.

It is tempting to answer the first question by referring to the history of the telephone. For the cell phone can be seen as related to the *théâtrophone* or “theater phone,”⁶ a device through which the sound of shows such as plays, operas, and concerts could be relayed to a network of subscribers. The *théâtrophone* was first demonstrated in France as part of the Universal Exhibition (1881), and experiments continued into the 1930s, with similar devices existing in the major European and American cities. However, I do not think that reference to these experiments, by then long forgotten, played a role in integrating cinema into the cell phone.

In my view, a more likely relationship is with television and computers, particularly as cell phones have always included a screen (showing first num-

bers, then menus, and soon enabled the viewing of photographs). Manufacturers and operators quickly understood that, just as films could be used to sell television sets and computers, so they could be used to sell phones—and, crucially, payment plans. Meanwhile, the film industry saw that its own interests could be served since, just like television and computers, cell phones were potentially a good tool for promoting movies. So the motivation was economic.

But what is changed by our ability to watch films on our cells? Much has been made of the negative aspects of this experience, and it is true that the small screen and unprotected environment make this a very different experience from watching a film in the cinema. According to Raymond Bellour:

Watching a film projected in a darkened theater for the prescribed time of a more or less shared viewing has become and remains the condition necessary for a unique experience of perception and memory that defines its viewer and which is more or less altered by any other viewing situation. This and only this is worthy of the name “cinema.”⁷

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Without entering the debate around whether or not it is a good thing, the experience offered by a cell phone is undoubtedly different. I shall attempt to list the most important points.

1. For the first time in the history of cinema, I have an almost infinite number of films at my disposal, which I can watch wherever and whenever I like, whether by streaming, on-demand viewing, or using homemade recordings (my own cell phone holds a small archive of my favorite films).
2. Watching a film on my cell phone is not unlike reading a book. I hold my chosen film in my hand, I use my thumb⁸ to start playing the film and to pause or rewind so I can watch a particular section again, just as I use a finger to turn the pages of a book.⁹
3. Not only can I stop the unfolding of the film (using the pause key) to contemplate a particular image at my leisure, but a two-fingered, zooming stroke of the screen enables me to enlarge any detail I regard as important to the story being told or which intrigues or attracts me, in the manner of Roland Barthes's *punctum*. I can even enlarge to the point where the very substance of the image appears. Never before have I had such tactile contact with the images of a film.¹⁰
4. Because my cell phone connects to the internet, I can access all the information I could wish for relating to a particular film, read reviews and books on cinema, visit and indeed contribute to websites for cinephiles, and use their portals to enter and consult film archives all over the world.

5. The cell phone has turned the cinema into an amazing social tool. It has always had this role (the legendary Saturday night at the movies, the many tribes of film fans), but now that a single tap will allow me to exchange films that serve as messages sent to others, it is easier than ever for me to find a community to share with. The cell phone is part of the movement of participatory cultures.¹¹
6. Finally—and to some extent this is the result of everything I have just said—the cell phone has turned cinema into “the vector of a culture of the self, a space that allows individuals to explore their own personality.”¹² Never before has film had such a role in schooling us for life (particularly for adolescents).

In short, my cell phone puts the cinema—with its films, archives, culture, and powers—in my pocket. More than that, I can shape my own relationship to film. This situation is undoubtedly entirely new.

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To answer the second question (about the presence of a camera), we need to go back to the first cell phone cameras. In her book *Mythologie du portable*, Laurence Allard tells the following “edifying tale.” It is 1977. Computer scientist Philippe Kahn is supporting his wife in childbirth. As usual, he has a small camera and his phone with him and he thinks that he would really like to be able to send his friends and family a picture of the baby. As his wife’s labor continues, Kahn starts working on his devices. In the time it takes to fetch his soldering iron, his daughter is born and he is ready to use the machine he has cobbled together to take a photo on his cell and send it out by email.¹³ Whether this story is true, false, or a modified version of what happened, the story itself remains significant. Described in this way, the addition of a camera was made in the context of private communication as an enhancement to both the cell phone and the family photo. From here, the shift from stills camera to video camera seems to have been a natural progression, enabling everyone to use a cell phone to film their family and life in general (particularly their travels). The ultimate goal of this addition is videotelephony—showing what we are seeing to distant viewers as it happens and, crucially, showing ourselves by filming ourselves as we speak. Though this long-standing dream¹⁴ led to cable-based experiments in 1964 (picturephone and visiophone) and was later realized using computers (Skype), its inclusion in cell phones was delayed until 2004 for technical reasons (insufficient bandwidth). Now, however, it is present in the cell phone in my hand.

The moral of all this is that the addition of a camera to a cell phone was not for the purpose of “filmmaking” but for private communications. But of course, once the cell phone had a camera, it was also used to do all that a camera can do, including make films. A wide variety of practices can be found

between the two poles and I shall describe a few of these, seeking to highlight the changes brought about by cell phones in each case.

1. The cell phone enables us to make films, the kind of films that are made with a camera, in situations that lack the economic conditions required to do so with traditional equipment (in Africa, India, and, in the case of young filmmakers, anywhere in the world).
2. Since 2005,¹⁵ cell phones have nurtured an entire artistic movement (from the short and very short to feature-length films and installations) that exploits the particular characteristics—lightness, the relationship to hand and body, the vertical screen, geolocation, connectivity, and so on—and also the limitations (low resolution) of this new device for recording images. The aim is still to make films, but “otherwise.” To describe this new type of filmmaking, I have suggested the term “p cinema”: cinema made while thinking portable (“du cinéma fait en pensant portable”).¹⁶
3. To the extent that it is neither a stills camera nor a film camera, the cell phone opens up a completely new, “dedramatized” relationship to the subject being filmed. At the Pocket Films festival of 2009, sculptor Richard Texier related that his friend, the painter Zao Wou-ki, always refused to be filmed until the day that Texier suggested filming him on a cell phone (cf. the film *ROUGE TRÈS TRÈS FORT*).
4. Cinema has long been present in education, but the aim is usually to develop knowledge of cinema itself (film clubs) or to use it as an additional learning tool (educational films), more rarely to learn to make films. But today, thanks to the cell phone, cinema can be directly involved in the general learning process. Elementary school teachers are having their students make short educational films on a whole range of subjects (such as how to construct a triangle or measure volume), with a view to sending these films to students in other schools. The educational value is obvious—the motivation afforded by the aim of sharing encourages students to acquire full mastery of their subject. Examples of this kind of approach are now growing in number.
5. There are places where it is impossible to film with a camera but possible with a cell phone as long as it remains more or less hidden, for example in workshops employing illegal migrants, in prison or in prison camps (Russia), or in demonstrations (China, Iran). As soon as they have been captured, these images are put online so that, even if the cell phone is confiscated, the images have already gone out and have been archived on a platform (*Crowd Voice*,¹⁷ *Iranian Stories*¹⁸) or edited into a film (*FRAGMENTS D'UNE RÉVOLUTION*, anonymous, 2011)¹⁹ and even shown on tele-

vision, thereby reaching millions of people. With the cell phone, cinema acts as a powerful tool for democratization.

6. Some images exist solely because the person who shot them was carrying a cell phone and was able to capture the event as it happened. Of course, there are examples of such images caught with a conventional camera (Zapruder's film of President Kennedy's assassination), but now the element of chance in the production of films (serendipity or happenstance—the luck of being in the right place at the right time) has been recognized by all. This is reflected in the proliferation of such images on our television screens after some remarkable event (natural disasters, accidents, bizarre encounters, visits by politicians, and so on). We have all acquired the reflex of getting out our cell phones. Let us be clear, what matters here is availability. No other movie-making device is always in our pocket, not even compact cameras or the micro cameras currently in development (we take them with us only when we think we might want to take a photo or film).
7. This availability also gives rise to what is perhaps the most important phenomenon linked to cell phones: the use of cinematographic language in everyday life.²⁰ The cell phone has ushered in the age of cinematographic language for all, breaking down any barriers of age, social class, and gender. This is not a matter of making films but taking notes, playing, communicating with friends and family, and conversing over distance or face-to-face (again in the tradition that led cameras to be included on cell phones). With the cell phone—that eminently personal device (the device that says “I”)²¹—cinematographic language meets interpersonal relationships, acting as a go-between in situations where the end product (the film) often matters less than what happens when the pictures are taken. It also plays a part in our relationships with ourselves.²² “Selfies” are more than just a fashion: cinematographic language now has a function in our construction of ourselves.

So now we can see how far we have come.

Gilbert Cohen-Séat provides a good summary of the situation before the advent of the cell phone: “On the transmission side, film as a means of communicating something one wanted to express was used by a comparatively tiny number of specialized people who were rightly described as professionals. Conversely, what the film communicated was received by a disparate and ever-changing mass of countless individuals.”²³ All that changed with the cell phone. Now millions of individuals have the capacity for limitless communication with millions of other individuals using cinematographic language.

While television may have served as a teacher of cinematographic language, disseminating skills that had hitherto been the preserve of professionals, the cell phone provides the necessary tool for this new mode of communication.

According to the International Telecommunication Union, in 2013 the penetration of cell phones across the world rose above 96 percent (and increasingly cell phones have a camera). “In a way, the quantitative is becoming qualitative.”²⁴

Translated by Trista Selous

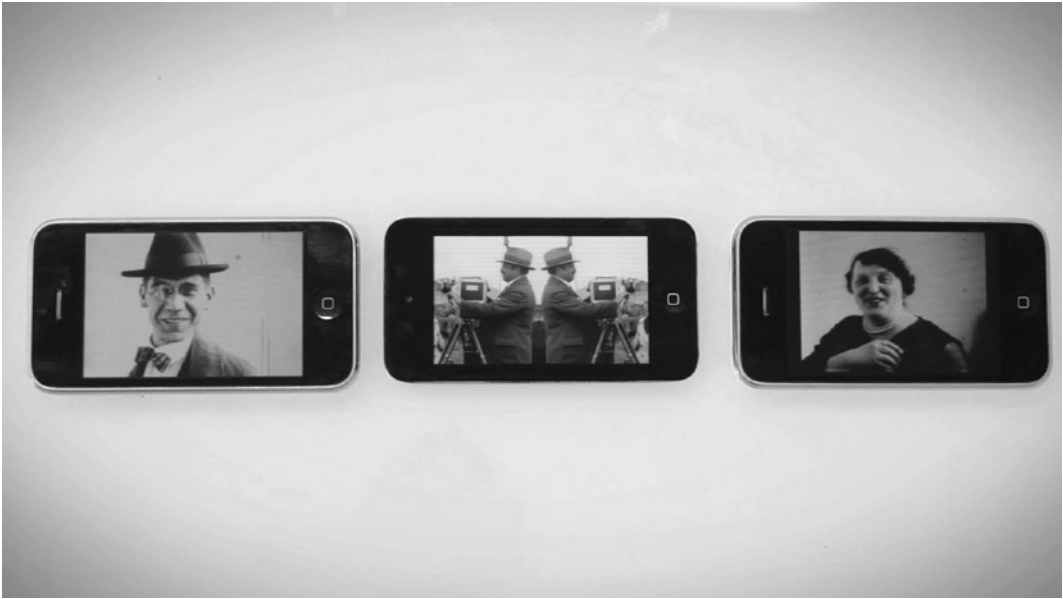


Fig. 7: Daniel Szöllösi's UNTITLED.

Uncanny Encounter: The iPhone and the Debie Camera

Martine Beugnet

THE IPHONE

Designed by Apple Inc, the first iPhone was released on June 29, 2007. The model used in Daniel Szöllösi's 2012 UNTITLED is likely to be a 4S. The iPhone 4 measures 4.53 inches (11.5 cm) in length, 2.3 inches (5.8 cm) in width, and 0.4 inches (0.93 cm) in height. Its distinctive look comes from its expansive touch screen, resulting from the replacement of the traditional hard keyboard by a virtual one. As well as offering the usual communication functions, the iPhone 4 is equipped with a still and video camera and features a high resolution 960 x 640 "retina display" screen. Its thin, discrete casement and landscape viewing function allow for an enhanced display of images.

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THE DEBRIE PARVO CAMERA

The camera featured in the archive footage appears to be a Debie camera, probably the Parvo model. Joseph Jules Debie launched his first 35mm film camera in 1908. One in a series of successfully upgraded models, the Debie Parvo remained popular through the 1920s thanks to its relatively compact, light make (its name is derived from the adjective "*Parvus*," small in Latin). The camera measures 10.2 inches (26 cm) in length, 5.5 inches (14 cm) in width, and 7.5 inches (19 cm) in height, and weighs 13.2 lbs (6 kg). Its plywood case could hold up to 390 ft (120 m) of film. It is hand cranked and includes an in-built tachometer to aid the camera operator maintain the right rotation speed.

THEORETICAL FRAMING

In Daniel Szöllösi's award-winning UNTITLED, created as part of the EYE Filmmuseum 2012 "celluloid remix" competition, the early 20th-century Debie camera meets the 21st-century iPhone: images filmed with the camera of the silent period, duplicated and miniaturized, play on mobile phone screens. In this encounter between old and new, unlikely affinities emerge, reminding us of the strangeness and wonder of technological evolution.

UNCANNY ENCOUNTER: THE IPHONE AND THE DEBRIE CAMERA

Imagine three iPhones, placed lengthwise, side by side, on a white surface, and filmed from above.¹ A hand comes into sight and switches the devices on one by one, in video replay mode. The little screens soon spring into life and images appear in the middle window: displayed in their original square ratio, they show a cameraman from the silent film period operating a camera set on a tripod.

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These images form the beginning of Daniel Szöllösi's *UNTITLED*, an award-winning filmed installation created in response to the EYE Filmmuseum 2012 "celluloid remix" competition.² In agreement with the principle of the competition, Szöllösi based his "remix" on silent archive footage preserved in the Institute's collection, selecting and combining sequences from two short films. The first is a documentary film by the Mullens brothers, aptly titled *CAMERAMANNEN*, and dating from the late 1910s or early 1920s. The second is an anonymous and undated Dutch film, probably recorded in the late 1890s or early 1900s, and featuring a series of portrait-shots of what looks like several members of the same family.³

First to appear on the iPhone screen is a medium shot of one of the Mullens brothers, Albert, most likely filmed by his brother Willy. The location is an open air event, possibly a 1919 aviation show in Amsterdam, but the focus of the shot is on the cameraman and his machine: Albert Mullens filming with a Debie camera, presumably the "Parvo" model. The incongruous meeting of optical devices that appear so far removed—the iPhone and the silent film camera—accounts for the strange and delightful effect of *UNTITLED*'s introductory sequence.

Indeed, in relation to the history of film, its technological and cultural evolution, the Debie camera and the iPhone belong to opposite ends of the spectrum. It is not merely that the former is associated with the beginnings

of cinema and represents a wonderfully inventive yet largely obsolete technology, while the latter is a current, regularly upgraded product representative of a 21st-century drive towards technological and media “convergence.” They are also emblematic of different antithetic and complementary vocations of the medium of the moving image: on the one hand, film as cinema—an established, collective form of art and entertainment based on public performance—and on the other hand, film for individual consumption, produced and disseminated in endlessly variable forms and formats as part of a set of diversified viewing practices.

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Before they started to shoot their own films, the Mullens brothers were exhibitors: from 1900 to 1911, they ran a travelling cinema, *Alberts Frères*, and were generally considered the main distributors in the Netherlands at the time. Indeed, it was to supplement their catalog of Pathé Frères films that they began to produce their own.⁴ Both the French-made Debie and its owners thus stand for film’s cinematic vocation, that is, its dominant vocation in the 20th century: film as a mass medium destined to be experienced collectively. The Lumière brothers’ invention of the combined camera and film projector, which led to the first public screening, established what would become film’s prevailing mode of existence as a cultural phenomenon: a moving image creation that belongs to the broad, diverse sphere of the cinema once its films are projected in public on a screen large enough to be seen by a group of spectators. Early apparatuses for the display of films to individual viewers, such as Thomas Edison and William Dickson’s kinestoscope, were quickly superseded by the cinema. For all the insistence in successive marketing campaigns on introducing the smart phone as a “pocket cinema,” or in presenting it as a revival of Edison’s legacy (or of pre-cinematic experiments involving individual viewing), the iPhone ostensibly belongs to the “non-cinematic” mode of film viewing.

Amongst the recent writings of historians and theorists on the changing definitions of “film” and “cinema,”⁵ Eric de Kuyper’s eloquent reminder that the history of cinema proper cannot be dissociated from that of the public screenings is of specific pertinence here. In giving into the temptation to “short-cut through history—from the mobile phone to Edison,” de Kuyper insists that one denies the precedence of “the institution of cinema as spectacle.”⁶ He thus outlines the problematic bias involved in the current re-visiting, by new media theorists and art historians alike, of the beginnings of the medium of the moving image with the hindsight of the recent technological evolution. To reduce the experience of the film as collective spectacle to, as Gabrielle Pedulla puts it, “a brief parenthesis [...] a brief encounter that today we are all the more inclined to remember nostalgically for its transience”⁷ is to retrospectively devalue one fundamental feature of the medium’s existence

so far, while over-emphasizing a minority phenomenon.⁸ Equally reductive, in this view, is the tendency to extend the definition of “cinema” to all forms of screening situations and formats.⁹ Jean-Luc Godard’s often quoted aphorism sums it up neatly:

Cinema is larger than us; you should have to raise your eyes to the cinema screen. When you start lowering your eyes on a smaller display, cinema loses its essence.¹⁰

Not only are small screening devices such as the iPhone designed for the individual consumption of the image, but in the process, audio visual perception often mingles with a host of other activities. The iPhone user can select a frame ratio, rewind and fast-forward, still the image, but also “pinch” or zoom into it to try and discover its mysteries, or move back and forth from various sources of visual, sound, and text data. De Kuyper remarks:

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The first purpose and appeal of such devices is the *manipulation* of the image (and the sound). Secondly, they are designed for an *individual* usage [...] but first and foremost, they are designed to activate our hands, our fingers, to endlessly manipulate... Less than the visual, the illusion—or ersatz—of activity, is central to this universe dominated by possession (one holds the device in one’s hand) and control over *my images*, *my sounds*, *my messages*, in other words: the world!¹¹

Envisaged through the prism of the above quoted comments, Szöllösi’s filmed installation offers itself, through its mise-en-scène and camera angle, as a topical illustration of a techno-fetishistic and essentially non-cinematic experience. In a perfect reversal of Godard’s evocation of the “essence” of cinema, Szöllösi lays his three (and at some point in the film, four) miniature screens on a flat surface and shoots them from above. His hands come in and out of sight, entering the frame to switch the devices on and off, dwarfing the tiny images, asserting their control over them.

For all its “uncinematic” mode of image treatment, UNTITLED nonetheless arguably evokes the magic inherent to editing and projecting film footage through its combination of soundtrack, scale reduction, and multiple screens. Lying side by side in a line, with the discreet, black casements that became the trademark of the first iPhone models, offering maximum screen space and an unobtrusive frame to the black and white images, the three devices could be compared to photograms on a film strip. In this view, Szöllösi’s play on the scale of the images works as a distant echo of the process of analog film projection, where light travels through the tiniest of photographic

images so as to magnify them to a massive scale. The connection is emphasized by the noise of an old-fashioned projector that fills the soundtrack as soon as the devices are switched on. One could also liken the use of multiple screens—and the unforeseen interactions between images that Szöllösi thus creates—to a portable experiment in “expanded cinema” or multi-screen installation work.¹² The footage simultaneously showing in the three (and at some point, four) little screens has been cunningly edited and manipulated (slowed down, paused, and repeated) so that, from one screen to the next, images often seem to respond to each other. Combined with the small scale, the process brings to mind Annette Michelson’s evocation of the pleasures of the editing table, “inseparable from the thrill of power,” that is experienced “through repetition, acceleration, deceleration, arrest in freeze-frame, release and reversal movement.” A euphoric form of control, she adds, that is part of a continuing sense of “ludic sovereignty, grounded in that deep fantasy of infantile omnipotence open to those who, since 1896, have played, as never before in the world’s history, with the continuum of temporality and the logic of causality.”¹³

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In effect, UNTITLED derives its quirky charm precisely from its foregrounding of the iPhone’s specific characteristics as a diminutive screening device, and the childish pleasures of control over the image continuum it affords, rather than from mimicking the cinematic. Already in Steve Jobs’s initial presentation of the iPhone,¹⁴ which characteristically took place in a vast, cinema-like auditorium with *giant* images of the device displayed on a large screen, the discourse that insisted on the convenient replacement of traditional film-viewing conditions effectively missed out on the key appeal of the mobile phone as a screening device: the effect of the *miniaturization* of the mobile image, a reduction in scale of highly detailed images such that a tiny, yet perfectly rendered live spectacle can be held in the palm of one’s hand. In contrast, UNTITLED makes full use of the delightful effects of reduction—the artist’s hand serving, in Susan Stewart’s words, as “the measure of the miniature.”¹⁵

Not only does the high “retina” resolution ensure a good quality display, but because they are seen on a small scale, the images gain in density and contrast. Thus the viewer may delight—as admirers of *enluminures* and painted miniatures once did—in the perfect rendering of details that would pass unnoticed in a large format. Stewart notes how “Unlike the gigantic, which celebrates quantity over quality,” the art of the miniature insists on proportional perfection and detail.¹⁶ It therefore calls for a distinctive form of gaze. In her seminal book *The Skin of the Film*, Laura Marks has emphasized how, in a culture that has privileged the distanced, optical gaze over the haptic one, we need to be reminded that vision is also a form of contact. Amongst the types of

haptic images that invite us to exercise our haptic or tactile gaze, she mentions “traditions that involve intimate, detailed images that invite a small, caressing gaze.”¹⁷ As a screening device, the iPhone arguably encourages us not only to interface with images in a tactile way through our fingers, but also to exercise our tactile gaze.

Writing on miniaturization in the arts and crafts, Stewart explores the relationship between the pleasures of scale reduction and childhood as well as the drive to collect and possess, thus anticipating De Kuyper’s comments on the playful and controlling aspects of the multitask portable apparatuses born out of electronic and digital technology.¹⁸ Devices such as the iPhone are akin to toys (albeit very expensive toys) both in their size, manipulability, and in the measure of control they offer. Indeed, as I have noted elsewhere,¹⁹ if the minuscule invites us to surrender our sense of height to penetrate its microcosms and—to use Marks’s words—“yield into the image,” smallness and tactility also play into forms of ownership and mastery that go beyond the playful exploration of the device’s operative functions.

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The live figure is the best measure of intimate viewing giving way to possessiveness. Watching a film on her/his iPhone, the viewer bends over the small screen to observe, like a kind of entomologist, insect-sized figures moving through miniaturized sets and landscapes, creatures reduced to the stature of Tom Thumb and imprisoned in the tight confines of the diminutive frame, their movements rendered more hysterical by their miniaturization.

Szöllösi’s images, however, point in a slightly different direction, one where scale reduction and individual access relate to the forms of possessiveness derived from affective closeness. In selecting the archive footage for his project, Szöllösi gave his preference to film portraiture: both CAMERAMANNEN and the anonymous second film create live portraits of their subjects. In the latter, a man, a woman, a young man, and a boy appear in a succession of brief vignettes in medium and medium close-up shots. Evidently unused to the presence of the camera, they try and hide their shyness and awkwardness by (silently) talking to the cameraman, laughing, occupying themselves with small activities such as lighting a cigarette or cavorting in front of the lens. As a family record and ancestor to the amateur film, this anonymous footage arguably stands for what might be the missing link between cinema (public projection) and individual screening devices such as the iPhone. Amateur film relies on its own practices and rituals that in turn, as Roger Odin has suggested, fed into the practices of image making and image viewing characteristic of the age of electronic communication.²⁰ The history of amateur film is woven into the more general history of the cinema; indeed, it overlaps with that of early and experimental cinema in particular. It relies on collective viewing, even if its screenings—typically aimed at a small group of people—take place,

more often than not, in a domestic setting. Often intended as a record of personal experiences, including family events and portraits, amateur cinema tends to target an intimate audience, and as such, amateur filmmaking has migrated more easily than other film forms to the individual mobile platforms offered by contemporary technologies. In this particular context, the miniaturization of the image of one's close ones to be stored and carried about on one's mobile phone recalls the tradition of the miniature portrait.²¹ For centuries, tiny painted portraits held in lockets were carried about by individuals, until they gave way to the more accurate and democratic photograph.²² Film, of course, needing a cumbersome display apparatus, never was a viable alternative—until, that is, the appearance of small, portable devices such as the iPhone. In the context of *UNTITLED*, the new technology thus offers the small amateur-looking vignette portraits of the anonymous archive film a fitting outlet.

62 | In Szöllösi's whimsical work, two pieces of moving-image technology initially described as belonging to opposite ends of the spectrum thus reveal unexpected affinities.

At a mere 13.2 pounds (6 kg), the Debie Parvo derived its popularity from its relative lightness and enhanced mobility. The success of the iPhone originates in the multiplicity of tasks it affords as a 0.31 lbs (140 g), pocket-size piece of audio-visual equipment. A century separates the Mullens brothers' Debie film from Szöllösi's filmed iPhone installation, yet a common delight in the technology involved is evident in both. Rendered tangible through the willingness to focus on the apparatus itself, on its idiosyncrasies and unique capabilities, there emerges, across time, a shared sense of playfulness and ingenuity.

As Willy and Albert take turns filming themselves, posing with the tool of their trade, the complicity between filmmaker and subject is evident: in one of the takes, Willy hides behind his camera and then mischievously steals a look on each side of the Debie's case. At the very end of *UNTITLED*, Szöllösi follows suit, switching the central device into video mode, so that his own image (and behind him, a DV camera set on a tripod) appears in the middle screen, framed by footage of Willy and his camera on either side.

However, beyond the similarity of the gesture and the affirmation of a continuing tradition of image making, evidence of a profound evolution emerges. Jacques Aumont remarked about the Lumière brothers' films that the one who films and the one who is filmed were at that point in the history of the medium exchangeable—that the one who filmed was “like you and me.”²³ This closeness, co-presence, and sense of interchangeability—emphasized by the physical similarity of the two brothers—is still perceptible in the Mullens film, even as the cameramen portray themselves as professionals. Szöllösi's

self-portrait as “signature” shot, however—an avowedly narcissistic gesture—is more typical of the contemporary uses of the small screens now epitomized by the endemic practice of the “selfie”: here the one who films is also the subject of her/his own filming.

In effect, the superimposition of portrait shots offered in UNTITLED comes as the conclusion of a chaos of images and sounds that suggests that, from silent filmmaking to iPhone video replay, so-called “remediation” is anything but a straightforward process. Indeed, in UNTITLED, the encounter of old and new technology turns into an uncanny and unruly performance. Throughout the film, the soundtrack is filled with noise (a projector running, high-pitched tuning...) and punctuated by the sound of a woman laughing. At one point, Szöllösi’s hand appears to lay a fourth phone on top of one of the iPhones already on display, and the new device seems to pick up a sequence of images as if by contamination. Little by little, both the sound of the projector and the stream of images become more erratic. Parasite noise—static, buzzing, and whistling—invades the soundtrack, and the images start to flick by at an irregular speed before decomposing and finally vanishing, as when analog footage jams and combusts during a projection. It is as if the iPhones had become possessed with the malevolent spirit of an old, dysfunctional projector.

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In “Re-Newing Old Technologies,” Tom Gunning talks of the deceptive relation of familiarity we entertain, as the result of habituation, with technologies of everyday use. Yet as Gunning argues, artistic strategies of de-familiarization can reawaken the sense of wonder inherent to technologies that once challenged our perception of the world.²⁴ In UNTITLED, this renewal happens through an unexpected meeting of the old and the new that plays on our perception of scale. It is both the everyday object—the mobile phone—with its ability to play images shot well before it was invented, and the images themselves, at once banal and extraordinary, that are thus brought back to our attention and capacity for wonder. Rather than the sense of nostalgia and loss that normally enfolds the obsolete, what emerges anew from the perfectly rendered image of a toy-sized Debie camera that replicates from iPhone screen to iPhone screen is the sense of strangeness and marvel inherent to the evolution, practice, and perception of moving-image technology.

Like Gunning’s advocacy of technological de-familiarization, Laura Mulvey’s *Death 24x a Second*—a kind of meditation on new forms of cinema viewing and the emergence of a possessive spectator—resonates with the kind of encounter between old and new discussed here and wittily staged by UNTITLED. Nostalgia, Mulvey points out, need not preside over the encounter of today’s technologies with the cinema of the past, for the process of looking through the cinema archive, she observes, is never foreign to “the childish and playful pleasure of the treasure hunt.”²⁵



Fig. 8: Cue marks on a film print of STAGECOACH (John Ford, 1939).

The Erasure of Analog Film Projection

Leenke Ripmeester

35MM FILM

A filmstrip consists of two layers: a base and the emulsion. The emulsion takes up 3 to 10 percent of the total thickness of a filmstrip. The emulsion of black-and-white film consists of a gelatin that contains grains of silver halide. When light is reflected from the scene in front of the camera, a chemical reaction causes the crystals to form a pattern that produces a latent corresponding image. The emulsion of color film is approximately three times thicker than the emulsion of black-and-white film because it also consists of three layers of dye that are sensitive to a primary color (red, blue, and yellow). The emulsion side of a filmstrip absorbs moisture and can be scratched off quite easily. The base side of the filmstrip is stiffer and less vulnerable. The material of the base—also called the film's carrier—has changed over time: from nitrate (1989–1951) to acetate (since 1910) to polyester (since 1955). Along both sides of the film are sprocket holes that enable the film to be transported through cameras, projectors, and other equipment. One single frame takes up four sprocket holes. With sound film, the soundtrack (optical or magnetic) is on the left side between the frames and the sprocket holes. Digital soundtracks might be next to the optical track as a dotted line (DTS) or as a pattern of dots in between the sprocket holes (SRD).

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THEORETICAL FRAMING

This chapter will focus on analog film from a projectionist's point of view. Analog film is gradually becoming an obsolete technology, as the Digital Cinema Package (DCP) is now the new standard digital copy format. Within media studies, the arrival of digital cinema has often been understood as yet a new moment in the history of what Bolter and Grusin described as "remediation," i.e., the way new media are inspired by, oppose, and change earlier media. They do this by the double logic of immediacy and hypermediacy: erasing all traces of mediation while also putting to the fore mediation in all its multiple forms. This chapter argues that the projectionist is implicated in both sides of this logic.

THE ERASURE OF ANALOG FILM PROJECTION

I was working in the projection booth when I suddenly realized that I was actually putting film made of paper in the projector. I panicked. How could I ever project the film without damaging it, without the film breaking? It was a classic projectionist's nightmare and one I carried with me while working as a projectionist in various cinemas in Amsterdam, including the cinema of the Dutch national film archive, EYE Filmmuseum. As a projectionist you are always busy checking whether everything is going well and, most importantly, ensuring that the film is not damaged during projection. Still, film prints are damaged all the time by mistakes, lack of attention, or worse, carelessness. And these damages, unfortunately, are often visible on analog film prints and noticed by the audience. This chapter focuses on analog film—35mm in particular—and the practice of its projection. The main question I will address is how the projectionist's handling of analog film relates to the way film functions as a medium.

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This question is an urgent one, as analog film is gradually becoming an obsolete technology. With the arrival of digital film in the 21st century, the Digital Cinema Package (DCP) is now the new standard digital copy format in movie theaters in Western countries. One of the few places where analog film is still being screened is those movie theaters located within film archives. Media transitions, such as the one from analog film to digital film, were analyzed by Jay David Bolter and Richard Grusin in their 1999 study *Remediations*. They coined the term “remediation” to describe the way new media are inspired by, oppose, and change earlier media. They do this by what Bolter and Grusin labeled the *double logic of transparent immediacy and hypermediacy*: erasing all traces of mediation while also putting to the fore mediation in all its multiple forms.¹ The projectionist's work is implicated in both sides of this logic. However, within film studies, the projectionist's work is rarely analyzed at the same

level as the discursive practices of film as a medium. There have been plenty of studies in apparatus theory and phenomenological approaches to film about how film is experienced—e.g., watching a film on a big screen in the dark with other people. Yet in these approaches, film projection, if discussed at all, is merely a starting point for theoretical or philosophical arguments which are not really grounded in everyday projection practices or experiences.² Studies that explicitly devote a section to the subject tend to treat film projection as a purely technological matter related to the correct use of aspect ratios and sound systems.³ However, how audiences experience film is greatly influenced by the way films are projected at a specific place and time. Projection practices surely are not just a technological matter but are anchored in the way film “works” on the spectator as a medium.

In projection manuals, by contrast, the emphasis is placed on another aspect: that of sound professionalism, as is apparent in the detailed explanations of the different technologies and accurate screening of the film’s cinematography and sound.⁴ Whole chapters are dedicated to the correct design of the movie theater (distance between lens and screen, position of the speakers *vis-à-vis* the screen and the audience, etc.); the correct use of all the equipment (projector, film, amplifiers, etc.); use of the correct aspect ratio, sound system, frame rate, focus of the image, framing, and so on. Yet behind all these notions of correctness and accuracy lies the ideal that the audience should never notice that the projectionist is doing his/her work. Indeed, a dominant feature of the figure of the projectionist is precisely his/her invisibility. Perhaps the most important task of a projectionist, then, is to ensure one side of Bolter and Grusin’s logic of remediation: the film medium’s transparent immediacy.

Bolter and Grusin describe transparent immediacy as the manner in which media always seek to conceal the process of mediation and to let the viewer forget the presence of the medium. One strategy for achieving transparency is erasure. For example, Bolter and Grusin describe the ideal in traditional Western oil painting of effacing the process of painting by making the surface disappear. The painter tried to achieve this ideal by erasing his brushstrokes as much as possible and thereby erasing the traces of his workmanship and himself. In analog film, there is a similar ideal of making the surface and the materiality of film disappear during projection. In order to achieve this, the projectionist must be careful not to cause any damage to the film print, which would give away the projectionist’s work. Indeed, a projectionist is always trying to be invisible, to erase his or her presence, not unlike the classical painter who tried to erase his brushstrokes. The erasure of film projection is achieved first and foremost via a smooth operation of the screening: ensuring the correct timing in opening the curtains, dimming the lights,

switching on the sound, and opening the douser; then checking the focus, the frame, the gate pressure, and the sound volume—all executed in a subtle way without the audience noticing. The reels must be projected in the right order. Second, the projectionist's invisibility should also be ensured by avoiding any damage to the film. This requires careful handling of the film (taking it out of the can, putting it in the projector, checking while the film runs through the projector, rewinding), making good splices, having a clean projection room and projectors, avoiding film trailing on the ground, adjusting the friction, and so on. Indeed, an important aspect of projecting analog film is checking: checking that the film does not run over the rim of a roller, checking whether you forgot a roller, and constantly listening to the projector to ensure that everything is going well. This should be done during *every single* screening.

There is one compromise, though, one part that hints at the presence of the projectionist: the cue marks. The cue marks are a remnant of the way feature films used to be projected—and still are in many cinemas—on two projectors: reel 1 is projected on projector A, reel 2 on projector B, reel 3 on projector A, and so on. To move from one projector to the other, the projectionist needs a cue for when to start the motor of the projector of the next reel and a second cue for when to open its douser, thereby smoothly transitioning from the end of the reel being projected to the beginning of the next. These cue marks are always put in the right corner of the image over a length of approximately 4 frames and can have various forms: a perforated hole in the film, scratches of some form in the emulsion (e.g., a circle, a triangle, a square, or a cross), a black circle printed on the film, tape, etc. These cue marks can, strictly speaking, be defined as damage to the film, and yet they are indispensable for projection. The marks enable a smooth projection of a film print by disguising the fact that the print actually consists of separate reels and ensuring the invisibility of the projectionist's work; at the same time, they hint at the projectionist's presence.

The cue marks are one solution in the history of many different approaches to changing films and reels. Before two projectors began to be used by movie theaters, the use of one projector necessarily led to short intermissions during the screening so that the projectionist could thread the next film on the machine. In this type of projection, the audience was continuously made aware of the projectionist's work and presence.⁵ The use of two projectors enabled the continuous screening of a film whose length exceeded one reel. The non-rewind system (and alternatives) in the 1970s made it possible to screen a feature-length film with just one projector without intermissions. In this system the reels are taped to each other, forming one horizontal reel that lies on a big, revolving platter. The film is led via rolls to the projector, and after leaving the projector is led via rolls to another platter. During the period when non-re-

wind systems were predominantly used in mainstream cinemas in Western countries (in the 1980s and 1990s), cue marks were nonetheless still printed on new film prints for those cinemas still using two projectors. So in this situation, analog film prints still hinted at the projectionist's presence during the transition from one reel to another by means of the cue marks.

The cue marks might be seen as a hinge in the double logic of remediation, between transparent immediacy and hypermediacy. This hinge is located in the different manner in which the audience and the projectionist watch the film during the moment of a takeover: while the audience looks through the film print to the filmed reality shown on the screen—experiencing the film print as a “transparent window”—the projectionist concentrates on what is happening right on the surface of the print as someone who has just cleaned a window checks for smudges and other marks that might have been overlooked. Indeed, many experienced projectionists are no longer capable of “just watching” a film. They are always paying attention to the quality of the film print's surface and materiality.

While cue marks are there to cue the projectionist in a subtle way without being noticed by the audience, thereby ensuring the film's transparent immediacy, in practice they can be a distracting mess. Old projection prints sometimes have a myriad of different cue marks, adding more damage to the rain and cables that the beginnings and ends of reels often already have. Cue marks can also be missed by an inattentive projectionist, causing the black frames and numbers and text on the tails or heads of film prints to suddenly become visible. So a film's projection can be quite disruptive. The technology of film and its vulnerable materiality comes to the fore in various forms of damage. While a projectionist's job is first and foremost to avoid damage, it also revolves around tracing damage. What caused this type of damage? Was the damage made just now or in a previous screening? Projection manuals often have a chapter that lists the variety of possible damages on the film: rain, cables and horizontal scratches, scratches on the emulsion side or the base side, on the image or the soundtrack, damaged sprocket holes, shrunken film, bad splices, splices with jump cuts, and so on. Every film print is representative of its own storage and projection history.⁶ Moreover, types of damages or unwelcome disruptions of the screening can sometimes be traced back to particular technologies that were introduced at a particular moment in time. For example, in the early days, projectors did not have a framing device so when a film jumped its sprockets, the film had to be stopped to be corrected by rethreading the film;⁷ and carbon-arc lamps constantly had to be adjusted to avoid the risk of causing small burning spots on the film. The arrival of xenon lamps reduced this risk considerably. Another example is the introduction of the non-rewind system where the film, while being wound on the big

horizontal platter, ran the risk of touching the rim of the platter, causing diagonal scratches on the film.

While analog film projection centers on the avoidance of damage, damage seems inevitable and, ultimately, inextricably related to analog film. This is most clearly demonstrated in the way film is represented in other media. If video or digital filmmakers want to create a look of an “old film,” they add cables and rain with their editing software. The damage has become a stylistic property which foregrounds the medium of film. Bolter and Grusin describe this approach as the logic of hypermediacy: the way in which a medium attracts attention to itself. Hypermediacy not only makes the medium visible but tries to emphasize multiple signs of mediations. The audience is invited to look at the medium itself and be fascinated and delighted by it. Of course, from the perspective of the filmmaker, the projectionist, or the audience, there is no such thing as “delight” in seeing a film print damaged. While actual damage to a film—not the stylistic property of another medium trying to look like analog film—might be an unintended form of hypermediacy, there are also moments in film history where hypermediacy through projection was intended or simply (an unavoidable) part of the screening.

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In the early days of cinema, when film was introduced as a new medium in the late 19th century, watching the projectionist do his job was a spectacle in its own right for contemporary audiences. Sometimes, this spectacle involved the projectionist projecting a film backwards in order to demonstrate the strange effects of “wrong” projection. Unintended but unavoidable disruptions of the screenings of early cinema were also regularly caused by a lack of trained and experienced projectionists.⁸ How the use of the hand crank gave projectionists a creative role by controlling the projection speed is described elsewhere in this study.⁹ Projectionists have also been much more visible in non-theatrical settings: in travelling exhibitions, screenings in companies, at people’s homes, in film clubs, at fairs, and in classrooms. In these various screening contexts, the invisibility of the projectionist seems to matter less. Indeed, the invisibility of the projectionist seems closely related to the specific architecture of the cinema. Yet another example of hypermediacy can be found in experimental film. Many avant-garde filmmakers have been interested in film projection, putting projectors in the same room as the audience, as in the film *PROJECTION INSTRUCTIONS* (1976) by Morgan Fisher that puts the projectionist and his work on center stage as a performer. Some other films such as Nicolas Rey’s *AUTREMENT*, *LA MOLUSSIE* (2012) or Ko Yi-cheng’s *BLUE MOON* (1997) give an exceptional role to the projectionists, leaving it up to them to choose the order of the reels of the film, thus allowing the projectionist to create a different narrative structure each time.

However, my argument about the projectionist’s relation to analog film’s

hypermediacy should not be confused with the concern of some avant-garde films to disrupt or critique Hollywood's classical film narrative by showing the film apparatus. For instance, Ingmar Bergman's *PERSONA* (1966) starts by foregrounding film projection. The first shot of the film is a close-up of the carbon-arc lamp followed by shots of a film projector and a film leader. Although this is a case of hypermediacy, it is not an example of how the projectionist is implicated in this. Surely it was the film leader that Bergman inserted in his film that he wanted to be projected on screen, not the film leader of that particular print of *PERSONA*. There might be an image of a projector, but these shots were not meant to show the traces—rain or cables—of projection itself. So my earlier remark about the audience looking at the film print as a transparent window should not be equated with the ideology of realism. Indeed, *PERSONA* is not a realistic film, as it reveals the practice of film projection. However, this revelation is achieved on the level of its imagery's content and its (narrative) structure, not in the projection of a particular print of *PERSONA* in such a way that it draws attention to itself. Were the latter the case, film prints of *PERSONA* would have had to be accompanied by a special note for projectionists (which they do not). So in projecting a print of *PERSONA*, the projectionist is simply complicit in the ideal of transparency, enabling the audience to look "through" the film print to a film that critiques the notion of film as a transparent, unmediated window. So the projectionist is not only implicated in the double logic of remediation but also operates at a different level of this logic. A film may foreground the notion of hypermediacy even as the projectionist projecting that film is complicit in the ideal of transparency.

Indeed, although the projectionist has historically often been implicated in hypermediacy, the projectionist's main task remains one of being complicit in the film's transparent immediacy and being invisible by erasing his or her presence. The most important job of a projectionist is to avoid damage to a film and to avoid giving the audience any hint of his or her work. To achieve this, the projectionist must find a delicate balance between routine and alertness. On the one hand, the projectionist should be well acquainted with handling film and operating all the equipment. On the other hand, the projectionist must be vigilant during every single screening, always double checking one's own work. The projectionist's complicity in the ideal of transparency then continuously confronts the "psychology of routine work." To make no mistakes, one needs experience; experience in turn leads to routine actions; routine actions threaten to dull one's consciousness of what one is doing, and this lack of consciousness might lead to mistakes. An experienced projectionist can put a film in the projector blindfolded, so to speak. Still, imagine how difficult it might be if one were to explain this routine to an apprentice projectionist; one might suddenly forget the film's routing.

This balance between routine and alertness also plays a part in digital cinema, where the arrival of DCPs has disturbed this delicate equilibrium. Tom Gunning analyzes the arrival of new technologies in his article “Re-Newing Old Technologies: Astonishment, Second Nature, and the Uncanny in Technology from the Previous Turn-of-the-Century.” He relates Martin Heidegger’s thoughts on the tool to the way technologies are new and then become old: “According to *Being and Time* it is in the nature of a tool not to assert itself, but rather to withdraw in favour of the project it is supposed to accomplish. When a tool works, we pay it no attention; it seems to disappear. However, if the tool breaks down, if in some way it doesn’t function, it suddenly becomes conspicuous.”¹⁰ This process refers to the way analog projection is now gradually becoming an obsolete medium and thereby drawing museological attention to itself. Analog projection is also suffering from a dearth of skill: it is precisely the lack of experience and routine that makes it difficult for projectionists to avoid mistakes and damage and thereby keep themselves invisible during projection. We have entered a period—not unlike the early days of cinema—in which it will become increasingly difficult to find experienced analog projectionists. Whereas film archives used to worry solely about preserving films, they now also need to worry about preserving analog film projection—not only because it is a trade of interest in the context of film history or because it threatens the quality of expensive film conservation prints, but also because it preserves the way analog film functioned as a medium by the logic of transparent immediacy. It is indeed ironic that while the disappearance of the classic projectionist makes analog film and its projection more visible—and perhaps, in a way, the spectacle it once was—the price that projectionists have to pay for this visibility is their own erasure.

With thanks to Erwin van ’t Hart, Ivo Hoek, Nico de Klerk, Marieke van der Pol, and Ron Salari.



Fig. 9: Rewind cranks for the Paillard Bolex H16 and H8 cameras produced in 1935 and 1938, respectively. Photo by Fabian Rose.

Ghosts of the Past: Frame Rates, Cranking, and Access to Early Cinema

Marek Jancovic

THE HAND CRANK

Hand cranks have been used to produce moving images since the earliest pre-cinematic devices, such as in mechanical kaleidoscopic magic lantern slides (chromotopes), since at least 1713. Their use in film projectors declined gradually during the 1910s and 1920s because of motor-driven projection. On cameras, their use decreased with the spread of spring and electric motors around 1925. Hand cranks came in various sizes, but they were typically around 5 x 6 inches (10 x 15 cm). The arm was made of metal; the handle of wood, later Bakelite. They were positioned on the back side of some early cameras/projectors, and later exclusively on the right-hand side. The models depicted are rewind cranks for the Paillard Bolex H16 and H8 cameras produced in 1935 and 1938, respectively.

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THEORETICAL FRAMING

This chapter explores how technology shapes our knowledge of early cinema by looking at the function of frame rates in hand-cranked projection practice and artifacts produced from frame rate changes. The tactility of early film projection is contrasted with current fixed frame rate norms in digital cinema, television, and streaming video. Frame rates and the crank are examined as technological sites of mediation for our understanding of concepts of originality and authenticity of early cinema.

GHOSTS OF THE PAST: FRAME RATES, CRANKING, AND ACCESS TO EARLY CINEMA

Recently, I made an interesting discovery upon seeing a DVD of Leni Riefenstahl's *OLYMPIA* (1938).¹ Rather than the controversial, phenomenal filming artistry, it was the strange superimpositions and "ghosting" artifacts visible in the footage that prompted me to observe the images as a material surface. Despite being published in Europe, the digital track on the disc had a frame rate of 29.97 frames per second (fps), the former North American analog television norm. *OLYMPIA*, originally projected at 24 frames per second for its first audiences, had somehow found itself on a European DVD with a North American frame rate standard. The multiple changes between different norms introduced visible disturbances into the image. Despite the cover prominently claiming that it was the "Original German Version," was the *OLYMPIA* I saw a film by Riefenstahl or rather a cover version orchestrated by machines, algorithms, and engineers? How does a film change when seen with a different frame rate? What about early cinema, before projectors became standardized to a stable running speed?

If one were to follow frame rates like a map through history, the slightest change can tell much about when and where particular moving images are situated and how they were being put to use. Edison's Kinetoscope and Kinetograph experiments filmed and projected at more than 40 frames per second at the beginning of the 1890s. Donisthorpe and Croft's Kinesigraph from the same period was supposed to run at only 8 frames per second. From the 1922 Pathé Baby amateur camera to a DLP projector, from 1950s high frame rate large-format projection, theme park attractions, planetariums, flight simulators, game consoles to variable frame rate mobile phone video—all of them have idiosyncratic frame rates that open up new topologies of cinema. But they also pose serious archiving and access problems when technology and knowledge change and images and sounds travel between media. To histori-

size frame rates, one could examine various parts of the cinema apparatus, but there is only one device that is operated directly by the hand and thus highlights the tactile quality of cinema that current technology cannot reproduce: the crank.

The visual world at the turn of the 19th century was profoundly tactile. Cameras, projectors, and optical toys had to be touched and felt in order to be operated.² Movement was created by pushing, pulling, twisting, flicking, and spinning. Many optical contraptions of the time afforded their spectator-operators time-bending abilities through the movement of their hands. Film projectors were advertised by their ability to be easily operated both forward and backward, enabling projectionists—almost exclusively men, since women in the trade were “curiosities,” a mere handful among tens of thousands of male colleagues—to double the exhibition opportunities of their one-reelers, which audiences now could enjoy in reverse. The Lumière brothers most famously demonstrated this in *DÉMOLITION D’UN MUR* and *LES BAINS DE DIANE À MILAN* in 1896.³ Cecil Hepworth also reminisced how he entertained spectators by changing or reversing the speed of projection. Self-reflexive films comedically featuring varying speeds, either deliberately or unintentionally, appeared already in the first decade of the 20th century.⁴ By the 1920s, these varying speeds had become “basic film tricks” often used by the avant-garde.⁵

As with projection, manual control over speed was also crucial for the discursive construction of cinematography as artisanship. A handbook from 1927—when spring-wound, electric, and compressed air motor cameras were already common—elaborates:

The *artist*-cinematographer with the hand crank will keep the film tempo in sympathy with the subject being filmed, but he [sic] can do this only after long practice. On the contrary, the great bulk of commercial, industrial, expeditionary, news, travel, scientific and home films should be exposed at normal speed.⁶

The “artist” cranks. The rest was business, science, or news.

Although musical accompaniment also necessitated a predictable running time, and even though producers often marked their films with a preferred speed, exhibition frame rates in early cinema were at the discretion of projectionists and theater directors.⁷ Comprehensive analyses of cue sheets and journals performed by film preservationist James Card (1955) and Kevin Brownlow (1980) have revealed the diversity of filming and projection speeds: anything from 12 to 26 fps, even well after the spread of sound film.⁸ There was no “authoritative” version: projectionists adjusted speed depending on the action, and generally preferred to crank faster than films were recorded

to give motion pictures energy and liveliness greater than that of real life, as well as to allow more shows per evening. As Timothy Barnard (2002), Steve Wurtzler (2001), and Yuri Tsivian (1994 [1991]) have also shown in detail, the crank was a locus of artistic expression, and recognition of the hand-cranking projectionist as the final element in the creative chain of cinema was a matter of both artistic prestige and political importance.⁹ In 1920, even F.H. Richardson, the most relentless critic of speed differences and over-speeding, admitted that “there are occasional exceptions where a scene may actually be improved by moderate overspeeding of projection.”¹⁰

Overspeeding was deliberately counted upon during production, but knowing that their films were being rushed too much, producers also ordered cinematographers to crank faster—which, of course, did nothing to prevent theaters from rushing even more.¹¹ This way, frame rates steadily increased during the 1910s and 1920s before mechanization and standardization to 24 fps began spreading in the second half of the 1920s.

It is important to point out that the uniformity of speeds in projection and recording was in no way a natural step or a technical obstacle that needed to be solved for cinema to develop to “the next level.” Motor-driven cameras and projectors operating at fairly stable speeds had been there all along. Both Edison’s Kinetograph (1891) and Armat and Jenkins’s Phantoscope (1895), for instance, were already driven by a motor but were too massive to hold. Rather, it was the field of tactility in which motion pictures emerged that structured the integral importance of the hand-to-crank vector for cinematic artistry. Even as electrified projector-speed regulators began spreading slowly around 1908,¹² their handles took the same shape as the crank and permitted “any speed from 5 to 30 min. to reel,” as the advertisements in periodicals like *Moving Picture World* indicate.¹³ While removing the labor of cranking, the necessity to touch and the possibility to manually adjust speed remained.

Received wisdom tells us that the mechanization of frame rates was inevitable for synchronized sound film to emerge in the second half of the 1920s.¹⁴ Yet another article from 1908 shows that other approaches were more than possible: it presents three kinds of “talking pictures,” one of which involves synchronizing a phonograph with the projection. French, German, and American synchronizers are addressed, “[y]et a device which gives the operator control is the best [...]. Devices giving purely automatic synchrony have many drawbacks. If an accident happens and a few feet of film be removed from the reel the synchrony is gone.”¹⁵

Wurtzler points out that even the very design of 1920s sync-sound technology went against standardization, as it required an active operator responding to variations at any given time during a performance.¹⁶ In fact, as late as 1926, the same year that 24 fps became a standard on the Movietone sound-

on-film system, producer Richard Rowland expressed his doubts about any norm for the projection of film: “[I]n the making of motion picture productions the tempo is one of the most powerful tools *in the hands* of the director for obtaining the desired effect. Some films are made, therefore, to be run slowly and some at greater speed.”¹⁷ The breach between touch, vision, and sound around 1930 meant the eradication of the last remnant of an interactive “player mode” of pre-cinematic optical toys¹⁸—one that had already vanished from the Mutoscope parlors into the hands of projectionists before becoming lost to mechanical precision.

THE CRANK IN THE FILM ARCHIVE

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What does all this mean for the film lover, archivist, and historian watching the remains of early films circulated on DVDs or online databases? Most importantly, the realization that despite all of its perceived progress, our current technology fails to provide the conditions to accurately retrieve the tactile quality of early cinema—one of its fundamental expressive tools. When archives such as *Open Images* or the U.S. Library of Congress make early audiovisual material accessible, it is often conformed to and published in video formats that do not allow any fluidity of frame rates. “[F]ilm restoration is in some ways ideologically complicit with Hollywood’s industrial desire for standardization. By retrospectively valorizing the carefully controlled labor of film production, it sometimes elides the labor of [...] textual *performance*.”¹⁹ Confining a hand-cranked film to a medium with a normalized frame rate will always introduce marks and traces stemming from this conflict.

Something as mundane as watching a DVD of a movie is, in fact, a highly complex media practice. When storing films originally shot and projected at 24 fps on DVD in PAL regions where the television frame rate is 25, they are usually simply sped up by four percent.²⁰ A two-hour movie will change in length by five minutes. The change in motion is barely noticeable, but the shift in pitch requires destructive audio correction to prevent the voices and music from changing drastically. Transferring a film in NTSC regions, like North America, involves even more material changes: for each four frames of film, five video frames are created.²¹ The duration remains the same, but motion becomes jerky. These new frames, like the ones in *OLYMPIA*, are ridden by visual artifacts and “ghosts”²² from blended pictures not present in the original.

David Bordwell, whose analyses of editing frequently involve counting the exact number of frames in shots, described the difficulties of such an approach when trying to recover the filmic “original” from any other medium.

Movement becomes jittery; frames are added and disappear; shots even double in length.²³ Films displaced into different contexts and regions will differ significantly, and every displacement inscribes material traces and perceptible marks onto the “text.” The effects of such drifts are slight, but are they insignificant enough to be ignored? Is *OLYMPIA* with artificial frames still the same film?

Older films pose even greater problems. In 2010, the *TCM Classic Film Festival* opened with the North American premiere of Fritz Lang’s *METROPOLIS* (1927), expanded with footage that had recently been discovered in Argentina. A press release proudly stated, “This nearly complete copy of Lang’s 204-minute original now stands as the authoritative version of the film.”²⁴ Film festivals derive a significant amount of legitimacy (and profit²⁵) from their perceived privileged access to the most “authentic” versions of film history’s preserved artifacts.²⁶ But where do these films obtain their authority from? *METROPOLIS* was filmed and first presented at a time when hand-cranking was the norm. There is no consensus as to what frame rate it was or should be projected at—opinions in various sources range anywhere from 19 to 28.²⁷ Martin Koerber, who restored the 2010 version, wrote: “we can only guess at this today.”²⁸ This uncertainty is in stark contrast both with the claimed authority and the technical demands of current media. Expressing the exact duration of the film in minutes rather than meters or reels is possible only in hindsight, building on norms and (im)possibilities of the present.

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Brownlow showed how projection equipment helped construct contemporary perceptions about early cinema: that silent films were jerky, poorly shot, or had flicker. These are not just artifacts of the early cinematic image but marks of the inadequacy of current technology to access the past. Analog film projectors often feature a “silent” switch, which slows down the projection rate from 24 to 16 fps, the speed of spring-wound clockwork cameras.²⁹ Even recent film restoration manuals give these as “the two basic speeds employed throughout film making history,”³⁰ which *METROPOLIS* also a “silent film,” readily disproves. By turning 16 fps into a synecdoche for all silent films, projector manufacturers created a knowledge-producing machine that orders the tactile multiplicities of early cinema into a homogenous history. Online video archives, DVDs, or projectors do not restore the past but also actively produce it.³¹ Brownlow criticized how unbearably long silent movie projections become when projected at “silent” speed, but Card pointed out the same problem already in 1955:

In presenting a silent film [...], the program director should be sure of his [sic] purpose. Does he wish (as he often claims) to show the film as it was seen originally? Or does he wish to present the film as its maker

intended it to be seen? [...] [H]e should realize that Douglas Fairbanks' Robin Hood, for example, might have been shown in two hours and a half during slack periods of the day or in a little less than two hours during the evening, to squeeze in an extra show. If he wants to show Robin Hood at the speed originally specified in 1922, he will run it at 12 minutes per reel which is very close to sound speed. [...] If it is decided to show Robin Hood at the arbitrary 16 frames per second, the film will last exactly three hours! And this is the way poor Robin Hood is usually shown to Film Society audiences, painfully limping through the forests at a rate that gets him through his adventures a full 52 minutes later than Mr. Fairbanks intended.³²

One needs to be aware of the decision-making involved in producing an “authoritative original” that deserves to be ossified for a commercial Blu-ray release. Is the authority based solely on the longest possible accumulation of “lost footage” or on the most scrupulous reconstruction of the premiere, as is the case with METROPOLIS? How about its other simultaneous premiere at the Ufa-Pavillon am Nollendorflplatz? Even if one were able to recreate the screening circumstances of both events, the discursive and technological conditions that allow us to create “new originals”³³ have to be considered critically.

Furthermore, one cannot simply project films at arbitrary frame rates and pick the most appropriate one. The truth is that it is exceedingly difficult to displace the past accurately into the present.³⁴ In digital projection, the crucial point is not simply adding support for more frame rates,³⁵ as has been done recently by the Digital Cinema Initiative. Instead, the difficulty lies in providing the conditions to emulate hand-cranking and *varying* the speed. A portion of cinemas and film archives are equipped with “Microverters” and potentiometers that can continuously vary frame rates of analog projectors, but another crucial “device” became scarce with the disappearance of the crank: projectionists that can operate them. Most cinemas do not have either.

Giorgio Bertellini spoke of the various cuts of METROPOLIS as palimpsests, but the image and sound themselves are inscription surfaces documenting not only what happened in front of the lens or microphone but also, more importantly, their own history within complex, changing networks of media practices. Since the physical disappearance of the crank in the 1920s, the necessity to convert and normalize frame rates has been shaping how one sees and accesses cinema's past. Current devices do not allow one to retrieve its tactility. The “ghosts” of frame-rate changes haunt our DVDs, projections, and online videos, reminding one that one's understanding of early cinema's originality and authenticity relies on fragile technological assumptions from the present.



Vitascope Movie-Maker: A Ludic Historiography

Guy Edmonds

THE VITASCOPE MOVIE-MAKER

The Movie-Maker was made by the Vitascope Corporation in the USA in 1931. It is a compact and light 16mm movie camera, measuring 7.1 x 5.1 x 1.8 inches (18 x 13 x 4.5 cm) and weighing only 2.2 lbs (1 kg). The intermittent movement is driven solely by a hand crank. It has a built-in lens of fixed aperture and focus. The camera takes 50 ft (15 m) spools of double perforated 16mm film, which give a running time of about two minutes at 16 fps. An “Empty – Full” gauge is supplied on the side of the camera above the hand crank to roughly indicate how much film has been used.

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THEORETICAL FRAMING

The Movie-Maker is placed within a historical context in which the desire to open up amateur filmmaking to a wider public was prevalent. The chapter describes the author’s hands-on method of exploring the camera’s functionality and offers an interpretation of the films produced by the camera as being representative of technology’s effect on aesthetics. This chapter argues for an interdisciplinary approach to the study of moving-image technology and the images it produces rather than a discrete analytical approach, and suggests this can be a task of the film archive as research laboratory. The use of the Movie-Maker in this chapter should be considered as a loose form of ludic historiography, not as a strict attempt to recover a historical moment.

VITASCOPE MOVIE-MAKER: A LUDIC HISTORIOGRAPHY

MOVIES FOR MILLIONS

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It is not surprising that the 1920s are seen as foundational years in the popular conception of the history of amateur filmmaking. Despite pioneering efforts in the prior two decades, it was only the introduction of the film gauges of 9.5mm by Pathé in 1922 and 16mm by Kodak in 1923, as well as the development of reversal safety film, that unlocked a “cheap enough” formula for mass-market home-movie making. This is evidenced today in the large number of existing cameras, projectors, and full spools of home movies in these gauges, which are daily offered to film archives or placed in online auctions. In retrospect, it seems this could have been the beginning of “cinematography for all,” as prematurely advocated by Henry Hopwood in 1901.¹ Two popular film formats had come to market, and both film manufacturers—Kodak and Pathé—had introduced equipment fitted for these formats. Nevertheless, the ongoing development of cameras and projectors would be in the hands of many different companies, and the pressure to drive down the cost of private filmmaking within the family continued to be a major theme in this process.

The Vitascope Movie-Maker of 1931 is an excellent example of such cost-driven design. Eight years after Kodak brought its first 16mm camera to market at a price of \$125, the Vitascope camera could be bought for a mere \$10. Its companion projector was equally affordable at \$12.75. Kodak had also been introducing new designs, but in 1930 their cheapest camera was still \$75. The success of Kodak and its 16mm camera was confirmed by its cheap imitations. No other film format had ever had such a wide range of products available to service it. The notable historian and collector of amateur film equipment, Alan Kattelle, writes of three tiers of camera manufacturers, with the likes of Kodak and other “established firms” in the first tier, “less prestig-

ious companies” such as Keystone and Ansco in the second, and below that the “relatively unknown” firms such as Vitascope and the less common Filmagraph.²

The wealth required by an individual to fund the initial purchase of equipment and the ongoing costs of film stock, however, could have given one the impression that home-movie making as a practice was directed solely at the elite or well-to-do. To refute such assumptions, the Movie-Maker’s slogans of “Home movies for all” and “Movies for Millions” were thus chosen wisely.³ They specifically alluded to the Achilles heel of the amateur film movement, which was often guiltily acknowledged and apologized for in the written discourse: home-movie advocates struggled to unite the generally wholesome and liberating benefits of the practice with the high cost of participation.

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Of course, in order for everyone to participate, the manufacturing costs had to be reduced, and reducing costs had its effect on the quality of the equipment. Looking at the Movie-Maker, one can easily see that it was cheaply constructed. Basically, it was just a pressed steel biscuit tin with an intermittent mechanism and a tiny lens of fixed focus and aperture. Furthermore, the lens was not interchangeable as with more advanced cameras. A small waist-level viewfinder gave some idea of the field of view of the lens. The only control exercised by the filmmaker was to be found in the pointing and shooting and in the rate at which the hand crank was turned. The camera’s design and construction parameters, its lightness, and its portability all had a distinct effect on the images it produced, as will be discussed further in the following section.

The stripped-down specification and cheap materials almost put it in the toy category, although naturally the advertising was keen to suggest otherwise:

The MOVIE-MAKER Motion Picture Camera is an engineering triumph. Mechanically perfect, handsome in appearance, it is a camera that anyone will be proud to own. And it takes REAL MOVIES—clear and distinct. [...] Don’t—we beg of you—judge this product by its amazingly low price. The MOVIE-MAKER is built with the precision of a fine instrument, yet it is a marvel of simplicity.⁴

Although some parts were finely made, such as the “cam and box” intermittent movement, in general the level of engineering was as one would expect from a cheaply produced item. The drive sprocket was cast rather than machined, and the whole feel of the camera was delicate and fragile. As far as I have been able to discern, this camera was not marketed in Europe, which had no comparable budget 16mm camera, although there were basic 9.5mm machines that also tried to double as projectors, such as the British made Campro.⁵

As for the name Vitascope, it obviously alludes to the earliest days of moving pictures, but there does not appear to be any connection at all between the Vitascope Corporation, which brought the Movie-Maker to market in 1931, and Edison's Vitascope of 1896 which was itself a re-branding of Armat's Phantoscope.⁶ In any case, the Vitascope Corporation did not survive long enough to produce a follow-up to the Movie-Maker. That said, given the regularity of their appearance in online auctions in America, a good deal of them must have been made and presumably sold.⁷ Had 8mm not arrived in 1932, then perhaps this trend of simplified camera design and manufacture would have continued. However, once the new gauge was established, the Movie-Maker became a cheap camera using expensive film, representing a small initial investment but with high running costs.⁸ Speculations aside, further research into the Vitascope Corporation is required to know precisely why its short-lived period of production came to a close.

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PRAXIS OR RE-CRANKING

In 2006, some 75 years after its heyday, I sourced a Movie-Maker for a personal project. Although I had trained and worked as a film restorer and researcher, I have always maintained a parallel practice as a filmmaker and often found that insights from one practice can happily inform the other. My filmmaking activities variously encompass both amateur and experimental modes of production. Having for some time used either a Bolex H16 or a Canon Scoopic camera when shooting 16mm film, I was interested to experiment with a much older hand-cranked camera, especially as my idea for the project called for some footage that would appear to have been shot in the 1920s. It seemed logical that an old camera might produce a visual effect that would achieve that.

The shots that I made with the Movie-Maker surpassed expectations. The camera had spectacularly affected the look of scenes and imparted a sense of extreme antiquity. The film bore a number of curious effects—from jumping of the frame and vertical streaking of the image due to lost loops,⁹ to a slightly squarer aspect ratio than standard 16mm—a probable attempt by the designers to mask the inefficiencies of the lens, which would become more visible at the edges of the picture. Critically assessing the definition of the resulting images suggested that the image quality was more comparable to an 8mm frame than that of a frame produced by a highly specified 16mm camera, although the softness of the produced images—again most likely due to the quality of the lens—did have a certain appeal.

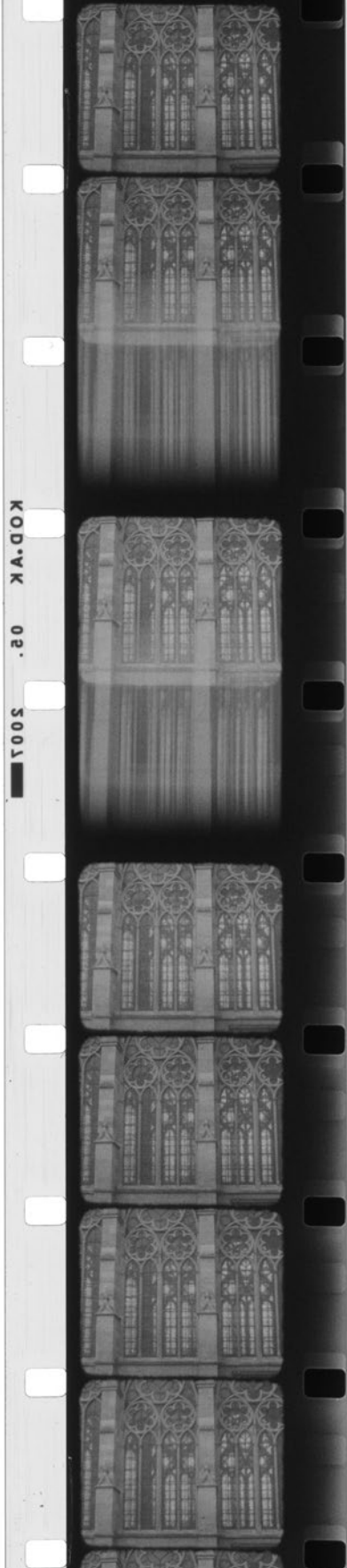


Fig. 11: ANCIENT OF DAYS, b/w 16mm (Guy Edmonds, work in progress) the effect of the lost loop and the squarer aspect ratio of this film shot with the Vitascope Movie-Maker is clearly visible on the filmstrip.

I continued to use the camera on other projects such as my film of a walk to Stonehenge (SUN STILL STAND, col. 16mm, 2009) and the ongoing project, ANCIENT OF DAYS, and further developed the practice of maintaining a range of camera-tools, each of which could contribute a different feeling to the photographed image. I traced the cause of the lost loops to the tension in the gate being too great. This turned out to be easily adjustable by pushing against the soft metal support of the pressure plate. Relieving the tension caused the film to pass through the gate easily, while increasing it caused the mechanism to partially jam, thereby producing the streaking and jumping effects. Having no control over the exposure apart from the cranking rate (one turn of the crank is estimated to be 8 frames) made precise exposures almost impossible and also imparted subtle variations to the exposure of subsequent frames, which could further animate the image.

There were surprisingly few 16mm cameras that were operated only by a hand crank. Though the first cameras from Kodak and Pathé fell into this category, these were soon followed by cameras with accessory motors and then by second-generation designs with integral motors.¹⁰ These motors had the effect of doubling the weight of the camera so that by comparison the Movie-Maker was very light. Its special ergonomics involved holding the rounded box not to the eye but at waist level where one could peer down into the tiny viewfinder and hopefully catch sight of a reversed image, which would give you a hint as to the composition of the filmed scene. This type of viewfinder would have been familiar to many users in the early 1930s from popular still photography rollfilm cameras.

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Fig. 12: Filming position of the Vitascope Movie-Maker.

The camera's ontology presents an interesting contradiction or, one could almost say, non sequitur. Although only becoming apparent in a practical filming situation, the specification of a method of film advance solely by hand crank within a highly portable package establishes some very rocky foundations for filming. Consequently, the resulting images are not just vertically jumpy and streaky thanks to the weak mechanism, they also move from side to side because of the action of cranking.

Kodak's hand-crank camera, with its weight and sharp corners, was, by contrast, a less attractive proposition for hand-holding. Kodak did not intend for it to be handheld and thus in the beginning it was sold only as a set including projector and screen, splicer, and the all-important tripod to ensure "that the beginner would be successful with his first efforts."¹¹ Manufacturers soon realized that carrying around a tripod as well as a camera was asking too much of the non-professional leisure-time filmmaker and that removing the need for hand-cranking by adding an internal spring motor produced images that were tolerably stable.

The use of a tripod, or lack thereof, was a constant debate between amateur film theory and practice. The ideal expounded by the advice literature often bore little resemblance to the reality experienced by filmmakers operating in "home mode." A history of home-movie making researched solely from the written discourse would be spectacularly incongruous with the evidence of the surviving home movies. As an object, the Movie-Maker embodies this dichotomy, although this is only revealed through active use. In order to communicate the results of this practical experience to an audience, a wider framework of interpretation is required.

INTERPRETATION

The missing part of the story in any film apparatus collection concerns the films that were made and exhibited with such cameras and projectors. Likewise, the films on the shelves in the film archive or shown on cinematheque screens are hardly ever employed to comment on the technologies that produced them. In public institutions that collect both apparatus and film material, there is often little connection made between these artifacts, which are usually conserved and curated by different departments. Even amongst passionately motivated private collectors, a strong divide is seen between collectors of film and collectors of film technology. This lack of connection not only is a missed opportunity to construct historically useful meaning but could also frustrate efforts to advocate for the proper resourcing of such collecting by failing to promote its benefits to institutions' core constituencies.

A hands-on approach similar to the one described above, in combination with interpretative analysis, should be seen as a way to breathe life into collections of obsolete apparatuses. In this way, in presentations given in film-historical and museological lecture contexts, I have repurposed my experimental Movie-Maker films to provide a powerful entry point into linking film technology history to the wider study of film aesthetics, particularly within the area of amateur filmmaking.¹² Additionally, if the images produced by the camera have a kind of instant “archive” look—I use the term as a documentary filmmaker would, not as an archivist—then perhaps we can start to see beyond film content as a signification of age and appreciate technology’s contribution.¹³ An analysis of the films produced by the camera can trace the effects of the design and manufacturing parameters, and once this link is established it can be imaginatively extrapolated to interpret both effects seen in other films and produced by other film technologies. Comparisons can be made with modern trends in budget analog filmmaking, such as the Lomokino,¹⁴ as well as popular digital technologies such as phonecams, in order to highlight the often neglected topic of technology’s influence on aesthetics.¹⁵ Indeed, anyone who has used a Lomokino or any other Lomo product will recognize the “philosophy” of flimsiness common to both designs—how frail mechanisms and cheap materials have the dual function of keeping costs down while producing sometimes attractive and surprising results.¹⁶

My application of the Movie-Maker as a working camera has therefore produced insights, such as the discovery of its non-standard aspect ratio, that would not have been recoverable through other methods of analysis. This hands-on approach also lends weight to film historical questions, such as the rivalry between proponents of different amateur film gauges, in this case showing how such “third tier” cameras were unable to compete with 8mm cameras, not just with regard to costs but also in terms of image quality, as this was only significantly better if used under ideal conditions and with a tripod. Although exceeding my own expectations regarding its abundant expressive functions, it is unlikely that the Movie-Maker’s images would have pleased the aesthetic expectations of its original customers and their audiences.

In a delightfully scathing review that appeared in the German magazine *Film Für Alle* in 1931,¹⁷ Dr. Konrad Wolter dubbed the Movie-Maker a *Zelluloseorgel* (celluloid organ), presumably referring to the need to constantly turn the hand-crank. Wolter detailed the generally poor construction of the camera and importantly, for my support of a “hands-on” approach, shot a test film before declaring himself offended not just with the dreadful quality of the images but also with the misrepresentative advertising: “And trusting such unwavering panegyrists of U.S. design and innovation, I have sacrificed in good faith 15m of good German 16mm film.”¹⁸

Although drawing different conclusions from the practical results of our hand-cranking, it is satisfying to see that Wolter's experience of the camera and its images were not unlike my own, despite the 75-year gap: thereby underlining my main point that technology and its products should be studied in parallel. The use of the Movie-Maker in this chapter should be considered a loose form of ludic historiography, not as a strict attempt to recover a historical moment. For example, when shooting with the Movie-Maker, I made use of modern film negative stocks with much greater exposure latitude than the reversal film of the 1930s, as a result of which it was much easier to obtain a usable image. The prints I made from the negatives were projected with a 1970s projector of precision construction and with a powerful light source, not the 1931 \$12.75 Movie-Maker projector, which would have undoubtedly added further obfuscating layers to any attempt to screen the film. Nevertheless, my use and interpretation of the Movie-Maker can be seen as a practical example of what has recently been theorized as Experimental Media Archaeology,¹⁹ and which already has many precedents in work conducted by members of the archival community, particularly in the field of Early Cinema.²⁰

Such projects are especially suited for public performance in archives or film museums, given their interpretive missions. In the case of the Movie-Maker, I would further suggest that the idea of practicing a hands-on approach with regards to such an obsolete apparatus could be extended into a more interactive workshop format, given the comparative availability of inexpensive second-hand examples. At the time of writing this chapter, 16mm film is still readily obtainable, yet becoming more expensive as services dwindle. In that respect, we find ourselves in a rather similar situation to that of the 1930s: the major costs of filming with a 16mm Movie-Maker camera are the costs of the film material. It is my intention that my experience with the Movie-Maker can be applied to the re-use and interpretation of other devices and the results incorporated into museum displays of technology. If the film archive is to fulfill its potential as a research laboratory, then that lab should not just be about handling objects but also about filmmaking. To put it another way, when talking about exhibiting film technology, exposing the apparatus also requires exposing some film.

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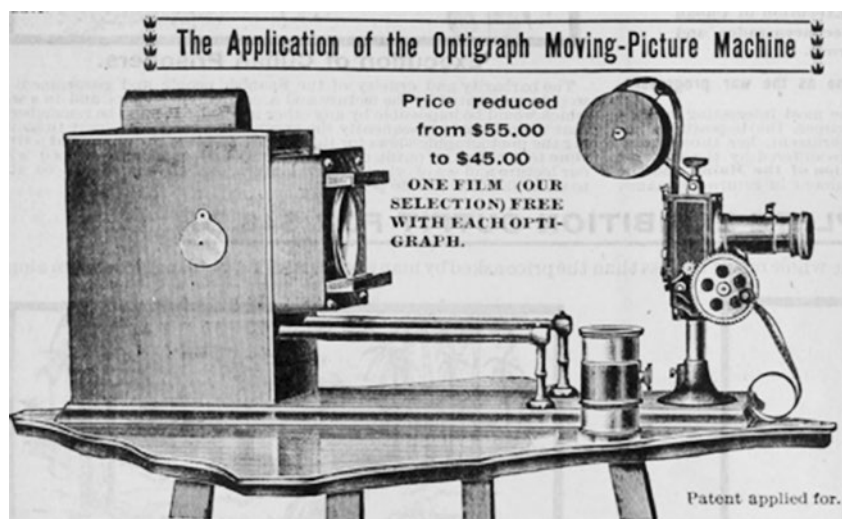


Fig. 13: Sears and Roebuck's 1898 Optigraph Moving-Picture Machine *in situ*, attached to a Magic Lantern.

Contextualizing the Apparatus: Film in the Turn-of-the-Century Sears, Roebuck & Co.'s *Consumers Guide*

William Uricchio

THE SEARS, ROEBUCK & CO. 1898 CONSUMERS GUIDE

Published by America and Canada's largest mail order company, the 10.8 x 8.5 inches (27.4 x 21.6 cm), 1120-page catalog was filled with illustrations, descriptions, and testimonials regarding every possible commodity, including motion-picture-related items. Several million copies per year found their way to farms and small towns across the continent. The *Consumers Guide* offered projectors and films for sale, itemizing the medium's technological requirements, its business models, and programming possibilities for the general public. It provides a highly detailed documentation of what the turn-of-the-century public could be expected to know about the film medium shortly after its birth.

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THEORETICAL FRAMING

A catalog can be an apparatus of sorts, as a causal agent and source of documentation and evidence. The 1898 Sears *Consumers Guide* helped to position the medium of film in the imagination of millions of readers, locating it as a technology, business opportunity, and source of information and entertainment. From a 21st-century perspective, it offers evidence regarding the intricate relationship of technology and text, of the material conditions facing those who would use the medium, and of the period's cross-media endeavors. The *Consumers Guide* is an apparatus for understanding the horizon of expectations that greeted the new medium of motion pictures.

CONTEXTUALIZING THE APPARATUS: FILM IN THE TURN-OF-THE-CENTURY SEARS, ROEBUCK & CO.'S *CONSUMERS GUIDE*

In 1898, “the cheapest supply house on earth” offered its readers 1,120 pages filled with virtually any product capable of bearing a price tag.¹ The Amazon.com of its day, Sears, Roebuck & Company’s semi-annual *Consumers Guide* provided an infinitely detailed compendium of American material culture, advertising its goods with descriptions, illustrations, commentaries, testimonials, and of course prices. From plows, bicycles, stoves, tools, barn doors, clothes, and by 1908 even automobiles and DIY house kits, to electric belts (curing debility brought on by “the dissipations and indiscretions of youth”) and Peruvian Wine of Coca (“if you wish to accomplish double the amount of work”) ... every conceivable commodity, no matter how large or small, found a place in the catalog.

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Perhaps not surprisingly then, the 1898 spring *Consumers Guide* No. 107 included an extensive media section called the “Department of Special Public Entertainment Outfits and Supplies.” Among its offerings was a motion picture projector called the Optigraph, and with it dozens of films including the ANNABELLE SERPENTINE DANCE, THE BLACK DIAMOND EXPRESS, THE CORBET (SIC) AND COURTNEY FIGHT, and KISS SCENE starring John Rice and May Irwin. Twenty-five dollars bought the projector alone and up to \$154 would buy the projector, a calcium light system, ten films, advertising posters, and 1,000 tickets.² According to a historian writing in the *Journal of the Society of Motion Picture and Television Engineers*, the Optigraph, during its heyday, probably outsold all other makes of projectors combined.³

Charles Musser mentions Sears in his discussion of the Chicago film scene, telling us that the company had close ties with William Selig; that its Optigraph film projectors were manufactured by the Chicago-based Enterprise Optical Company (patent still pending in 1898); and that it was sued by Edison for its film sales in April of 1900.⁴ Curiously, Alvah Roebuck was the

principal owner of the Enterprise Optical Company, having sold his interest in Sears, Roebuck & Company to Richard Warren Sears in 1895 for roughly \$20,000.

In this chapter, I would like to consider the appearance of film in these catalogs in a particular light.⁵ The Sears *Consumers Guides*—and with them, Montgomery Ward & Co.’s *Catalogue of Magic Lanterns, Stereopticons and Moving Picture Machines* (1898)—offer important insights into the cultural position of film as a medium, and perhaps a corrective to some of our assumptions regarding film’s earliest years.⁶ Were films the wonder of the 19th century, sending unsophisticated audiences scurrying for cover in an endlessly replayed “train effect”? Did the new medium’s performative and business models evolve slowly and organically, or did it enter the world pre-packaged? What was the nature of the last new medium of the 19th century’s “newness”? What did the many millions of people in small towns and farms who had not yet experienced film actually know about it?

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“Importance” in this case emerges from the fact that these catalogs enjoyed extensive reach throughout the American public, occupying a significant place in its imagination. By 1907, some nine million free⁷ catalogs were delivered each season to a population that was still predominantly rural.⁸ One business historian went so far as to claim that for much of rural America, “the Sears catalogue and the bible were the only two pieces of literature in the home.”⁹ It is, I think, fair to assert that no other representation of the nascent film medium reached as large nor as diverse a public.¹⁰ And certainly, outside of the trade press, no descriptions of the medium, its physical components, and economic models were more “thick,” to invoke Clifford Geertz’s usage.¹¹ Although film historians have attended carefully to urban experiences of film, these catalogs established a horizon of highly detailed expectations that penetrated every nook and cranny of the land. Their depictions of the moving picture—as technology, entertainment, business opportunity, and textual system—therefore have special weight at a moment when the medium was taking form in the popular imagination.

In these early years before the nickelodeon, the term “moving picture” referred to an ensemble; to the interworkings of technology and text; to an experiential gestalt that included mechanics, views, and showmanship. Indeed, throughout the medium’s first decades, discussions regarding what we would today call the text—the film—were often commingled with descriptions of its material underpinnings, from complaints about scratches on the celluloid and concerns about sprocket hole damage to comments on the stability of the projected image and illumination levels. Technology, particularly at this early moment in the medium’s history, was inseparable from text.

OF TECHNOLOGIES AND CATALOGS

Technologies, alas, are mute. Of course, technological artifacts reveal a great deal about their manufacturers' engineering and tooling capacities, about assumptions regarding power sources and work routines, and to some extent about intended uses. But challenges abound, particularly when considering historical technologies, as scholars such as David Nye and Carolyn Marvin have eloquently demonstrated.¹² While articulate in terms of industrial lineage, material capacities, and even aesthetic resonance, technologies are generally silent regarding their envisioned uses, their grammars, and their conceptual fit within a larger *Zeitgeist*. Only armed with such things as instructional manuals, discussions in the press, regulatory guidelines, or information teased out of what we would today call production studies can we understand how a particular historical technology was conceived and what it "meant." If we are to have a reasonable chance of comprehending the horizon of expectations within which a historical technology was inscribed—rather than simply imposing our contemporary assumptions on the malleable past or being content with the silent presence of the technological artifact—then we have to work for it.

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No news here, as students of the text know all too well. At least for those for whom a historical understanding of the text matters, context helps to delimit interpretive frames and sharpen critical insight. And so it is too with the technological artifact. As I have tried to show in some earlier publications, for example, understanding the project of early cinema benefits considerably from understanding expectations in the late 19th century regarding a moving image medium that we would today recognize as being closer to television than film.¹³ In order to understand the expectations inscribed within the technological apparatus—expectations sometimes evident in its name and its intended modes of deployment—one must look beyond the artifact itself. Context matters.

In the case of Sears, Roebuck & Co.'s catalogs—and in particular the 1898 *Consumers Guide* at the center of this chapter—the location of the film apparatus among technologies for the domestic production and consumption of the printed word, recorded sound, telegraphy and telephony, still photography, lantern slides, and more, positions the motion picture within a particular set of media expectations as well as notions of domesticity and profit. My contention is that by understanding its everyday accessibility, cultural status, and place within a burgeoning culture of participatory media production, the audio-visual context of the motion picture's technological apparatus can help us to refine our understanding of film's cultural position at the dawn of the 20th century. There are, of course, many ways to do this, and in the pages ahead, I will draw on the *Consumers Guide* to pin down the medium's cultural status in its formative years using the following three questions: 1) How was

film positioned within the media technologies that people already knew? 2) How was the moving picture explained and demystified to those who had never seen it before? And 3) How were film performances integrated into larger multi-media ensembles?

DEFINING THE TURN-OF-THE-CENTURY MEDIASCAPE

The motion picture entered the world already positioned within a set of media practices such as photography, the Zoetrope, and the magic lantern. But the Sears *Consumers Guide* of 1898 testifies to a far more fine-grained positioning of the medium within the commercial mediascape of the late 19th century. The Department of Special Public Entertainment Outfits and Supplies included within its holdings Graphophone Talking Machines (\$25 “It talks, it laughs, it plays, it sings!”); the Universal Graphophone (\$50 ... a recording and playback device complete with rewritable cylinders); “coin-in-the-slot” machines (“The Automatic Money-Maker” outfitted for pennies or nickels); an extensive supply of recorded songs and speeches; professional-grade magic lanterns and slides (with special lectures on the Klondike and Cuba); the Stereopticon; the Optigraph motion picture projector and films; light and gas-making systems; and posters, tickets, and various bits of ancillary technology.

Sears’s sample posters suggest that sound, slide, lecture, and moving picture technologies together constituted “high class entertainment” and could best be deployed together for “a most wonderful combination of fun and amusement.” The “mammoth” 18x24 inch sample poster for “Alaska and the Klondike Gold Fields” promised a full-blown program including a lecture illustrated with 50 magnificent views; musical selections, vocals, and speeches on the Graphophone; and moving picture images of “the large cities, railway trains going at full speed, bicycle parades, comic scenes, fancy dances, etc.” The idea of the entertainment program was not only alive and well, it was pre-formatted and mass-marketed to the public by Sears.

More interesting is the larger cluster of media forms within which the Department of Special Public Entertainment Outfits and Supplies itself was situated. Among them were clocks, optical goods such as eye-glasses, microscopes, binoculars and telescopes, drawing equipment, cameras and photographic supplies, telegraphs and telephones, musical instruments, music boxes and perforated disks, organ rolls, sheet music, books (over 57 pages of titles!), stationary and writing materials, albums, games, artist materials, and typewriters. In all, nearly 180 consecutive pages chart the contours of what might broadly be considered the period’s media constellation. From a contemporary perspective, this cluster is striking in several regards, besides the

prescient inclusion of games. First, the items for sale enable both the “reading” and “writing”—the production and consumption—of word, sound, and image. Second, they demonstrate conceptual contiguity with *analog* production and playback systems and *binary* or *digital* systems such as the telegraph, organ rolls, and perforated music disks. All are simply ways of storing and playing back information. Third, given the tropes of the day, even clocks, telephones, and telescopes have a media resonance, potentially positioning film within broader notions of futuristic media evident in such terms as the *telectroscope* and *telephonoscope*.¹⁴ Finally, a point to which we shall return, they demonstrate that multi-media experiences involving recorded sound, still and moving images, and performance enjoyed a taken-for-grantedness in the period and are not just creations of the late 20th century.

DEMISTIFYING THE MEDIA

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In 1898, the Sears catalog’s Department of Special Public Entertainment Outfits and Supplies opened with the following claim:

It has been demonstrated to us that the **public entertainment business** is a very profitable field and **an opportunity for making big money** with a very small amount invested, but it seems that there has been but a very limited amount of energy expended in this direction owing to the lack of knowledge as to what is required [...]. **(W)e have made a special effort** and are glad to be able to inform our patrons that we have made everything connected with the work so simple that anyone can understand it.¹⁵

Although the pages that follow would tend to invoke home entertainment as a goal for the various media, greater weight was put on commercial use. More to the point, the Sears 1898 *Consumers Guide* educated its mass reading public in the economic logic of the new media, suggesting income expectations, benchmarks, and sharing fees. A headline declared boldly: “\$20.00 to \$25.00 or more can be made every evening with the Optigraph Moving-Picture Machine, Only \$25.00.” The “coin-in-the-slot” Graphophone was described as a “great money maker for stores, saloons, railroad depots, offices and any other public places,” even considering the 25 percent payment that is customarily paid to the location’s proprietor. And *real* money was apparently to be found in illustrated lectures, where the *Consumers Guide* rhetorically asked “Do you want to make big money with little effort?” replying “Make \$5,000 to \$10,000 within a year” with “no previous experience necessary” and “no ability as a public speaker required.” While conceding that John Stoddard’s \$1,500 per evening

lectures (“on far less interesting topics”) might be exceptional, the reader is reminded of the drawing power of the Cuban question and the Klondike, and is offered examples of Sears customers regularly pulling in \$12 to \$75 every evening. Considering that the complete Sears Klondike Illustrated Lecture Set cost \$48.75, the logic seems irresistible. The closing page of the Department of Special Public Entertainment Outfits and Supplies’ section included over thirty signed testimonials detailing the mechanics of easy money and thanking Sears for their quality products. These claims are in addition to the featured testimony of experts such as George Kleine and Professor Henry Leo (also invoked in the Montgomery Ward catalog of 1898!).¹⁶

In addition to explaining the economic operations of the motion picture and its sister media, the *Consumers Guide* explicated the mechanics of film exhibition practice. Lamp holders, rheostats, chemicals such as chlorate of potash and black oxide of magnesium, and carbons in addition to the various models, prices, and characteristics of projectors all offered a material sense of the medium. The *Consumers Guide* repeatedly reminds readers that these technologies are simple, that everything has been made very plain, and that if any advice is needed, Sears’s experts stand ready to help. Particularly for those readers who had yet to experience moving pictures, the detailed descriptions of optics, mechanics, illumination sources, problems like flickering and noise that Sears’s products so assiduously avoided, and a detailed description of what a projected film looked like must have demystified the process to a considerable extent. The availability of abundant information in the farthest recesses of the US and Canada regarding the supply and pricing of films, techniques for constructing a successful show, the economics of exhibition, and the experiences of other customers combine to challenge the naïveté so often associated with “country bumpkins” when confronted with the moving picture and celebrated in *UNCLE JOSH AT THE MOVIE SHOW* (Edison, 1902).

CROSS MEDIA CULTURE

The motion picture, as already suggested, entered the world as part of a larger multi-media ensemble. Its texts, too, often acquired their meanings in tandem with other media, and in the process played a role in constructing a coherent culture. Viewed from an early 21st-century perspective where the logics of transmedia and convergence seem obvious, the *Consumers Guide* reminds us that these practices have a deep and largely unexplored history.¹⁷ Consider the case of the sinking of the USS Maine on February 15, 1898 in Havana Harbor and the furor to initiate a war with Spain later that year. The prominence of this event and its inscription within a nationalist narrative are evident throughout

the 1898 *Consumers Guide*, where the drumbeat of war takes the form of a multi-media wrap. Lecture Outfit Nr. 21476 (“The Destruction of the Maine and the Cuban War”) offers 50 slides and a lecture peppered with descriptors such as the “cruelty” of the Spanish, the “suffering” of the Cubans, their “struggle for liberty,” and the “punishment” inflicted by the US. The *Consumers Guide*’s music department offered “Patriotic songs in sheet form. The songs of ’98. Four stirring new patriotic songs with words appropriate for the existing conditions” in addition to standard patriotic songs. The book department did its bit as well, with Murat Halstead’s *The Story of Cuba: Her Struggles for Liberty*; the anonymously authored *The American Navy. Cuba and Hawaii*, described as “Pictures of United States Battleships; Pictures of Struggling, Bleeding Cuba”; and *Poems of American Patriotism From 1776 to 1898* (“the greater part of this book is naturally at this time devoted to the verse that is helping us to ‘make the history’ of the War with Spain”). Inside the 1898 *Consumers Guide*’s front cover, a red-white-and-blue Uncle Sam carries a Sears, Roebuck & Co. embellished mail pouch and stands in front of crossed US and Cuban flags. With the sun rising over the Cuban flag and illuminating Lady Liberty, we learn that “In Cuba’s dawn of liberty, Uncle Sam is not too busy to deliver US 15,000 letters per day” to Sears... a message eerily resonant with the post-9/11 campaign to demonstrate one’s patriotism by shopping.

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These examples and more like them amplify the point made earlier with Sears’s promotional poster for *Alaska and the Klondike Gold Fields* regarding multi-media entertainments. Sears’s media buyers certainly thought in terms of multiple distribution channels. But at a moment when Pathé, Edison, and the Lumière brothers all produced motion pictures, photographic, and sound technologies and texts, the notion of synchronizing content *across* media platforms—of thinking in terms of cross- and even transmedia strategies—seemed natural. That a recently declared war would generate a multi-media surround of patriotic expressions is less surprising as a tactic than for the speed with which it occurred, underscoring the sinking of the Maine as more of an excuse and less as a cause. In any event, the *Consumers Guide* offers invaluable evidence into the coordination of messages across media platforms and, as noted, serves as a reminder that our study of individual media forms in isolation from others can blind us to these important cultural dynamics.

CONCLUSION

The turn-of-the-century saw a number of changes for Sears, including the end of its patent medicine business and the temporary termination of its film sales due to Edison’s copyright challenge (1900). By 1902 (*Consumers Guide* No.

112¹⁸), the Optigraph (sans films) was located in a new Moving Picture Department and literally inscribed as the leading medium in a media ensemble: “Of all forms of public entertainment, there is one that leads. All others follow.” This speaks to the medium’s contradictory cultural position by the early 20th century, having triumphed over other amusements while being hamstrung by legal battles as Edison sought to monopolize the sector. Penny-operated peanut vending machines were available, and more pages were consumed with various projector lighting systems, suggesting the continued development of the medium despite Edison’s interference. And buyers of projectors were assured that they would “have no fear of harassing litigation” due to recent court decisions. But when it came to the films themselves, the *Consumers Guide* heeded Edison’s threats, failing to mention even one title. Rather than frighten potential buyers, the 1902 *Consumers Guide* claimed that shortage of space precluded listing its 300 films, and asked its readers to apply for a free listing of its titles as well as monthly updates.

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The sheer pervasiveness of the Sears, Roebuck & Co.’s catalogs in the American scene during these early years of the moving picture makes them fundamental to our understanding of the medium, and I have but scratched their surface here. Unlike books and writing materials; records, sheet music, and musical instruments; photography and telegraphy... all of which brought along well-established uses, the moving picture like other “new media” had to create its value, its meaning, for the larger public. Books, for example, offered instruction, self-improvement, cultural betterment, entertainment, wisdom, and sacred knowledge; but what about the Optigraph and its films? As noted, business potentials predominated the American scene, followed by domestic entertainment; but terms like “instruction,” “education,” and “culture” that would appear frequently in the subsequent nickelodeon period, when the industry sought to dampen public fears of the medium, were notable for their absence.¹⁹ The *Consumers Guides’* elaborate exegesis of moving picture technologies, techniques, business models, and easy profits as well as their inscription of the industry’s larger patent and copyright battles rendered them media primers for a mass and widely distributed public, many of whom had not yet seen a projected film. And just as importantly, the catalogs both demystified the medium and insisted upon the linkage of technology with text. The *Consumers Guide* reminded its readers that, even during those moments when the text was temporarily absent, technology remained deeply relevant to the textual experience as its enabling condition.



Fig. 14: A prismatic Hilux 264 anamorphic projection lens by Projection Optics Co. (from the University of Groningen's film archive).

Widescreen Anamorphic Lens

Steven Willemsen

THE PRISMATIC HILUX 264 LENS

This prismatic Hilux 264 lens, found in the University of Groningen Film Archive, is a fixed anamorphic lens utilized for widescreen projection. Projection Optics Co. started producing this model around 1955, selling them to cinemas at a price of \$395 a pair. Anamorphic lenses enabled the shooting and exhibition of widescreen film through 35mm film and standard projectors. By using an anamorphic lens in shooting, a 2.66:1 or 2.35:1 widescreen image can be “squeezed” onto a standard strip of 35mm film; consequently, using a similar anamorphic lens in projection, like the Hilux 264, the image can be “unsqueezed” onto a specialized widescreen.

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THEORETICAL FRAMING

This chapter will examine the transformative impact of anamorphic widescreen technology on film aesthetics in two parts: first, I will discuss how the affordances of early anamorphic widescreen technology (primarily CinemaScope) played a key role in standardizing the widescreen format in the Hollywood film industry during the 1950s. Following this brief historical contextualization, I argue that besides its affordances, the initial limitations of this particular technology have impacted film aesthetics. In the possession of later widescreen technologies, filmmakers responded to the limitations of early anamorphic formats by introducing or *re*-introducing stylistic and aesthetic techniques. My case in point will be Sergio Leone’s use of the close-up in his famous Italian westerns (shot in Techniscope, a 1960s format that bypassed earlier anamorphic technology) which, I argue, employed this dialectic to introduce a new aesthetic to the widescreen, drawing new attention to an old technique—an effect I will call “re-monstration.”

WIDESCREEN ANAMORPHIC LENS

THE (DELAYED) INTRODUCTION OF ANAMORPHIC WIDESCREEN

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Cinema history shows a rich and interesting quest to step beyond the Academy ratio (first 1.33:1, later 1.375:1), which had formed the dominant standard for screen formats from early narrative cinema onward.¹ Although the term “widescreen” seems to refer to a clear and distinct category (i.e., those screens that are wider than the Academy aspect ratio), it covers a multitude of film formats that are not only historically separated but also employ entirely different technological devices. Widescreen technologies include the use of multiple projectors, larger film gauges, different masking processes, and anamorphic lenses. Even though the popularity of widescreen cannot be attributed to any of these singular technologies or inventions, the role of anamorphic technology has arguably been decisive in the popularization of widescreen during the 1950s.

The actual technology used in the anamorphic widescreen process, however, predates this era. During the late 1920s, inventors and companies had already begun to seek ways to expand the traditional film screen’s size and dimensions. Magnascope, for instance, used a wide angle lens that could enlarge the image up to four times during moments of spectacle, while Abel Gance’s Polyvision consisted of three 35mm cameras to shoot images that could be projected onto three panoramically lined up screens using three projectors. Inspired by Gance’s 1927 film *NAPOLEON*, Henri Chrétien invented the Hypergonar, the first anamorphic lens by which panoramic widescreen pictures could be projected using only one projector.²

Yet the success of early widescreen processes had only been modest at best, and for almost a quarter of a century, the industry showed little interest in Chrétien’s invention. Formats like Magnascope and Polyvision primarily

aimed to offer a novelty, a brief effect of spectacle and shock, meant only for limited use in a film. They formed momentary attractions based on a fascination with screen size and scale that is arguably still found in present-day screen media. It is in part due to its appearance as a mere novelty that early widescreen formats did not catch on widely. On top of that, the technological adaptations involved in these widescreen processes (multiple projectors, special lenses, larger or multiple screens) made exhibition expensive or impossible in most movie theaters.³ Moreover, any demand for novelty was soon satisfied by sound, and along with the conversion to sound film exhibition, the Great Depression put economic constraints on cinemas.⁴ Larger gauge film formats that attempted to naturalize the widescreen format (like Fox's *Grandeur*, based on 70mm projection, and Warner's 65mm *Vitascope*) also failed to make widescreen the norm, and the idea largely disappeared from film companies' agendas.

112 | Another widescreen technology indirectly propelled the industry's rediscovery of anamorphic widescreen to the forefront: the Cinerama road show of 1952. Cinerama offered a spectacular set-up of three projectors (comparable to Gance's *Polyvision*), a large and deeply curved screen, color film, and a new stereophonic sound system. Its screenings were essentially technological demonstrations in which spectacular documentaries and travelogues were shown to demonstrate the immersive qualities of the apparatus. The technology reportedly amazed audiences, and Cinerama quickly became a popular attraction in the limited amount of venues that accommodated it.⁵ Even though the movie industry deemed Cinerama impractical and unfit for narrative cinema, its success showed the economically troubled studios that widescreens could offer a new strategy to regain audiences' interest in cinemas. Different companies immediately began developing alternative widescreen processes that were supposed to be more practical and less expensive, and which offered the possibility of patenting.

It was for this purpose that Twentieth Century-Fox bought Henri Chrétien's anamorphic lens design. In 1953, the company launched its widescreen package under the name *CinemaScope*. As John Belton, author of the most extensive studies on widescreen film history, notes: "Although Twentieth Century-Fox did not invent *CinemaScope*, the Research Department of that studio effectively innovated it by linking disparate developments in lens, screen, and sound technologies."⁶ Modifying Chrétien's lens, Fox and its partners (Bausch & Lomb) developed an improved anamorphic lens that could "squeeze" a 2.66:1 widescreen image onto a standard-sized 35mm film.⁷ The 35mm strip could then be "unsqueezed" onto a wide screen by using an anamorphic projection lens. To add four tracks of magnetic stereo sound to the 35mm film strip, the widescreen ratio was cut down: first to 2.55:1, and then to 2.35:1

(the format that is still used today). This way, stereo sound—another new technological novelty—was included in the package, together with a highly reflective and curved screen.

CinemaScope thus meant that cinemas could now project an image of proportions close to that of Cinerama while using only a standard 35mm projector equipped with a special anamorphic lens. Likewise, the studios could continue shooting with modified 35mm cameras. The relatively low conversion costs along with the practicality of the anamorphic technology, and the success of CinemaScope's early film features such as *THE ROBE* (Henry Koster, 1953) triggered what has been called the "widescreen revolution." Other studios adopted the new format (or continued to work on similar alternatives), and cinemas were soon persuaded to convert. In January 1955's *International Projectionist* journal, James Morris looked back on the previous year in an article titled "1954: Decisive Year for Film Industry," noting that while 3-D "fell flat on its face at the box-office early in 1954 [...] it may now be stated without fear of contradiction that the big, wide screen is here to stay."⁸ The article contained a picture of a variable Hilux anamorphic lens, praising the device as "a surprisingly simple device for unsqueezing anamorphic prints."⁹ In its June 1955 edition, *International Projectionist* announced the fixed Hilux 264 as a solution for "the smaller theaters," promising that it will "fit into any *standard 2* and *25/32* projector mount, and will clear all accessories on the face of some projectors."¹⁰

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THE AESTHETIC REVERBERATIONS OF TECHNOLOGICAL CONSTRAINTS

While the anamorphic technology indeed helped spread widescreen projection into even the "smaller theaters," its limits also became apparent. It is these limitations of the technology I want to focus on for the remainder of this chapter, as I argue that these, too, contributed to the formation of new aesthetic strategies. Early anamorphic lenses imposed some constraints on early widescreen filmmaking—problems which were overcome by new lens designs and the widescreen formats of the 1960s. Responding to its previous limitations, directors of the 1960s (such as Sergio Leone) avidly appropriated new possibilities in widescreen filmmaking. By doing so, older techniques such as the close-up—which I will focus on shortly—could find their way onto the widescreen, resulting in what I will call a "re-monstration" of aesthetic techniques in the context of novel technological means.¹¹

The shift to anamorphic widescreen required that films were shot using new, special anamorphic lenses (instead of the standard spherical lenses directors were used to). Early versions of these lenses were notoriously difficult to handle. As David Bordwell discusses in the article "CinemaScope: The

Modern Miracle You See Without Glasses,” a significant problem with early anamorphic lenses was their very limited depth of field.¹² This provided extra difficulties in the staging of (already uncomfortably wide) widescreen films: as staging in depth could not be kept in focus, widescreen staging tended to become planar, with characters lined up horizontally (after all, the new proportions of the wider screen had to be filled). The filmed object could also not be placed any closer than seven feet from the camera, which made close-ups almost impossible to achieve. Long shots became preferable to create sharper images, and less cutting and little camera movement were recommended to cover up CinemaScope’s shortcomings. Directors thus had to deal with the sudden emphasis on the *mise-en-scène* of the single shot, which was pervaded by a new sense of setting and space.¹³

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The close-up formed a particularly problematic technique. When shooting in CinemaScope, directors were initially recommended to minimize close-ups for several reasons. Besides the limitations of the seven feet camera distance, the anamorphic magnification process caused large, centrally placed objects to look round and bloated. This created an odd distorting effect known as “CinemaScope mumps,” which, unsurprisingly, actors especially did not find very flattering. A change from cylindrical to prismatic anamorphic lenses (like the Hilux 264 above) made the lenses somewhat easier to handle, but it took until the late 1950s and early 1960s for improved Panavision lenses to clear away these distortions. These new lenses contributed to the end of CinemaScope’s brief period of success.¹⁴

New widescreen formats in the 1960s such as Panavision made it possible for filmmakers to use more types of lenses, various focal lengths, and various alternative shot types on the widescreen. The result of this new flexibility has been described by David Bordwell as a “curious historical throwback.” He mentions Sergio Leone to note that “[d]irectors of the 1960s began cutting faster and dwelling on big faces—both technical options characteristic of late silent films.”¹⁵ But rather than a mere reversion to old strategies, I would argue that with filmmakers like Leone, there is also a so-called “re-monstration” of these cinematic techniques at play in their films. Thus, the close-up could gain a new and revived aesthetic impact on the widescreen, in part because of its initially problematic place in the anamorphic widescreen process. As Annie van den Oever and I have argued, it is often overlooked that these stylistic features (a heavy reliance on the close-up, fast cutting, emphasized music and sound) were also prominent features of the aesthetics of television.¹⁶ Although widescreen is usually considered as cinema’s antithetical reaction to the emergence of television, it does not seem tenable to assume that the two remained in entirely separate realms in terms of stylistic development. Television had been popularized throughout the 1950s and had undoubtedly influenced a

new generation of directors. Moreover, prior to the stylistic appropriation of the close-up (through its domesticated role in shot reverse shots, its narrative and emotional functions, its prominence in television broadcasting, and so on), the technique had been considered a vehicle for shock, estrangement, or cinematic specificity (one can think here of famous examples like Jean Epstein's essay "Magnification" or Sergei Eisenstein's work on the close-up).¹⁷ Once possible on the widescreen for the first time, a part of the close-up's original spectacle and strangeness was revived, hence allowing the re-monstration of the technique itself—not least because, as David Cook points out, "[e]ven undistorted, on a sixty-foot screen close-ups frequently appeared ludicrous, menacing, or both."¹⁸

SERGIO LEONE AND THE WIDESCREEN CLOSE-UP

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Sergio Leone's films show that he was one of the first directors to be aware of this new aesthetic possibility. His famous spaghetti westerns such as *A FISTFUL OF DOLLARS* (1964), *FOR A FEW DOLLARS MORE* (1965), and *THE GOOD, THE BAD & THE UGLY* (1966) were shot in the Techniscope widescreen format, which had been developed in Italy during the early 1960s. Although Techniscope's image quality was generally lower than that of good anamorphic widescreen photography, the new format provided a few notable advantages. The Techniscope process works by reducing the size of the negative used for a shot from the conventional four perforation size (referring to the perforated holes on the film stock) to a frame of only two perforations in height—meaning that a negative of only half a standard frame in height is blown up to a standard-sized widescreen expanse in projection.¹⁹ With some small modifications, this negative pull-down technology could be employed on a standard 35mm camera. Moreover, only half the amount of film stock was needed in this process. Techniscope thus allowed for the cheap production of relatively high-quality widescreen films, and as a result, smaller film industries (such as the one in Italy) and directors with limited budgets (like Leone) could now decide to shoot films in widescreen.

Moreover, by eliminating the prismatic and cylindrical anamorphic squeezing from the process, Techniscope allowed directors to use spherical lenses with short focal lengths and a greater depth of field. Thus, with Techniscope, Sergio Leone could maintain a 2.35:1 widescreen ratio while shooting with spherical lenses that did not create any distorting effect when filming in close up. Leone's biographer, Christopher Frayling, notes that the director of photography Leone worked with, Massimo Dallamano, was "the first person to understand that the new widescreen format for Techni-

scope—the ‘2P’ or two perforations format—would mean that you’d need a new kind of close-up, a sort of very close-up, which would frame the face from the chin to the bottom part of the forehead, in order not to lose too many small details of the features.”²⁰ This invention resulted in Leone’s famous (and often copied) trademark shot: the extreme facial close-up in widescreen.

Leone’s use of this novel technique was excessive by all cinematic standards; for instance, in the opening fourteen minutes of *ONCE UPON A TIME IN THE WEST*, no less than 54 out of a total of 112 shots can be considered close-ups or extreme close-ups.²¹ Moreover, these close-ups seem to carry a different aesthetic effect than in most narrative cinema. As Frayling aptly notes, Leone’s new, foregrounded close-up “belonged more to the world of Sergei Eisenstein, with his ideas of ‘faces as types,’ than to Hollywood.”²² They have been described as “grotesque,” “uncomfortable,” or as resembling “gargoyles.”²³

New technological possibilities can serve to aesthetically re-monstrate old techniques in a novel fashion.²⁴ The new format of the widescreen restituted a sense of the close-up’s strange and dramatic powers (as it had been described by early film critics and theorists like Epstein, Eisenstein, or Balázs).²⁵ The dimensions of the screen confronted audiences again with the spectacle, attraction, aesthetic, or indeed “menacing” qualities of sheer size and scale. Leone further reinforced this effect by making maximal use of the other new possibilities that Techniscope offered: contrasting the gigantic close-ups, Leone filmed wide landscape shots in deep focus, often staging his cowboys in depth, with musically paced editing. Early anamorphic technology posed limits on deep-focused spaces, extensive camera movement, and close-ups; in response to these limitations, Leone’s films explore the newly found extremes of widescreen cinematography, resulting in one of the most influential film styles of the era.

PERSPECTIVES

The case of the close-up and widescreen technology is a token of the constant film-historical dialectics between aesthetics and technology, options and constraints, and habitualization and estrangement. Today, large widescreen close-ups like Leone’s have become entirely normal, but systems like IMAX similarly seek to bring viewers new thrills and filmmakers new options. In terms of the history of the widescreen, the above discussion of the consecutive cases of CinemaScope and Techniscope forms just a *pars pro toto* of the larger picture. Rather than a linear evolution, the complex history of widescreens consists of various alterations of different (and often parallel) technologies competing in a chaotic marketplace.²⁶ The vast majority of these have not

even received mention here—think of anamorphic processes such as Superscope, Panascope, and Warnerscope; or processes like Todd-AO, VistaVision, Technirama, Super Panavision, and many more. Each of these widescreen technologies offered some advantages and disadvantages in relation to their predecessors, and each provided filmmakers new options and limitations that influenced spectatorship and the course of film aesthetics. It is these aspects of widescreen history that remain largely open for film scholars to address.



Fig. 15: Prototype of the 1923 Ciné-Kodak camera. Leather-covered wood body; hand-cranked 16mm camera; 50 feet film load (3 minutes of film at 16 fps).

CHAPTER 8

The Introduction of Ciné-Kodak: “The Long-Awaited Answer”

Susan Aasman

THE CINÉ-KODAK SYSTEM

In June 1923, Eastman Kodak Company introduced the Ciné-Kodak system intended for amateur use. The system included a Ciné-Kodak camera, Kodascope projector, splicer, tripod, screen, and 16mm film footage. The camera—a die-cast aluminum box—used a hand-crank technique. The crank needed to be turned twice a second, taking pictures at a standard rate of sixteen frames a second. Each camera held a footage indicator which showed how much feet had been used. The camera made use of a Kodak lens at $f/3.5$, which would enable filming under bad lighting conditions. The viewfinder was situated just above the lens. The Kodascope projector could employ 400 feet (122 m) of reels (sixteen minutes of screen time) once the film was threaded. The projector was motor-driven, and a Mazda lamp supplied the light. On the whole, it was easy to use, as the projector operated automatically: once the film was threaded, there was no need to go near the machine until the film was finished. The 16mm celluloid safety film format had a perforation on both sides of the film strip, placed at the frame lines. The price for the whole set was 335 US dollars.

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THEORETICAL FRAMING

This chapter charts the introduction of the early Ciné-Kodak 16mm equipment and format as a domestic technology and thereby seeks to re-evaluate Kodak's early contribution to the history of amateur media. One of the more interesting issues in media historical research is how and why some new media technologies are domesticated and become a part of everyday material practices. By focusing on the materiality of media, the author follows media historian Lisa Gitelman in order to allow “complexities to emerge.” To do so, we have to see media as “unique and complicated historical subjects”—as “specific sites that produce and represent historically and culturally specific experiences of meaning.”

THE INTRODUCTION OF CINÉ-KODAK: “THE LONG-AWAITED ANSWER”

CINÉ-KODAK SIMPLICITY

At the time of its introduction in 1923, the quick commercial success of the 16mm Ciné-Kodak system was quite overwhelming. That year, the *British Journal of Photography* stated that “the day of the moving picture as a competitor of hand camera photography has been a long time coming, and it looks as though its advent will not much longer be delayed.”¹ According to its own sales data, Kodak had already sold 35,000 cameras and 49 million feet (15 million meters) of film footage in 1926.² In its advertisements, the company referred to the concept of “simplicity” as its main contribution to the introduction of the amateur cinematography as a new hobby:

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It was the simplicity of the Kodak that created amateur photography, fostered it, maintained it. The new Ciné-Kodak is grounded on the “know how” gained by the Kodak Company in forty years of successfully serving the amateur picture maker. It fits the amateur requirements in motion picture as fully as did its predecessor in making “stills.” It puts Kodak simplicity into the movies.³

In other words: “All you do is turn the crank and the motion picture is yours,” as *Kodakery: A Magazine for Amateur Photographers* told its readers in the introduction that described the Ciné-Kodak.⁴ The magazine continued to praise it as “the long-awaited answer to the demand for an outfit that would render motion pictures relatively as easy and inexpensive to enjoy as Kodak prints now are.”⁵ Many film historians later acknowledged this successful introduction. Alan D. Kattelle, for instance, characterized the arrival of 16mm as a watershed moment, and Leo Enticknap pointed out that before the introduction of Ciné-Kodak, “non-professional film-making before 1923 was sporadic and limited.”⁶ Also Patricia Zimmermann, in her influential work on the social

history of amateur film, saw the introduction of Ciné-Kodak as an important moment because it “gained prominence almost overnight as the most efficient, exact, and inexpensive amateur home movie method [...]”⁷

In order to understand Kodak’s quick success, it is interesting and helpful to revisit this moment of introduction. How should one appreciate Kodak’s attempt to market its new system as “the long-awaited answer”? Although the reviews in amateur magazines suggested differently, when Ciné-Kodak came on the market it was neither the first nor the only format with accompanying equipment designed for amateur use. In the preceding decades, inventors had developed many kinds of film gauges that could reduce the cost of film. It was estimated that more than 40 camera and projector systems designed for domestic use circulated between 1898 and 1923 (of which almost 30 used nitrate film).⁸ Around 1923, the most significant competition that Kodak had to face was Pathé’s 28mm system and the newly introduced Pathé Baby 9.5mm projector (to which a camera was added soon after Kodak introduced 16mm).

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If we want to analyze the introduction of the early Ciné-Kodak system, it can help to realize that media are “unique and complicated historical subjects.”⁹ They are, as Lisa Gitelman explained in her book *Always Already New*, “specific sites that produce and represent historically and culturally specific experiences of meaning.”¹⁰ Gitelman defines media as “socially realized structures of communication, where structures include both technological forms and their associated protocols [...]”¹¹ A protocol can be understood as “a vast clutter of normative rules and default conditions,” which could be cultural, social, economic, and material.¹² Therefore, in short, protocols instruct our behavior, but once a medium becomes familiar these protocols become invisible and we tend to forget the social processes behind the medium. Tracing these sets of rules and conditions, especially when they are still debated at the moment of introduction, can help to reconstruct the social experience that surround the then new media. In our case that would mean that we could analyze to what question or need the Ciné-Kodak system was the long-awaited answer for, just by unraveling it as a technology and practice that represents a complex set of interrelated socio-historical conditions. By deconstructing the Ciné-Kodak system, I propose to not only see it as one cluster of technologies or one set of rules and conditions but rather as three sets of protocols: as home cinema, as amateur cinematography, and as a new format.

Before elaborating further, it is important to mention that, initially, customers who wanted to buy this camera or projector had no choice but to buy the whole package at once. This typical Kodak business model—externalizing the process of developing film by selling customers film that Kodak could develop for them—was already used for the photography market and was now applied to moving images as well.¹³ Its model was very different from that

of competitors like Bell & Howell, who offered the possibility of purchasing the camera and projector separately. Only later did Kodak abandon its initial strategy, allowing customers the choice to buy just a film camera or a projector. In terms of protocol, this moment of purchase of the Ciné-Kodak system becomes significant. Buying a Ciné-Kodak in the early 1920s meant the immediate possibility of making and screening films. Bought as a package, however, there was no clear indication which apparatus was the prime reason of purchase. From the mid-1920s on, the deliberate purchase of either a 16mm camera or a projector clearly indicated for which practice the apparatus was bought: to make home movies (as a filmmaking practice) or to project moving images (as a screening practice). In other words, as Gitelman rightly instructs us, “specificity is key.”¹⁴

Fig. 16:
Advertisement for
the Ciné-Kodak
projector.

DECEMBER 1927



Now—for Christmas Enjoy the Magic of the Silver Screen

*Home Movies—A New Answer to that Age-Old Question—
“What Shall I Give for Christmas?”*

A NEW gift idea! Something different for Christmas. The gift unusual, for one who already “has everything.” A family gift that carries with it a thousand thrills—that affords more genuine pleasure, more enjoyment to a greater number of people, than anything else you might give.

No wonder thousands are choosing a Ciné-Kodak for Christmas. For think of the fun—the sport—the personal satisfaction in home movie-making, the new dramatic art!

The Miracle of Movies You Make Yourself
Think of the movies you’ve always wanted to make—the children, friends, neighbors, outdoor trips. It’s so easy now anyone can do it with the assurance of professional results.

Into the marvelous Ciné-Kodak camera weighing only 5 pounds, Eastman Scientists have concentrated every necessity of movie production.

What a triumph in simplicity! No need to focus. No tripod. No grinding crank. Everything is there that you need . . . the non-essentials have been done away with. Just sight the camera, either from waist height or eye level. Then press the button. A shutter whirr, inside, and the film slides swiftly behind the

always—ready lens. Instantly every action within the scene before you, every changing sequence of light and shadow, is registered on your film.

After pressing the button, your work is done. No troublesome developing. No both-er or fuss. We finish your films at no extra cost, and return them ready to run.

Then with equal ease your films are shown. Switch on your Kodascope projector and instantly the screen becomes alive with action. Crisp and clear you see the pictures you’ve made. Drama . . . adventure . . . romance . . . in the lives of people you know and children you love parade before your eyes in a swift pattern of light and shadow. “Your own movies!” They are as easy as that to make.

... simplicity itself
Ciné-Kodak embodies Eastman’s forty years’ experience in devising easy picture-making methods for the amateur. Unhindered by the precedents and



Single lens camera from waist or eye level



Single camera from waist or eye level

prejudices of professional cinema camera design, the men who made “still” photography so easy have now made home movie-making equally simple for you.

To supplement your program, Kodak Cinegraphs—100-foot reels of comedy, drama, travel, may be purchased at \$7.50 per reel, and full length feature pictures of famous stars may be rented from any Kodascope Library.

Official United States War Department movies of the World War, filmed in action by the Signal Corps, are also ready for you to run. War Cinegraphs—100 feet per reel—\$15 each. Special authentic war thriller, “America Goes Over”—100 feet—\$15.

Now only \$140

Today a complete outfit, Ciné-Kodak, Kodascope Projector and Screen, may be had for \$140. Give a Ciné-Kodak for Christmas. See it at your nearest Kodak dealer’s.

EASTMAN KODAK CO., Dept. H-24, Rochester, N. Y.
Enclosed are FREE and without obligation, the booklet
Now—
Address: _____

✦ Ciné-Kodak ✦
Simplest of All Home Movie Cameras

THE CINÉ-KODAK SYSTEM AS HOME CINEMA

The Kodascope, released in 1923, was certainly not the first projector developed for domestic use. According to film historian Ben Singer, there were more than two dozen projectors designed specifically for the home, launched by several manufacturers between 1896 and 1923.¹⁵ The first attempts to develop projectors for home screening were made as early as 1896. One of the better known examples of an inexpensive amateur projector for the home was designed by the British inventor Birt Acres. His “Birtac,” launched in 1896, was a camera that could also be used as a projector. To reduce costs, Acres spliced the 35mm film gauge in half, thereby creating a 17.5mm film gauge. This sub-35mm gauge was the format that many other manufacturers, such as Heinrich Ernemann’s Heimkino,¹⁶ chose to use as well. Although some of them had sophisticated names such as “The Homograph moving picture machine,” they were often poorly designed and did not function adequately.¹⁷

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Nevertheless, around 1912 the search for attractive alternatives to existing home cinema projectors led to some interesting new models such as the Pathé Kok (Pathescope in the US) and Edison’s Home Kinetoscope.¹⁸ What was new about these innovations was that both Pathé and Edison used cellulose acetate safety film. The formerly used nitrate film was considered too great a risk because of its highly flammable nature, so that some manufacturers were only willing to join the market with safety film. Once the screening of movies in the home was considered safe, the idea of the family being able to view films at home opened up the possibility of real home entertainment. It is important to realize that this notion of safety not only applied to the technical conditions but also worked at a moral level. Most scholars agree that in those early years the emphasis was put on the concept of home cinema as an alternative to the low-brow moving picture halls, especially since going to the cinema was still questionable in terms of reputation and respectability. According to Moya Luckett, the development of the home movie projector was a “move designed to show that spectatorship could be tamed.”¹⁹ Other scholars point to the fact that this concept of home cinema also paralleled a more general desire for new forms of home recreation. In an attempt to naturalize the presence of movies in the home, some companies marketed home cinema as just another form of a “visual phonograph.”²⁰ As an example of home cinema entertainment, the Pathé Kok projector in particular was successful, thanks to its extensive film library made available by mail.²¹

Home cinema was certainly an interesting market for Kodak to tap into. In the first two decades of the 20th century, Kodak had heavily invested in marketing amateur photography as a kind of domestic leisure, thereby strengthening the idea of family. Although the Ciné-Kodak camera and projectors were

advertised and sold side by side, Haiddee Wasson argued that many users predominantly considered the Ciné-Kodak system to be a home cinema technology that provided automatic, efficient, and essential family screenings of professional and semi-professional entertainment.²² According to Wasson, it showed promise as “a playback system for cultural content made outside of the home and as a new object to be incorporated into domestic space.”²³ Wasson certainly has a point here. To accommodate this desire for home entertainment, Kodak started working on Kodascope libraries, which offered films for sale or rent, shortly after the introduction of the Ciné-Kodak system. Wasson’s focus on the small film screen and its function in the domestic space nevertheless neglects the fact that Kodak not only sold a home projector but also a camera, thereby bringing the prospect of amateur cinematography to the fore.

THE CINÉ-KODAK SYSTEM AS AMATEUR CINEMATOGRAPHY

As indicated above, buying a Kodascope projector in the early 1920s meant buying a camera as well. In terms of protocol, it could be argued that Kodak deliberately structured consumers into active users by forcing them to buy the entire outfit in one go. There was no choice but to buy the whole set, which implicitly emphasized that the basic concept of the Ciné-Kodak system was to make your own movies. Not even Pathé had marketed the 28mm equipment in such a manner. Even with their newest innovation, the 9.5mm Pathé Baby, a serious competitor to the Ciné-Kodak camera in Europe, Pathé did not persuade the consumer to buy the whole package. Thus, with this new Kodak System, the option of making your own movie became an important prospect.

The first Kodak amateur film camera was a solid piece of work. In 1923, at a meeting of scientists at the Royal Society of Arts in Great Britain, Dr. C.E. Kenneth Mees, director of the Eastman Research Laboratories, presented the Ciné-Kodak camera quite modestly, stating that “it was just a standard camera.”²⁴ According to Mees, the Ciné-Kodak resembled a standard motion picture camera but in “amateur size.” Although the reduction in size might have suggested better portability and thus greater mobility, this was not the case. Since the camera used a crank, it was impossible to use the camera without additional equipment. Like most 35mm film cameras, this amateur motion picture camera could only be used with a tripod, which Kodak provided.²⁵

Although the camera was not introduced as a new revolutionary device, Mees did have high hopes for the growth of a new hobby. He compared the camera to amateur photography and its contribution to the development of photography as an art form.²⁶ Many photography journals at the time followed

this discourse of amateur-film-as-a-hobby in the hope that it could help turn cinematography into a respectable art. Kodak's move into cinematography was quickly taken up by *Photo-Era*, one of the main journals on amateur photography. Its July editorial stated that it was now time for amateurs to start considering cinematography as a serious option.²⁷

Still, Kodak needed to address the issue of how to target the active user of the Kodak camera. In its marketing campaign, Kodak liked to stress the concept of simplicity. In fact, the Ciné-Kodak camera was supposed to be the "picnic and vacation camera for the man in the street," as a contemporary critic described the machine.²⁸ So how and where can we locate Kodak's role in "inventing amateur film"?²⁹ As Dwight Swanson showed in his reconstruction of the early history of 16mm film, Kodak was rather ambiguous in its definition of filmmaking, and seemed to move between two modes: filmmaking as family leisure and/or filmmaking as serious leisure.³⁰ Family leisure came first. When the company had finished developing the first prototype 16mm camera, they were looking for a way to experiment with the camera. One thing Kodak employees did was to ask Marion Norris Gleason, a young woman with children who had no experience with filmmaking, to make a home movie. The result, *THE PICNIC PARTY*, became the first 16mm test movie made with a Ciné-Kodak camera. The film showed the birthday of Marion's son, and according to one of the engineers, the screening of the film convinced "Mr. Eastman and the other executives that home movies were practical."³¹ Kodak used this and other test films to demonstrate the possibilities of the Ciné-Kodak camera to potential buyers like those occasional non-serious amateur snapshooters. But Kodak also appreciated amateur filmmaking as a hobby. Kodak actively helped shape an amateur film culture by supporting the local Rochester amateur film club, sponsoring the tourings of amateur club films in the United States, advertising in amateur journals, and by becoming active in amateur "How-to" handbooks geared to the more ambitious user.

Despite these supportive strategies for the amateur, whether at home or in the club, the incentive at work here was mainly economical: Kodak was first and foremost a manufacturer of raw stock. They actively advocated the do-it-yourself mode in the hope and expectation that they could regain a dominant position in the film market. The Ciné-Kodak camera was a relatively minor element in the whole chain of the Kodak business model, which according to Risto Sarvas and David Frohlich was based on the concept of: "purchase film, consume it by using an easy-to-use camera, give the film to a commercial service, wait, receive prints, purchase film and so on."³² As a consequence, the film format was the fundamental element in this system.

THE CINÉ-KODAK SYSTEM AS A NEW FORMAT

Both the projector and the camera were only developed after Kodak was satisfied with the new film format. Already in 1909, Kodak had been working on reducing size while also developing a new chemical base for non-flammable film. The company collaborated with Edison for a while, but dissatisfaction with the quality of the image and lack of potential consumers made Kodak decide to stop production in 1913. In the meantime, the research laboratory continued to search for alternatives and finally came up with the reversal process.³³ This reversal process meant that a positive print was to be obtained by direct treatment of the original print. There was no extra negative print necessary, which reduced the costs considerably. One question remained: how small should the film be? The splicing of 35mm film to produce 17.5mm film stock successfully reduced the size of film; however, not everyone favored the 17.5mm film gauge. Eastman, for instance, feared that competitors would just split existing 35mm nitrate film in order to use it in Kodak machines. The solution finally came in 1923 in the form of the 16mm film gauge, a format that combined great safety with low costs and high quality. Even before announcing its new system to the public, Kodak invited other manufacturers to adopt this format, hoping thus to rapidly standardize 16mm as the default amateur film format. Bell & Howell and Victor quickly joined forces, so that shortly after the introduction in 1923 it was possible to buy 16mm cameras from other manufacturers as well.

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It would be interesting to analyze how the arrival of the 16mm film format, including the reversal process, changed and restructured the field of amateur cinematography. According to Jonathan Sterne, the concept of format is essential in understanding media: "Format denotes a whole range of decisions that affect the look, feel, experience, and workings of a medium. It also names a set of rules according to which a technology can operate."³⁴ In other words, format matters. It structures the way the camera should be built, how projecting works, but most of all it influences the rules or protocols by which the user could operate. Still, the complexities surrounding consumer technologies are numerous. From the start, amateur film came in "all shapes, sizes and genres" as different kinds of social uses emerged along the way.³⁵

First of all, the cost of using 16mm reversal film was about one-fifth of the costs of using 35mm negative-positive film. This of course appealed to both the amateur who liked to invest in filmmaking as a serious hobby and the occasional user interested in recording his/her family life every now and then. According to Singer, "the sudden drastic reduction of the cost of making home movies emancipated a popular market that had previously been beleaguered by the prohibit cost of raw film."³⁶ Still, it was not very cheap, so some users

bought 9.5mm instead since that was the better bargain, and when Kodak introduced 8mm a decade later, it lost many of its 16mm devotees but gained a tremendous amount of new—albeit 8mm—Kodak film users.

The ease and simplicity with which one could send the film to the Kodak plant for processing also helped to increase the popularity of the format. Initially there was only one plant—in Rochester, where Kodak's headquarters were based—but when 16mm gained more popularity, processing laboratories were set up all around the major cities of the United States and some years later in Europe as well. Here we can detect a certain resistance against 16mm by groups of users that saw themselves as ambitious amateurs. The idea of not processing the material oneself did not agree with the ideal of real or serious "amateurism," especially for those who liked tinkering with the technical and chemical aspects of their beloved hobby.³⁷ It fed a certain sense of loss of control over the entire production of filmmaking. In Europe, this reaction was sometimes part of a broader resistance against "Americanization," of which Kodak with its "you-push-the-button" simplicity ideal became one of the prime symbols.³⁸

What these more serious amateurs also disliked was the lack of a copy. Initially Kodak believed that users were less interested in the negative, since they were satisfied with a single print that was immediately quite good and free of film grain. Later, Kodak would revise its policy on this point and advertise heavily in amateur journals to let their users know that making copies was also a possibility. Another effect of this choice for a 16mm non-theatrical (or professional) format was that it was designed as a format not suited for regular distribution or exhibition outlets, as Zimmermann has pointed out.³⁹ Kodak, Zimmermann notes, first and foremost envisioned a domestication of the new technology and thus had no immediate desire to open up serious possibilities for artistic, experimental, or serious non-professional use outside the home or amateur film club. Kodak's lack of following the standard 35mm normal film gauge thus met with some resistance, and some writers in journals for amateur photography would even advise their readers to stick to 35mm film, even if that meant the use of nitrate film.

REVISITING KODAK'S SIMPLICITY

By following the traces of three sets of rules and protocols of the Ciné-Kodak system as if each on its own had a specific historical context, I have attempted to unravel the underlying principles of what Kodak introduced at that particular moment in time. Through this lens, one has been able to understand how ideological, social, economical, cultural, and material conditions affected the

reception of the Kodak system. But now it is time to consider those three different sets of protocols as being part of one cluster of technologies—as a complete cluster of technologies for film amateurs in the broadest sense. What was new in 1923 was the fact that Kodak was able to design a structure of technologies and services that favored the idea of an integrated practice that was both easy and affordable. This message was also advertised to the public: “You made the movie yourself. In your own home, on your own screen, you can show movies that you made yourself with typical Kodak ease.”⁴⁰ It was about “you,” “making,” and “screening” which opened up forms of amateurship that previously were not envisioned as something that was within reach for everyone. It addressed both the serious amateur ready to invest in a serious hobby as well as the casual snaphooter who was only interested in recording memorable moments of family life. By emphasizing the “home,” Kodak was able to frame the possible appeal of their technology at a time when a new ideology of domesticity gained prominence for middle-class families. This ideology implied that the home was a place where the family celebrated its togetherness mostly in moments of harmless leisure. More importantly, the home was a place to be enriched with all kinds of new consumer technologies making family life more safe, simple, and enjoyable. A hobby like home-movie making fit this ideology perfectly. More than anything else, home-movie making became a kind of sacred duty to celebrate and record the bliss of family life.⁴¹ The Ciné-Kodak system played an important but brief role in the configuration of this domestic ideal. According to Haidee Wasson, “the utopian life of 16mm” as a domestic technology did not last very long.⁴² When Kodak introduced 8mm, most amateurs preferred this cheaper and newer format. 16mm remained an important format, but more outside the home than inside. It became the preferred format for semi-professionals and serious amateur hobbyists, and for screening in schools, churches, and other (semi-) public spaces. But by that time, the original Ciné-Kodak camera and projector had already been taken out of production.



Fig. 17: The Comodo Orbit, designed by Leonard Retel Helmrich.

The Orbit and Single Shot Cinema

Annelies van Noortwijk

THE ORBIT

The Orbit is a handheld camera stabilization system with a patented, mechanically driven, twin-grip arrangement that requires no batteries, motors, or balancing weights. It measures 17 x 5 x 17 inches (43.0 x 13.0 x 43.0 cm) and weighs 4.4 lbs (2.0 kg). It is designed to support HD/SLR/mirrorless cameras and small to medium-sized camcorders weighing up to 11 lbs (5 kg). It comes with three pairs of extension arms that are 0.98 inches (25 mm), 1.97 inches (50 mm) and 2.95 inches (75 mm) in size, which can be used individually or added together to further increase their length. This lightweight device causes less operator fatigue than comparable support systems. It enables the camera operator to move freely around the subject and can easily be passed from one operator to another. The Orbit was invented by independent filmmaker Leonard Retel Helmrich and subsequently licensed to Bowens International Ltd. It was released on February 17, 2014.

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THEORETICAL FRAMING

The technicalities of the Orbit were designed to fulfill the specific demands of Leonard Retel Helmrich's "single shot cinema" style. This chapter will investigate to what extent this new device has allowed Retel Helmrich to develop novel cinematographic effects and methods of representation and how to frame these new techniques with regard to André Bazin's perspective on "realism," from which Retel Helmrich's aesthetics draw their inspiration. In addition, it will be argued that single shot cinema is emblematic for the paradigm shift in contemporary culture from post-modernism to what I define as "metamodernism."

THE ORBIT AND SINGLE SHOT CINEMA

Documentary filmmaker Leonard Retel Helmrich publicly champions a method of filmmaking which he defines as “single shot cinema,” a style inspired by André Bazin’s notion of “cinematic tact” and his preference for deep focus and the long take. For this purpose, Retel Helmrich developed the Orbit, a camera stabilization system with a twin-grip arrangement. Retel Helmrich originally named his invention the Steady Wing,¹ a term that turned out to be confusing because it seems to suggest that the device is a type of steady cam. While the device shares the steady cam’s fundamental function of stabilizing the camera during long tracking shots, its lightweight and two-handed design allows for camera movements that previously could only be achieved with handheld cameras. Whereas other camera supports, such as the steady cam, are designed to be body worn by the operator or meant for relatively short-term, single-handed operation, the Orbit is specifically developed for two-handed operation. Moreover, unlike other camera stabilization systems, the Orbit enables multiple camera operators to easily pass the rig among each other, allowing for extended multi-point takes.²

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Constant movement and alteration of the angle and position of the camera became distinctive features of Leonard Retel Helmrich’s cinematography, who began his filmmaking career in the late 1980s. He further developed these features over a period of two decades and eventually achieved international admiration and recognition through his acclaimed documentary trilogy about post-Suharto Indonesia: *STAND VAN DE ZON* (*EYE OF THE DAY*, 2001), *STAND VAN DE MAAN* (*POSITION OF THE MOON*, 2004) and *STAND VAN DE STERREN* (*POSITION AMONG THE STARS*, 2011), for which he received more than twenty prestigious awards.³ The viewing experience of Step Vaessen, anchorwoman of Al Jazeera English and Indonesia correspondent for various other media, is



indicative of how Retel Helmrich's *pièce de resistance* has been received. As she observes in a Dutch television special:

These are by far the best and most beautiful films I know on Indonesia, the largest democratic Muslim country in the world. You can feel the country; you taste the ambience, the films make you feel as if you were present in the streets of the Kampong [the slums of Jakarta]. I even thought I could smell it. It's amazing, Retel Helmrich seems to achieve the family getting so used to his presence that they forget he is there while he keeps on filming them. And this in all kinds of situations. They even have the most terrible quarrels between them in his presence. You can really see everything and anything.⁴

In the following paragraphs I will elaborate on how the technological innovations of the Orbit were designed to fulfill the specific demands of Retel Helmrich's single shot cinema style. Focusing in particular on his Indonesian triptych, I will address how the Orbit has allowed Retel Helmrich to develop new cinematographic effects and methods of representation. I will also discuss how we can conceptually frame these new techniques with regard to André Bazin's perspective on "realism," from which Retel Helmrich's aesthet-

Left, fig. 18: The Orbit with a smaller Canon lens.

Right, fig. 19: Leonard Retel Helmrich holding the Orbit.



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ics draw their inspiration. In addition, I will reflect upon the emotional impact of this unique shooting style on its viewers. Finally, single shot cinema will be considered in the broader context of the evolution of culture as described by Barend van Heusden, and it will be argued that the work is emblematic of the paradigm shift in contemporary culture from postmodernism to what I define as “metamodernism.”

SINGLE SHOT CINEMA IN THE SHAMSUDDIN FAMILY TRIPTYCH

Retel Helmrich, a filmmaker of Dutch-Japanese heritage, began his filmmaking career in 1995 by documenting the decline of the Suharto regime. After he was arrested at a rally and forced to spend a few years outside of Indonesia as *persona non grata*, he returned to Indonesia and dedicated himself to a new project. Over the course of twelve years, he followed three generations of a lower-class family from the slums of Jakarta. The mountain of material he gathered was shaped into a documentary triptych that offers a remarkable insight into the life of the average Indonesian family, and through them, offers insight into the forces that shape Indonesia as a whole.

Central to Retel Helmrich’s unique style is Bazin’s notion of “cinemat-

ic tact,” as articulated in his chapter “An Aesthetics of Reality: Neorealism.”⁵ Discussing the Italian School of the Liberation as exemplary of a contemporary realistic film style, Bazin assigned a pivotal role to the camera’s movement, comparing the ideal camera technique with that of a draftsman who, by sketching around his subject, brings it into relief, adding a personal and dynamic touch to his representation of reality. The camera thus always holds a human quality as it features a projection of hand and eye and is in tune with the awareness of the operator.⁶ In line with this argumentation, Bazin reserved a privileged place for the long take and deep focus. He argued that the cinematic image should be “evaluated not according to what it adds to reality but what it reveals of it.”⁷ Inspired by these central ideas of Bazin’s film philosophy, Retel Helmrigh developed a unique style of filmmaking he called “single shot cinema.” Single shot cinema is strikingly described by Comodo as “an intimate *cinéma vérité* film technique that enables a scene to be shot in a single take using just one camera moving fluidly around the subject—recording all the camera angles that express the film-maker’s personal perception of that moment.”⁸

Single shot cinema thus always reflects the hand of the auteur, who literally *orbits* around his subject (and hence the name of Retel Helmrigh’s camera stabilization rig), using the camera like a draftsman uses his pencil, trying to reach—in this act of long-take-deep-focus filming/sketching—the heart of reality as the auteur perceives it. At the same time, the aesthetics of realism also created a cinematic realism; and the cinematic eye, as Vertov already realized, is a mechanical (and nowadays digital) eye. We will investigate how the use of this method of representation affects the documentary image’s emotional impact on its viewer by taking a closer look at Retel Helmrigh’s Indonesian triptych. How does the use of drifting long takes affect the narrative flow of the three documentaries and result in what is described—in the quoted definition of single shot cinema—as an “intimate *cinéma vérité*” style? What exactly is meant by the latter? And finally, how does this method of representation affect the way in which we experience the content that we are shown?

The first part of Retel Helmrigh’s triptych, *EYE OF THE DAY*, opens with a short text caption that sets the scene: “INDONESIA, A population of 200 million, political chaos and a depressed economy. Everyone tries to find a way to survive. Among them, Rumijah and her sons Bakti and Dwi.”⁹ The agenda of *EYE OF THE DAY* is clear; we are to witness a documentary about a country and its social, economic, religious, and political problems by following one struggling family trying to survive within this country. The opening scene clearly establishes the omnipresence of Retel Helmrigh’s camera. We see the sun rising over the hills outside Jakarta while we hear the call for morning prayers resound throughout the valley. The camera moves slowly through the fields,

and we see birds and insects moving through the plantation. Suddenly there is a terrible racket that echoes through the valley, scaring off the birds. The camera tracks over the field to find an old man who is shouting and pulling tin-canned strings that have been spanned between trees across the field. The rattling of the cans are the source of the noise. From a view of the web of lines that span across the field, we cut to a visually matching shot of the power lines that stretch across the skyline of Jakarta. The camera pans down to show a young man on a rooftop, waving his arms theatrically and shouting just like the old man in the field. He, too, is chasing off the birds, but for a different reason: these are racing pigeons and he is training them. Later in the film, we find out that this is Bakti, Rumijah's thirty-year-old son, and that the field where the old man is chasing off the birds is located just outside the village where Rumijah was born and now longs to return to.

The world of the city and that of the countryside are shown to be connected both literally and metaphorically, and our cinematic eye can move without difficulty from one world to the other. From the bustle and arguing of people gathering at a hand-out of food rations, we move seamlessly to the heated debate in the living room. We are suddenly only inches away from the sweaty faces of Ramijah, Bakti, and Dwi Shamsuddin as they argue about Bakti's inability to keep a job. The argument ends when Dwi offers Bakti to take him along on his job as a bus driver, and before we get a chance to let this sink in we are already with them on the bus. The camera follows Bakti's hectic pace as he collects money from the passengers, tries to hit on any good-looking female passenger, and checks if it is safe to pass a railway by inspecting it on foot. This is the pace of Jakarta, where you have to accept the rhythm of life or lose out. We are placed in the middle of all this movement as the camera drifts across the streets of Jakarta in long tracking movements. The documentary goes on to explore how the change in the political climate affects Indonesia as a whole and the Shamsuddin family in particular, and, in doing so, touches upon a wide range of opposing and matching themes and ideas, from religion to politics, city to countryside, and from the intimacy of family relations to the importance of mass-community gatherings. Rather than focusing on one element of Indonesia, *EYE OF THE DAY* attempts to show how every single element is part of the same flow of movement.

Although a full analysis of the cinematographic style of *EYE OF THE DAY* goes beyond the scope of this paper, let us briefly note some of its most eye-catching aspects. The prototype of the Orbit—or Steady Wing as Retel Helmrich called the device in its development phase—allows for long, uninterrupted takes and very smooth tracking-camera movements. These are combined with a great depth of focus and a style of cutting that visually matches the movements of each shot to the movement of the previous shot. The combi-

nation of these techniques gives the cinematic eye of *EYE OF THE DAY* a degree of lucidity and mobility that creates an illusion of omnipresence. This enables the documentary to make visual connections between a wide array of themes and points of interest. True to the “direct cinema” documentary style developed in the 1960s, Retel Helmrich avoids the use of voice-overs and interviews, preferring to show, rather than tell, how all things are connected. The cameraman, who remains invisible to the viewer, follows his subjects in their own environment, moving silently around and between them, filming them constantly from many different angles. Although it is difficult to ascertain to what extent some of these scenes are staged, it appears as if Retel Helmrich is able to document even very private family situations without any member of the family breaking the fourth wall. With the term “single shot cinema” for which the Orbit was developed, Retel Helmrich seems to refer to this specific method of shooting in which the rhythm and pacing of a film is established through camera movements rather than through manipulations at the editing table. As the filmmaker explains in his workshops and lectures, the operator needs to get physically involved in a certain situation and may not stop filming until s/he feels the action is over. By fluently following the movements of the subject, the operator becomes deeply immersed in the subject.¹⁰ The same is true for the viewer, whose deep immersion in the subject is facilitated by the specific way in which the camera follows and *orbits* around the subject, following her/him as in a dance. This results in images in which the background moves while the subject, placed in the foreground, remains comparatively stable. No matter how quickly a subject moves through the world, s/he remains the stable anchor of our experience; we are wherever s/he is.

Underlying the development of the Orbit and single shot cinema appears to be an archival desire or a romantic attempt to capture and retain traces of reality with as little interference of the restrictions of technology as possible. Indeed, these documentaries make for exciting historical documents that give us an apparently honest insight into the changing social and political situation of Indonesia from a very close and personal perspective. In this sense, single shot cinema strives to achieve what Bazin described as a “mummification” of reality.¹¹ One may argue, however, that by striving to capture “reality,” Retel Helmrich is guilty of applying, once again, the illusion of “objective” documentary, an attitude which Michael Renov criticized as early as 1995 as belonging to the naïve “rationalist’s dream of universal reason [...] and the belief in disinterested knowledge.”¹² Among documentary theorists, it is now generally accepted that it is impossible to represent reality without imposing on it a subjective point of view.¹³ Especially since Bazin’s central claim that the photographic image has a more direct indexical relation to reality than the plastic arts and therefore holds a higher claim to objectivity, can no longer be

taken for granted in the age of digital image manipulation. When seen from a postmodern skeptical perspective, single shot cinema could therefore be understood as a naïve throwback to the idealist dreams of direct cinema.¹⁴

Yet such criticism may be undeserved. Rather than associating single shot cinema with a modernist search for objectivity, we may also position it as belonging to a movement beyond postmodernism, a shift towards what I would call *metamodernism*.¹⁵ Moving beyond the relativism of postmodernism, contemporary culture returns its focus to reality under the full awareness that reality is always experienced subjectively. As Barend van Heusden argues, modernity was marked by a constant search for cruxes of truth, of which postmodernity was the final phase (or final “crisis”).¹⁶ Contemporary culture has moved beyond the search for truth and displays a renewed interest in the multiple dimensions of the representation of reality. Postmodernism has made our culture aware of the fact that “truth” is to a certain degree relative, in the sense that it is always value-based and embedded in a discourse of power. Recent technological changes, and especially the rise of digital technology, have further contributed to the spread of a world view in which reality is a multidimensional construct, of which truth is but one dimension. Consequently, contemporary culture has shifted its focus from an essentialist search for truth to the construction of interesting, provocative, and/or beautiful representations of “reality” from the perspective of the individual, who is now no longer considered an abstract “subject” but rather an embodied and emotional being.¹⁷

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Retel Helmrich’s public statements support my reading of him as a meta-modern filmmaker. He emphasizes how single shot cinema allows a filmmaker to capture his *personal* perspective of a moment, in an attempt to share the subject’s experience orbiting around her or him, indicating that his focus lies on the subjective experience of reality. It seems, therefore, that Retel Helmrich has accepted the impossibility of objectivity without abandoning the project of engaging with reality that has always been at the heart of the documentary format. Single shot cinema thus combines modern notions of capturing and archiving reality with a postmodern awareness of the subjectivity of experience. As a result, while the inside perspectives on Indonesia that these films offer us may be deeply personal, emotional, and subjective, they are at the same time undeniably real.



Fig. 20: Officially released video compact discs of Indonesian films from the 1970s and 1980s: RANJANG PENGANTIN (Teguh Karya, 1974), RORO MENDUT (Ami Prijono, 1982), and TAK SEINDAH KASIH MAMA (Hans Manan, 1986). Photo by Ari Purnama.

The Video Compact Disc and the Digital Preservation of Indonesian Cinema

Ari Purnama

THE VIDEO COMPACT DISC

Introduced by multinational electronic corporations Sony and Philips in 1993, the video compact disc (VCD) is an optical disc, 4.8 inches in diameter, designed to store and display audiovisual content. The VCD is technically an advanced modification of the CD-ROM, equipped with an MPEG video codec that can store up to 800 MB of digital data or 72 minutes of recording time. Thus, a feature length movie is typically compressed into two or three discs. Because of this compression, the VCD's image resolution (352 x 240 pixels) is comparatively lower than its predecessor, the laser disc (590 x 480 pixels), and its successor, the DVD (720 x 480 pixels). Therefore, when it comes to visual quality, the VCD does not rank high in the hierarchy of digital media.

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THEORETICAL FRAMING

The VCD was the single most dominant digital video technology in many parts of Asia between the late 1990s and early 2000s, and was a popular format for pirating foreign movies. VCD film piracy made international films that were not shown locally accessible to Southeast Asian audiences. It also facilitated the reintroduction of older national film titles to local movie viewers. This chapter traces the history of VCD technology from its inception to its dominant market position in Asia. By employing a qualitative research method, it investigates why and how the authorized VCD, as a marginalized media technology, still holds a valuable place in Indonesian cinematic culture today.

THE VIDEO COMPACT DISC AND THE DIGITAL PRESERVATION OF INDONESIAN CINEMA

INTRODUCTION

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Having been raised by a Hindi cinema-loving mother in Bandung, Indonesia, the only kind of cinema I was exposed to besides Bollywood fare was Hollywood cinema. Our own national cinema was at its lowest point in the 1990s; thus, Hollywood firms supplied the major cinemas in the city with its blockbusters. It was not until the first year of my undergraduate education in the 2000s that I was introduced to films by Roberto Benigni, Akira Kurosawa, Orson Welles, and Jim Jarmusch. Thanks to an underground library run by former students at Padjajaran University in Bandung, I gleefully discovered an oasis of lesser known yet exciting film titles coming from as far away as Yugoslavia or Iran. These newfound cinematic gems came in two, sometimes three, optical discs that were very similar to audio CDs. The difference was that these discs displayed moving images. These were video compact discs, better known as VCDs. Looking back, VCDs were my portal to international cinema.

Video compact disc technology¹ was the single most dominant video entertainment format in Asia from the mid-1990s to the early 2000s. In that period, the VCD system was the standard platform for viewers to access movies outside those screened by major theatrical chains. In India, Indonesia, Malaysia, and the Philippines, VCDs were also popular for karaoke music video, pornography, and reportage of political scandals.² Darrell William Davis and Emilie Yueh-yu Yeh dub this optical medium as a “Third World guerilla technology,” as it offers “options outside, and in defiance of, the major entertainment circuits.”³ Indeed, the pervasive usage of VCDs in East Asia, South Asia, and Southeast Asia established the device as a pan-Asian techno-cultural phenomenon little known in the West.⁴

An important element of this phenomenon in Southeast Asia was the

close relation between VCD technology and digital media piracy. Local film buffs could find pirated versions in VCD format of mainstream and non-mainstream titles from Europe, US, UK, Japan, Hong Kong, and other film producing countries. When the German film and media scholar Tilman Baumgärtel conducted a study on piracy culture in the region, he was astounded by the sheer amount of unexpected titles he could find at local markets in places like Patpong (Bangkok) and Quiapo (Manila). As he puts it: “Who brought to Thailand the films of Harun Farocki, another German avant-garde filmmaker whose films are not out on DVD in Germany, to sell them at the night market in Patpong red light district?”⁵ Indeed, because of the sheer variety of films that film fans could find in Quiapo, this place became known as the biggest “film archive” in Southeast Asia.⁶

The interplay between digital piracy and film culture in Thailand, Indonesia, Malaysia, Singapore, and the Philippines became a curious dimension of the Southeast Asian VCD phenomenon. The outcomes of this interplay were multifaceted. Baumgärtel and Gaik Cheng Khoo have argued in separate publications, for instance, that pirated VCDs to a certain degree have helped stimulate independent filmmaking movements and film education in the Philippines and Malaysia.⁷ Writing within the Indonesian context, Katinka van Heeren has pointed out that the pirated VCD network has crucially provided an alternative film circulation channel.⁸ In other words, it gave local film fans access to diverse and uncensored international as well as domestic films not shown in Hollywood-oriented Cinema 21 cineplexes.⁹

Despite the value of these important studies, the emphasis is nevertheless on the role of *pirated* VCDs in Southeast Asian film cultures. As a consequence, the value and function of authorized VCDs—also known colloquially in Indonesia as “VCD orijinal” or “VCD ori”—remains largely underexamined. In this chapter, I attempt to fill this gap in academic research on the VCD phenomenon in Southeast Asia by strictly examining the importance of authorized VCDs in the development of contemporary Indonesian cinematic culture.

My contention is that authorized VCDs crucially provided local film fans and filmmakers the opportunity to watch, exhibit, discuss, and appreciate the canonical works of Indonesian film history. Therefore, authorized VCDs functioned in a way as archival resources that digitally preserved the history of Indonesian cinema. The substantial amount of classic Indonesian films from the 1970s and 1980s, released exclusively on authorized VCDs, points toward the important position this format occupied as a vernacular conduit for the re-appreciation of the national cinematic legacy. In present-day Indonesia, VCDs of Indonesian classic films prove to be indispensable for local film communities such as the Jakarta-based Society for the Appreciation of Benyamin Sueb, as well as for the non-profit national film education initiative Kineforum.¹⁰

HISTORY OF DEVELOPMENT

According to film scholar Shujen Wang, the development of VCD technology may be one of the most peculiar accounts in the history of digital media.¹¹ In 1993, two multinational electronics giants, Sony and Phillips, launched the VCD as the video equivalent of the audio compact disc. In the midst of all this, however, the development of the DVD as the leader of the digital recording market was already underway. These early developers knew what lay ahead, namely the downfall of the VCD once the DVD finally entered the digital market in the West. Hence, Phillips and Sony decided to bring the VCD technology to China and tried to sustain the innovation by licensing manufacturing rights to Chinese manufacturers. The main reasoning behind this decision was that the VCD system was better suited for media consumers in economically disadvantaged countries than in developed countries, as I will explain shortly. Even so, they were skeptical about the prospect of this technology in Asia. They turned out to be wrong. This marginalized medium took off rapidly in China and spread throughout Asian markets in the mid-1990s as the primary digital medium for recorded entertainment. The VCD format managed to outperform VHS, Betamax, laserdisc, and, for a short period, the DVD.¹² In the eyes of its original developers, VCD technology was a closed book. To media producers and manufacturers in China and the rest of Asia, it was a newly opened chapter.

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What prompted the VCD to emerge as the region's most popular digital format in the late 1990s? Irrespective of its shortcomings, the VCD evidently offered some pragmatic advantages when it came to price, durability, compactness, speed, and reproducibility, and more importantly, censorship-free movie content. Firstly, the VCD was cheaper for consumers than any of the aforementioned optical media. One set of a movie on VCD (typically consisting of two discs) cost less than three Hong Kong dollars (US \$ 0.40) and much lower in Indonesia, the Philippines, and Malaysia. Film fans in Indonesia could own an officially released VCD priced at roughly Rp. 25,000 (US \$ 2.50). In local markets they could purchase pirated versions for only Rp. 5000 (US \$ 0.50) per title.¹³ Moreover, standalone VCD players manufactured in China were far more affordable than those sold by multinational corporations such as Sony or JVC. Secondly, VCDs were more resilient than Betamax or VHS tapes. Unlike videotapes, VCDs could withstand the high humidity level of the Southeast Asian climate. For that reason, VCD allowed a longer period of upkeep. Thirdly, a VCD movie could be reproduced without any generational image degradation. When a VHS or Betamax movie tape was copied, the second and third generation of the copy would have a lower image quality than the master tape. But with the VCD, the copied version would be just as pristine

as the master disc. Thus, when a movie fan rented a VCD from her/his local VCD rental store, s/he could easily copy the discs for her/his private collection, since there would be no loss of image quality. Furthermore, VCDs had neither a regional code nor a data encryption system that protected the copyrights, so the discs could be duplicated as many times as one wanted. Finally, the VCD was mostly popular because of its uncensored content. While international films shown in theaters and on television were typically censored for their obscene or indecent material, pirated VCDs presented the movies in their original state. Because of this, VCDs became the digital format most associated with soft and hardcore pornography. Combined altogether, these variables helped boost the popularity of VCDs not only among lower-class media consumers but also among the urban elite population of Asia.

REPRODUCIBILITY, PIRACY, AND NATIONAL CINEMA APPRECIATION

Precisely because VCDs could be readily copied and multiplied, movie pirates used the technology to clone officially released films from overseas. Canonized films that were never released legitimately in Indonesia—for instance *CITIZEN KANE* (1941) or *THE BLAIR WITCH PROJECT* (1999)—surfaced as pirated VCDs. More interestingly, non-mainstream titles released by boutique video distribution companies in North America or Europe became available as well. From the exclusively packaged Criterion Collection DVDs of Rainer Werner Fassbinder to Akira Kurosawa's *SEVEN SAMURAI* (1954), film aficionados could purchase the unofficial VCDs of these releases for an extremely cheap price. At certain shops in the city of Bandung, a collector could find obscure titles from *QUIET DAYS IN CLICHY* (Jens Jørgen Thorsen, Denmark, 1970) to Bae Yong-kyun's *WHY HAS BODHI-DHARMA LEFT FOR THE EAST?* (South Korea, 1989). Due to the clandestine operations of the interregional piracy network, it is very difficult to obtain the exact motives of the pirates in forging these non-mainstream titles. One might ask: Who bought these less popular titles? Research into piracy in these countries is difficult to conduct due to the uncooperative nature of those involved, from VCD retailers to renters.¹⁴ Evidently, there were consumers who craved these kinds of films. I would venture to say that cinephiles, filmmakers, and film educators made up most of the consumers of these less popular titles.

What was the role of the VCD and piracy at a local-regional level for film appreciators, filmmakers, and film educators? Undoubtedly, the VCDs enriched the selection of films. Baumgärtel aptly points out that before VCDs, there were very limited opportunities for local moviegoers in the Philippines, Indonesia or Malaysia to watch international films. Major cinema chains were

filled with Hollywood fare. Moreover, due to the lack of cinema infrastructure in these countries, art house cinema was virtually non-existent. Thus, film fans either had to order videos from abroad at overpriced rates or become a part of an elitist group that traded videotapes of the latest films.¹⁵ The availability of laserdisc movies did not help much either because it was simply too expensive to rent them.

The arrival of the VCD, however, completely changed this situation. Film buffs could find the most obscure international film titles that bypassed both official market and censorship regulations. For filmmakers, of course, this brought in influences and inspirations that benefitted local film artistry. Independent filmmakers like Amir Muhammad (Malaysia) and John Torres (the Philippines), for instance, have explicitly stated their gratitude for VCD piracy which greatly expanded their early education in world cinema.¹⁶ Furthermore, thanks to VCDs, teachers of film studies and film production have been able to show their students canons of cinematic history regularly and conveniently. Previously, departments of film and media studies at universities in Manila had to rely on poorly maintained VHS tapes of a handful of international titles. Pirated VCDs, and later DVDs, enabled film and media professors to show clips from important films such as *CITIZEN KANE* as part of their historical, theoretical, or analytical courses in the schools' film curriculum.¹⁷

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But the role of pirated VCDs should not be overstated. In fact, the authorized VCDs produced by legitimate VCD companies in the late 1990s to early 2000s have had an equally important function for the development of local film culture. This role involves the digital preservation of national cinematic history. In Indonesia, films that were considered important historically were released solely on authorized VCDs, and only became available on pirated DVDs much later in the decade. For example, the film *PENUMPASAN PENGKHIANATAN G 30 S PKI* (*THE BETRAYAL OF THE 30TH SEPTEMBER MOVEMENT*, 1984), directed by the highly regarded Arifin C. Noer, was made available for the first time on VCD in 2001 by Virgo VCD Company.

Used as an anti-communist propaganda tool for Suharto's New Order regime, the film had since 1985 been broadcast annually on television on September 30 as a commemoration of national Pancasila Day. Apart from being shown on television, the film was screened in cinemas on special occasions, when schoolchildren had to watch it together with their teachers as mandated by the government. Although the film has left a deep scar among Indonesians, who grew up watching its grotesque rendering of national history, the VCD became one of the most sought-after Indonesian films. Filmmaker Paul Agusta and film archivist Lisabona Rahman, in one review, named *PENGKHIANATAN G-30-S PKI* as one of the most significant films in the Indonesian cinema canon.¹⁸

Another important figure in Indonesian cinema whose films are only officially available on VCD format today is the multi-talented comedian and musician Benyamin Sueb (known popularly as Benyamin S). His films are occasionally still shown on television usually during Idul Fitri, the biggest Islamic holiday in Indonesia. Although Benyamin S's films are regarded as important cultural artifacts, most of them survived only as poorly maintained VHS tapes at Sinematek, the Indonesian film archive in Jakarta, Indonesia.¹⁹ When his films became available on VCD, local film fans were able to watch and collect his best work, including *INTAN BERDURI* (Turino Junaidy, 1972), shown here.²⁰

148 | Some local film societies took the opportunity even further by holding screenings of Benyamin S's films in their local communities. Remarkably, the Jakarta-based Society for the Appreciation of Benyamin Sueb (*Komunitas Pecinta Benjamin Suaeb*, KPBS) still holds screenings and discussions of Benyamin S's VCD movies at least twice a year.²¹ They even boast that they only screen authorized VCDs from their Benyamin S library collection, which consists of 29 titles in total, instead of the pirated DVD versions.²² According to its founder, Iwan Wabe, KPBS prefers to screen authorized VCDs of Benyamin S movies because it "want[s] to pay tribute and show appreciation for the filmmakers who have documented the amazing talent of our idol Benyamin S."²³ From Wabe's statement, we can infer that screening legitimate VCDs of Indonesian classic movies signals a higher appreciation for the local cinematic talents and their legacy. Thus, without authorized VCDs, the contribution of Benyamin S to Indonesian cinema would have been too elusive to witness since television broadcasts of his films are not regular enough to allow for repeated viewing. Furthermore, to show his films using the pirated DVD versions would betray the sanctity of his contribution to Indonesian cinema.

Kineforum, a non-profit initiative founded by the Jakarta Arts Council to educate the public about Indonesian cinema, also makes use of authorized VCDs. Supported by Sinematek, Kineforum screens Indonesian films on various formats in their monthly programming. For some classic Indonesian films it has to rely on authorized VCDs from Sinematek's archive; the mediocre image quality of other surviving formats obliges the use of authorized VCDs as a last option.²⁴ By and large, Kineforum prefers the crisper image of the DVD, and even more so, the celluloid-based 35mm film. For that reason, authorized VCDs here are not as highly upheld as by KPBS. Be that as it may, authorized VCDs possess some archival value that cannot be readily disregarded, as they provide an alternative option to celluloid copies, which are not always in prime condition at the poorly funded Sinematek Jakarta.

DISRUPTIVE TECHNOLOGY, PEDAGOGICAL FUNCTIONS

To connect this analysis to a broader political economic dimension of media technology, the VCD phenomenon seems to exemplify what Clayton Christensen has suggested as a disruptive technological innovation.²⁵ In his book *The Innovator's Dilemma* (1997), Christensen introduced the notion of *disruptive technologies*, which he refers to as technologies that offer a different usefulness from mainstream technologies. However, these technologies are considered inferior at the outset in terms of performance value and thus predicted to be unable to take the place of *sustaining technologies*—those that “improve the performance of established products.”²⁶ Consequently, disruptive technologies are abandoned or shipped to other markets that could potentially sustain them. Christensen argued that, along the way, such technologies somehow find their niche market because they are “typically cheaper, simpler, smaller, and frequently, more convenient to use.”²⁷ Gradually, these disruptive technologies become performance-competitive for a certain period, outperforming sustaining technologies. For instance, Christensen singles out transistors as a type of disruptive technology vis-a-vis vacuum tubes. Alternatively, small, off-road Japanese motorcycles were disruptive towards pricey and bulky Harley-Davidson and BMW motorbikes.

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Within this conceptual framework, the VCD can be seen as a disruptive technology. It was a media technology conceived by several multinational corporations in economically advanced countries but sidelined to the economically disadvantaged nations so that the DVD format could take over the global market. However, by focusing on the DVD, the multinationals left a gap at the lower end of the market. This is where the VCD emerged as a profitable business venture for local media entrepreneurs in Southeast Asia.

Since the second half of the 2000s, however, the DVD has usurped the primary position in the Indonesian movie-watching landscape. In addition, with the advent of DVD reproduction technology, movie pirates have shifted from using the VCD to the DVD in their illegal operations. Now, unofficial copies of Indonesian classic feature films are primarily available on DVDs. But the value of officially published VCDs of these older films, which were released in the first half of the 2000s by small VCD publishing companies like Virgo VCD and Sarinande Films, remains instrumental in the teaching and appreciation of national cinema to film fans in the country today.

This chapter is based on preliminary research conducted for an ongoing research project on Southeast Asian film cultures. Further study will definitely be needed to gather more findings. However, we can already draw several conclusions from the present study. The local cases outlined in the analysis above suggest the paramount role of VCD technology in preserving national

cinematic history and, in turn, fostering appreciation for the legacy of that history. Importantly, they indicate the unintended ramifications of this technology as a marginalized format. The VCD phenomenon in Southeast Asia, and specifically Indonesia, cogently illustrates film scholar Shujen Wang's thesis on the primacy of VCDs in Asia, whereby a passing and downplayed technology was appropriated and tweaked to fulfill the needs of local media producers and consumers.²⁸



Fig. 21: Bolex H16, 1951-1952 – National Media Museum (UK).

“Bolex Artists”: Bolex Cameras, Amateurism, and New York Avant-Garde Film

Barbara Turquier

THE BOLEX H16 CAMERA

Designed by Jacques Bogopolsky in 1928, the Bolex camera was first commercialized by the Swiss firm Paillard-Bolex in 1935. The model shown here is an H16, the firm’s emblematic 16mm model, from 1952. The camera measures 8.5 x 5.9 x 2.3 inches (21.6 x 15 x 7.6 cm) and weighs about 12 lbs (5.5 kg). Known for its robustness and versatility, the Bolex uses a spring motor mechanism, is equipped with a reflex viewfinder, and allows for a large range of speed variations—capturing from 8 to 64 frames per second—as well as single frame exposures.

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THEORETICAL FRAMING

Bolex cameras were used by American avant-garde and documentary filmmakers from the late 1940s to the 1970s and beyond, alongside a wide array of users, which included television reporters, people in the educational and business worlds, and non-professionals. This chapter explores the role of the Bolex in the history and aesthetics of avant-garde cinema and its American “renaissance” after World War II. The role that substandard formats played in the construction of an artistic *ethos* based on the figure of the amateur is also examined, exemplifying technology’s place and meaning in the culture of the time.

“BOLEX ARTISTS”: BOLEX CAMERAS, AMATEURISM, AND NEW YORK AVANT-GARDE FILM

INTRODUCTION

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The Bolex camera was invented by a Ukrainian engineer, Jacques Bogopolsky, in 1928. Two years later, he sold his patent to the Swiss firm Paillard, a manufacturer of typewriters, gramophones, and phonographs. In 1935, Paillard launched the first Bolex H16 camera. From 1935 to 1969, Paillard-Bolex launched more than fifty types of 16mm and 8mm movie cameras.

The Bolex was known for its solidity, light weight, and versatility in various shooting situations. It used a spring motor mechanism (although some later models were electrically powered), so that the camera had to be wound up to shoot for about 30 seconds continuously. Importantly for avant-garde cinema, it allowed for a large range of variations in speed: a finger-tip release button placed on the front of the camera enabled continuous exposures, while a side release button allowed for locked, hands-free running or single frame exposures. It was possible to film at 8, 16, 24, 32, and 64 frames per second (fps). Bolex had a reflex viewfinder, and in the original H16 model three lenses could be mounted on a rotating turret.¹

Bolex cameras were used in a great variety of contexts, notably for documentary, educational, corporate, or amateur films. Filmmakers working outside mainstream cinema chose the Bolex for its robustness, reliability, relative inexpensiveness, and, in the case of avant-garde cinema, for the array of aesthetic possibilities it allowed. In the New York avant-garde film genre, films shot with a Bolex include Maya Deren and Alexander Hammid's *MESHES OF THE AFTERNOON* (1943); Andy Warhol's *SLEEP* (1963) and *SCREEN TESTS* (1964-1966); Jonas Mekas's *WALDEN* (1969) and *LOST LOST LOST* (1976); Marie Menken's *NOTEBOOK* (1962), *GO! GO! GO!* (1963), and *ANDY WARHOL* (1965); Gregory Markopoulos's *GALAXIE* (1966); and Jack Smith's *NORMAL LOVE*

(1963); among many others. Although the use of 16mm cameras abated in the 1980s mainly due to the rise of video technology, there has been a continuing, albeit marginal, use of 16mm film in art and independent film practices to this day. This chapter explores how the use of the Bolex's technical features contributed to the aesthetics of avant-garde cinema from the 1940s to the 1970s. It also stresses the role of 16mm cameras in the filmmakers' construction of an artistic *ethos* based on the figure of the amateur, which subverted the industry's discursive and economical framing of 16mm.

Studies of American avant-garde film have linked the “renaissance”² of the movement to the availability of inexpensive and portable cameras after World War II among other factors,³ but to date there have been few accounts of the implications of the technology on these films' aesthetics. Although the concern for reflexivity and medium specificity is considered a defining feature of avant-garde cinema and experimental film, there are few studies of specific apparatuses and their connection to aesthetical issues, and cameras in particular have rarely been examined in that light.⁴ This chapter argues that taking into account the specifics of 16mm cameras—the Bolex in the present case—may contribute to a discussion of film aesthetics and of the filmmakers' position in the culture of their time, as well as help to distinguish experimental film from other areas of the history of cinema, such as video art. Although the reference to amateurism or “home movies” in New York avant-garde film has already been analyzed,⁵ this chapter connects studies of 16mm technology and their social role in the 1960s with studies of avant-garde film to see how dominant views of 16mm equipment help us to assess the cultural positioning of these filmmakers.

16MM AND THE PARADOX OF ARTISTS AS AMATEURS

Although the use of 16mm grew steadily in the 1920s and 1930s (after Kodak launched the first camera, film stock, and projector in 1923), the format became truly ubiquitous after the war. Bolex provides a telling example of the use of 16mm equipment by avant-garde and documentary filmmakers in that period. The “renaissance” of avant-garde cinema in the United States after World War II was simultaneous with the widespread use of 16mm equipment. Despite the fact that many filmmakers started using a Bolex camera as a cheaper alternative to 35mm, the camera's mobility, robustness, and technical possibilities were also important criteria, allowing for greater freedom in filming, both from a physical and financial point of view. Importantly for those who joined the “New American Cinema Group” in 1959 and the New York Film-Makers' Cooperative two years later, the Bolex camera made it pos-

sible for them to make films on their own, outside of industrial modes of production.

Additionally, the 16mm camera mechanisms and film strength were improved at the time – notably with the replacement of the 16mm acetate base by a stronger cellulose triacetate base in 1948. Progress regarding image stability, “zoom lenses” (which enabled variable focal lengths without moving the camera), and sound technology made it increasingly possible to use 16mm cameras for television, a field then in full expansion.⁶ Aspiring filmmakers naturally took on 16mm as a trial format, as did the Mekas brothers—Adolfas and Jonas—when they purchased their first Bolex in 1949.

Looking at the history of 16mm film circulation, it is also interesting to understand why filmmakers working outside the industry were drawn to it. Because 16mm was the “safety” format up to 1950 (since acetate film was inflammable, unlike nitrate film), 16mm films could be shown in venues other than licensed and regulated cinemas, such as community centers, churches, factories, schools, or political organizations. Even after 1950, at a time when the Hayes Production Code still prevailed in the United States, 16mm equipment offered possibilities for greater freedom of expression. Film societies, like Amos Vogel’s Cinema 16 in New York, not only used 16mm to show reduction prints of commercially produced features but also to show censored films.⁷ 16mm equipment became widespread in the academic and non-profit worlds after WWII. Universities were also a significant outlet for Cinema 16’s distribution arm and later for the Film-Makers’ Cooperative. Apart from the freedom in filmmaking that 16mm cameras made possible, this circulation network may also be a reason why 16mm was embraced by the emergent counter-cultural forces of the time.

The 1920s to 1940s period was marked, to quote Patricia Zimmermann, by the “inscription of an ideology of professionalism on all discursive levels of amateur film.”⁸ It submitted 16mm and 8mm users to what James Card, curator at the George Eastman House, once called a “tyranny of words” opposing professional know-how and amateur incompetence.⁹ Like other manufacturers, Bolex advertisements participated in disseminating the idea that aesthetic value in a film relied on technology and tangible visual criteria rather than on more intangible factors. Amateurism was defined through technology, with the possession of sophisticated equipment and accessories being a touchstone of professionalism.

From an aesthetic point of view, it equated “good” filmmaking with technical know-how and imposed a visual norm inspired by Hollywood films.¹⁰

A look at Bolex advertisements from the 1940s to the 1960s shows how the firm referred to that hierarchy. Bolex distinguished between the 16mm and 8mm camera, promoting the former as “semi-professional” (e.g., more

Bolex says, from this Christmas on home movies won't have to look like "home movies."



Not with Bolex equipment under the tree. That's for sure. You see, Bolex doesn't think home movies have to be a bore. The kind that cause you to forget in your seat. Or make excuses to leave. Fact is, we feel home movies should be downright entertaining. Something to do instead of watching television. And they can be.

Just take the Bolex S-1, for example. Here's a camera that will make you lose your amateur standing. It has an f/1.8 zoom lens. An electric eye that automatically measures and sets exposures. Filming speeds of 12, 18, and 40 frames a second. A 9 to 30mm zooming range. A reflex viewer. A variable shutter. A film rewind. You name it.

And to learn how to take those great movies, we'll even throw in the Bolex CineGuide booklet with every camera purchase.

O.K. Now let's suppose you've just shot a great film. Should you dump it on any old projector? Why mess it up? Great films should be shown on a great projector. And we just happen to make one. The Bolex 18-5 Automatic. It automatically threads itself, has zoom lens, and can show any film in slow motion. We mean real slow motion, too. 5 frames a second. Without ever flickering. And the same switch that puts you in slow motion also puts you in reverse, rewind—and even controls room lights. What could be easier?

Now you have a small inkling as to how we feel about home movies. Feel the same way? Stop in at your local dealer and let him demonstrate the Bolex S-1 and 18-5. Give them this Christmas to someone you love and you'll be giving the joy of fine home movies for many, many Christmases to come. Do it now. Bolex has never been easier to buy because your dealer has a convenient payment plan handy.

Check the Yellow Pages for the Bolex dealer nearest you. Or write: Paillard Incorporated, 1900 Lower Road, Linden, N.J.

Fig. 22: Bolex advertisement praising the camera's "professional" standards.

intended for documentary, educational and corporate films, as well as for "demanding amateurs"), while targeting 8mm at amateurs, for more informal and private uses.¹¹ In ads for its 16mm camera, Bolex distinctly associated its camera with amateur and professional practices, claiming to bring "amateur" practices closer to "professional" standards on account of the camera's technical performances. The company claimed to target a kind of elite among amateurs ("critical amateurs" as an early 1938 ad put it) who made "good" amateur films. This group was pitted against "poor" home movies filled with "mistakes" in framing, exposure, focus, and so forth. The camera itself was supposed to help correct these mistakes.¹²

This discourse equating aesthetic value with technical mastery was turned upside down by avant-garde filmmakers. Maya Deren, Stan Brakhage, and Jonas Mekas, who described themselves as amateurs, developed a typical avant-garde way of reflecting on their own practices, which effectively turned the limitations of 16mm to their artistic advantage. Jonas Mekas stressed that 16mm cameras enabled more spontaneity and improvisation: he considered what were previously described as visual "defects"—blurring, erratic camera moves, in-camera editing, etc.—as valuable marks of personal expression. Far from being a failing professional, the Bolex artist was seen as a freer, more authentic individual, who did not rely on financial imperatives.¹³ Even if Deren, Brakhage, and Mekas had different ideas of what being an amateur meant, for all of them, praising amateurism was a way of assessing the feasibility

Fig. 23: Hollywood star Kim Novak promoting the easy use of the Bolex camera.

Kim Novak
stars in
"THE EDDY DUCHIN
STORY"
A Columbia Picture
in Colorization - Color by Technicolor
says

*"My BOLEX is wonderful...
easy to handle...easy to operate"*

Only the Swiss-precision Bolex has so many extraordinary features that it's simple for the amateur to produce professional-looking home movies. The professional and amateur alike will appreciate the craftsmanship in every detail, plus the many innovations built into every Bolex home movie camera. Consider the famous Bolex C4 or C6, for example. Quality features like these make it a camera you'll be proud to own: Optical Zoom Viewfinder - provides three optical zooms from 16 to 36mm; you see exactly what you will film. Walnut Chassis of Spruce - from 16 to 36mm; you see exactly what you will film. Simple Drop-In Loading - takes only 18 seconds; saves 20% in film over other magazine cameras.

Standard 8 Lens Mount allows you to use the finest Swiss-fitted lenses, from wide-angle to telephoto. Single Frame Focusing allows special stills, animation and trick effects. See close and many other features demonstrated by your Bolex dealer. For literature and the name of the authorized Bolex dealer nearest you - and for details on how you can obtain copies of the informative magazine **BOLEX REPORTER** - write Bolex, C/o at the address below.

BOLEX A PALLARD PRODUCT

PALLARD PRODUCTS INC. • 100 NINTH AVENUE, NEW YORK 15, N. Y. • FINE SWISS MECHANISMS SINCE 1914

ity of one-person films and to oppose the “division of labor” in the film industry.¹⁴ The high regard for amateur formats should also be placed in the wider context of the attack on “technocracy” experts and professionalism throughout the arts¹⁵ that was linked to the Brecht-inspired valorization of folk art and domestic practices at the time. Notably, Brakhage and Mekas compared their films to “home movies” as a way to advocate their own thematic focus on domesticity and the family sphere.¹⁶

Ironically, this assertion of amateurism somehow reflected the industry’s urge to equate technology and status: to be an amateur was to use amateur technology; since they were using 16mm or 8mm “amateur” technology, then they must be amateurs. Yet, these filmmakers were not amateurs in any literal sense: they developed very sophisticated and idiosyncratic uses of their medium – and Bolex required a true mastery to put its features to creative use. Instead, their reference to amateurism was instrumental in defining their own position as filmmakers working outside the industry and in asserting the aesthetic specificity and legitimacy of their work.

Maya Deren wrote extensively on technology and its importance for her artistic practice. In her text “Planning By Eye,” she explained how artistic ends and technical means dialectically inspired and influenced each other in her work.¹⁷ For instance, she noted how the lack of sound in her Bolex camera helped her rely less on plot and on what she called the “theatrical tradition” in cinema, and how her concern with editing was born of the lim-

itations imposed by discontinuous shooting.¹⁸ Expanding on Deren's comments, it is possible to explore how the aesthetics of certain avant-garde films relied on making the most of Bolex features regarding film length, single frame exposure, varying recording speeds, handheld camera moves and lack of synchronous sound. Examining these aspects may contribute to a better understanding of the aesthetics of the experimental film in the 1960s and 1970s.

DISCONTINUITY

Bolex 16mm cameras could hold 50 and 100-foot-long films, while 8mm models held 25-foot-long films, which was the equivalent of four minutes of film projected at 16 fps. Hence, the filmmaker working outdoors only had limited time to shoot before changing the reel—knowing that film was on a limited supply. Moreover, the Bolex's spring motor mechanism implied that you could only shoot for a few moments—about 30 seconds—in a row before having to wind the camera up. Discontinuous shooting probably favored discontinuous, fragmented, and elliptic forms. This limitation was used to various ends by filmmakers. Andy Warhol's *SCREEN TESTS*, his filmed portraits of Factory regulars, used the total length of the 100 feet of film for each take and each portrait, shot at 24 fps. The images were then screened in slow motion at 16 fps. The intensity of these portraits very much relies on their specific temporality and floating atmosphere, prompting comparisons with the stillness of photography and early cinema, while actually resulting from a deft and conscious use of a constraint of the apparatus.

Discontinuous shooting probably played a part in the emergence of such cinematographic forms as “notes” or “film journals.” In Jonas Mekas's *WALDEN* (whose alternative title is “Diaries, Notes and Sketches”), the film structure involves short scenes separated by descriptive or reflexive titles. Mekas's focus on everyday life implied there was no need for continuous action: the scenes he chose often implied everyday actions with no significant beginning or end, whose essence might be captured in a few moments of shooting. Mekas often lowered the recording speed, which further enabled him to crystallize the event in a few bursts of images. The irregular movement of the film—its uneven *défilement* to use Thierry Kuntzel's term¹⁹—became characteristic of his style. Marie Menken also made ample use of discontinuous forms, as in her film *NOTEBOOK*. At the beginning of *Go! Go! Go!*, she used a low recording speed together with a horizontal tracking shot taken from a moving vehicle to create collage-like views of passers-by in New York streets. In her film *ANDY WARHOL*, the same acceleration and disjunction is used to

reflect on the theme of series and on Warhol's mock-industrial artistic production, during the making of the Campbell Tomato Juice boxes.

Bolex cameras also had a manual rewind system, which made superimpositions easy to make. Mekas used low recording speeds and superimpositions to dazzling effects in *NOTES ON THE CIRCUS* (1966). Maya Deren and Alexander Hammid used superimposition very differently in one scene of *MESHERS OF THE AFTERNOON*, where Deren sits at a table next to her mirror image. The Bolex's footage and frame counters would have enabled such special effects to be done with great precision.

A DISJUNCTION BETWEEN SOUND AND IMAGES

Sound is another decisive, although perhaps obvious, aesthetic aspect of 1960s avant-garde films, which was guided by the limitations of the camera. 16mm cameras were silent until the 1950s, when they began allowing for synchronization to an external magnetic sound recording device, which meant that sound had to be captured separately and synchronized with the film. Bolex launched the "Synchromat" in 1957 and the "Sonorizer" in 1960 to that end. Yet, contrary to what happened in documentaries, avant-garde filmmakers rarely attempted to synchronize their footage with a simultaneously recorded soundtrack. A vast majority of films did not rely on dialogues, which were so essential to fiction films. Instead, they either kept their films silent or played on the disjunction between sound and images.

Andy Warhol's films made with a Bolex were silent. Marie Menken used an illustrative soundtrack of birds singing in *GLIMPSES OF THE GARDEN*, and no sound in *NOTEBOOK* and *GO! GO! GO!*. Maya Deren commissioned Teiji Ito for the musical soundtrack of *MESHERS OF THE AFTERNOON*. Jonas Mekas made full use of Bolex limitations regarding sound. His film *LOST LOST LOST* (like many of his succeeding films) is based on a temporal gap between the moment the images were shot—from 1949 to 1963—and the moment the film was edited and the voice-over recorded, the film being finished in 1976. This temporal gap is structurally conveyed through a disjunction between sound and image. The commentary reflects on the footage years after the images were shot, echoing the film's central theme—Mekas's history of loss, exile, and subsequent discovery of cinema as a way of redeeming lost time. The elegiac comments and romantic music turn the film diary into a theater of remembrance.

CONCLUSION

The variety of ways in which the filmmakers of the New York avant-garde responded to the same apparatus is telling of the fact that a technique is never creatively meaningful in itself. The painting is not the canvas. Yet as Maya Deren put it, these filmmakers developed “a certain creative attitude towards the medium”²⁰ which stemmed in part from the specificities of their tools. The aesthetics of discontinuity or the treatment of sound are some of the possible interconnections between technology and artistic forms; and other areas could be probed with regards to avant-garde film using 16mm or 8mm—for instance regarding film stock texture or color. Furthermore, the Bolex camera provides an interesting example of the way technology and culture interacted in a history of conflicting discourses, between amateurism and professionalism. In that sense, exploring the history of techniques—both from a cultural perspective and from a purely technical point of view—helps us better understand the specificity of experimental film from the 1950s to the 1970s and the ways in which it differs from other histories of the moving image.

FOR Steady
AMATEUR
MOVIES~

SHOOT EVERY
PICTURE FROM
A TRIPOD



EQUIPPED
WITH A
PANO-TILT



MOUNT
YOUR
PROJECTOR

ON A
PROJECTOR
PLATE



LIKE THE
PROFESSIONALS
DO ~

When Professionals Turn Amateur!



THE NEW 16 mm. cameras
are turning professionals
into enthusiastic amateurs.

They use Thalhammer Tripod
and Pano-Tilt to hold their pri-
vate cameras steady. "Body-
Weave" is no more welcome in
their own films than it is in
their commercial productions.

A Thalhammer Tripod is
light in weight but holds the
camera perfectly steady. The
Pano-Tilt allows you to elevate
or depress the lens with a twist
of the wrist. A flip of the
thumb locks the camera straight
ahead or permits a full, smooth
panoram swing.

You'll be proud of your Thal-
hammer equipment. The blue-
grey and red lacquering sets off
the polished plating and the
dark oak woodwork.

The better 16 mm. dealers
have Thalhammer equipment in
stock. Have them show you
how you can positively eliminate
"Body-Weave" from your films.

(Even the person that "Has
Everything" may not have a
Thalhammer Tripod and Pano-
Tilt for his 16 mm. camera.
That would solve a difficult
Christmas problem, wouldn't
it?)



Carol Lombard

Popular young Pathe actress, who
has been featured recently in such
pictures as "High Voltage," "Big
News" and "The Rocketeer."



123 South Fremont Ave., Los Angeles

Fig. 24: Advertisement in *Movie Makers: Magazine of the Amateur Cinema League, Inc.*, vol. 4 (December 1929): 772.

The Tripod or “When Professionals Turn Amateur”: A Plea for an Amateur Film Archaeology¹

Alexandra Schneider

THE KINO-PANO-TILT TRIPOD FOR THE 16MM MOVIE CAMERA

The exact release date for the Kino-Pano-Tilt tripod by Thalhammer Inc. remains so far unclear, but its patent was filed in 1922—a year before the official release of 16mm by Eastman Kodak. The Kino-Pano-Tilt tripod was advertised in the amateur film journal *Movie Makers* for the first time in 1928. Its demountable head is made of aluminum and its leg of light wood. Its total weight—of importance for its portability—adds up to 4 lbs (1.8 kg); it stands 2.96 ft (90 cm) tall when folded, and can be extended to just under 5 ft (about 1.5 m). Although amateurs might have also preferred cheaper solutions by using tripods without movie camera heads, the discussed tripod is specifically built for 16mm movie cameras in order to tilt and pan during shooting.

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THEORETICAL FRAMING

This chapter focuses on a specific material object—the tripod—but my interest is of a theoretical and methodological nature. The following discussion of the tripod explores the history of amateur film as a history of material objects and devices and as an archaeology of the amateur video in the age of digital network culture: an archaeology of portable and mobile media devices. I will argue for a media archaeology approach that engages with a broad variety of materials and articulations, with specific texts as aesthetic practices, but also with discourses—artistic, promotional, commercial—to put the current, past, and future histories of amateur video practices into perspective.

THE TRIPOD OR “WHEN PROFESSIONALS TURN AMATEUR”: A PLEA FOR AN AMATEUR FILM ARCHAEOLOGY

In the ninth episode of the seventh season of the American television crime series *THE CLOSER*, Deputy Chief Brenda Leigh Johnson, a hard-hitting LAPD investigator with a knack for extracting confessions from criminals in one-on-one interrogations, gives a somewhat curious order to one of her deputies: “Buzz, I want you, your camera, and your best tripod.” The back story is this: Brenda and her unit need to pretend that they are filmmakers to entrap a killer whose only weakness is that she wants to make it big in Hollywood. The success of the investigation depends on how professional they look in pretending to be a film crew at work. Brenda Johnson thus insists that her technician bring his best equipment to the scene. In this scene, then, the tripod is the true yardstick of professional filmmaking. You can pretend to be part of Hollywood if you have a professional-looking tripod.

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These eight seconds of television reminded me of an advertisement from 1929 in which Carole Lombard, then on the brink of becoming a major movie star, promotes a Thalhammer tripod for 16mm amateur filmmakers. I will come back to this specific tripod in a later part of this chapter. For the moment I am interested in the following: if the television clip refers to the trope of the tripod as the signature device that ensures your professionalism as a filmmaker, the Carole Lombard ad helps to establish that trope—a major movie star consecrating the tripod as the amateur’s pathway to quasi-professionalism. Together, the clip and the ad delineate a key juncture of amateur film history and theory: the tripod as what may be called the emblematic aspirational device. A device that marks both a distinction between, and a fusion of, the amateur and the professional film, a device that articulates both a difference between and potential fusion of the professional and the amateur mode of moving image production.

Although in the following I will focus on a specific material object—the

tripod—my interest is also of a theoretical and methodological nature. My discussion of the tripod as an aspirational device raises the question of the history of amateur film as a history of material objects and devices.²

The current practices and politics of social media such as Facebook, YouTube, Skype, and the proliferating use of smartphones create a need for a renewed debate about amateur and portable media practices. The rapid spread of a digital-device-based do-it-yourself media culture and the broad accessibility of amateur filmmaking equipment, particularly in the form of the most advanced versions of smartphones, have led to the emergence of new amateur video practices that demand analysis and framing in terms of cultural and media theory. As I argue, a media archaeology approach allows us to put current, past, and future histories of the new amateur video practices into perspective.

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Let me briefly propose three arguments for a media archaeological approach and framework for the project I have in mind: an archaeology of the amateur video in the age of digital network culture as an archaeology of portable and mobile media devices.

MEDIA ARCHAEOLOGY AS A HISTORY OF THE PRESENT

Archaeology, loosely understood in a Foucauldian sense, is about examining the discursive traces and orders left by the past in order to write a “history of the present”—in other words, about looking at history as a way of understanding the processes that have led to what we are today. A media archaeology of amateur film allows us to engage with both the continuities and discontinuities of amateur film practices and assess how contemporary practices constitute a break with, or a continuation of, previous layers of amateur film practice.³

MEDIA ARCHAEOLOGY: LOOKING AT AND INTO MACHINES

Apart from a new approach to historiography, media archaeology as a field of different practices ranging from media art to new media and new film history has also contributed to reintroducing and reevaluating the status of the technical apparatus of media for the history of media. In this sense, one can argue that German media theorist Friedrich Kittler has paved the way for media archaeology. But where Kittler and his school trace all developments back to questions of technology, not all media archeologists subscribe to a techno-determinist view of film and media history. Rather, media archaeology allows us to approach technological devices as material objects as well as histori-

cally constructed technologies whose impact largely depends on the specific semantics of their cultural framing. Thus, for instance, when I call the tripod an aspirational device, what I mean is that the impact of the tripod cannot be properly understood in abstraction of the prior cultural framing of that particular technology.

MEDIA ARCHAEOLOGY: THE BASIC CINEMATOGRAPHIC APPARATUS AS A MATRIX FOR FILM ARCHAEOLOGY

A third argument for a media archaeological inquiry into the amateur film can be found in a study by film and media historians Michael Wedel and Wanda Strauven.⁴ Wedel and Strauven pick up on the idea of a machinery of media as a point of departure for media archaeology, but refer the discussion of technology back to film theory. More specifically, they propose to use Jean-Louis Baudry's notion of the basic cinematographic apparatus as a starting point for a media archaeological inquiry of the past and its ramifications for the present. In his second essay about the *dispositif*, Baudry writes in a footnote:

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In a general way, we distinguish the *basic cinematographic apparatus* (*l'appareil de base*), which concerns the ensemble of the equipment and operations necessary to the production of a film and its projection, from the apparatus (*le dispositif*) discussed in this article, which solely concerns projection and which includes the subject to whom the projection is addressed. Thus the *basic cinematographic apparatus* involves the film stock, the camera, developing, montage considered in its technical aspects, etc., as well as the apparatus (*dispositif*) of projection. The basic cinematographic apparatus is a long way from being the camera itself, to which some have wanted to say I limit it (one wonders what bad arguments this can serve).⁵

The tripod, the dollies, and later the steadycam devices, I would suggest, are also part of the basic cinematographic apparatus. And if the *dispositif*, as Baudry claims (echoing Althusser), produces specific forms of subjectivity, one question we can ask is what kinds of subjectivity the amateur *dispositif* produces. To what extent is that which I propose to call the “aspirational” aspect of the tripod device an effect of the tripod’s transition from being an element of the “*appareil de base*” to the *dispositif*?

Let me now return to my primary point of interest, the tripod. The tripod, I want to argue, can be called “aspirational” in that it both demarcates and bridges the divide between amateur and professional filmmaking.

While the tripod has been the object of study in the field of amateur film studies before, prior approaches have suffered—as others have pointed out before me—from an essentialist approach to both the technologies and practices of amateur filmmaking. In his critical readings of Patricia Zimmermann’s approach to amateur film history, Ryan Shand has shown that Zimmermann develops what amounts to an ontological understanding of the amateur film. According to Shand, Zimmermann reads amateur film as a counterpart to the Hollywood system and, by implication, as an oppositional practice directed against the dominant forms and practices of the cultural industry. As Shand writes, “the spontaneity of the home movie is celebrated in opposition to the control of Hollywood production.”⁶ Zimmermann’s approach is explicitly normative, particularly with regard to the use of specific stylistic and technological devices, such as the tripod. Zimmermann writes: “Compositional technique was also a site of ideological struggle in home-movie discourse: on the one side, a controlled, static camera emulating the most mundane studio film; on the other a mobile, intimate, and tripod-free style that exalted in lightweight amateur gear.”⁷ True amateur film practice, as this passage suggests, subscribes to an oppositional aesthetic, which explicitly excludes the use of the tripod. In a dialectical move that serves to underscore the reading of the tripod, I propose here that one could argue that Zimmermann implicitly acknowledges what I propose to call the “aspirational” aspect of the tripod device. In Zimmermann’s ideal, which is an ideally oppositional practice of the amateur film, the tripod has no role or right of place precisely because it speaks to the aspiration of the amateur filmmaker to become and be a professional, to put her/himself in a position where s/he can pass as a Hollywood—or quasi-Hollywood—filmmaker. In that sense, Zimmermann’s reading is in perfect accordance with the trope of the tripod presented in the opening television clip: use a tripod, and you go Hollywood.

Much more than merely an outdated trope or a matrix of amateur film research, the tripod haunts not only contemporary television and ads from the 1930s but also advanced critical film theory. The persistence of the trope—and more specifically: the persistence of the trope of the tripod as an aspirational device that both separates and bridges amateur and professional film practice—thus provides a good point of entry for an archeological analysis of contemporary amateur practices in the light of prior layers of amateur film practices.

THE PRESENT: THE AMATEUR VIDEO TRIPOD IN THE AGE OF DIGITAL NETWORK CULTURE

Let us start with the present and the uses of the tripod in amateur videos in contemporary network culture. For some time now, probably the most widely used equipment to make non-professional videos has been the smartphone. While a smartphone is first and foremost a handheld device, many of the videos circulating on YouTube and through other video channels were actually shot using tripods. A quick search on Google with the keyword “smartphone tripod” delivers nearly ten million hits, and “iPhone tripod” nearly the triple amount of 26 million hits (an interesting fact in itself). If you search the YouTube, the keywords “mobile phone tripod” yield roughly 16,000 results, while the keywords “iPhone tripod” yield around 55,000 videos. It is obviously not possible to watch all these videos, but if you take some time to browse through them, another interesting characteristic becomes instantly obvious: many, if not most, of the videos are not official advertisements from gadget manufacturers or retailers but actually amateur videos that explain how to make your own (cheap) tripod. Very much resonating the process films of early non-fiction cinema, these self-made video manuals offer step-by-step instructions on how to build a tripod. But while the process films in early non-fiction cinema were all about the aesthetic pleasure of watching people at work and watching people make things, these video manuals are just that: instructional films that aim to teach you how to build your own tripod.⁸ They are, if you will, doubly and reflexively aspirational, promoting both the device of the tripod and the subjectivity of the amateur aspiring to become a professional, or at least a bit more professional.

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Apart from the amateur video tutorials for making a tripod yourself, one also comes across another typical group of related amateur videos: the test video that shows and/or compares the aesthetic impact of the respective devices. While a relatively small number simply compare the effect of the tripod by contrasting tripod-based shots with handheld shots, a significantly larger number discuss the uses of the tripod and that of a close substitute, such as self-made steadycam-like devices that help stabilize the moving/walking camera-phone-device and allow you to move the camera without the noise effects of the handheld camera. Although I have to admit that my research into those particular video tutorials for amateur video gadgets is still rather punctual and not very systematic (in terms of the amount of data I looked at), one thing is rather striking (and maybe also not): nearly all those tutorials are made by men.

There is, however, a tripod-related amateur video genre that appears to be on the other side of the gender divide. Rather than teach you how to build a

tripod and become a better iPhone filmmaker yourself, these videos celebrate the fact of the tripod itself. I propose to call these videos the “Hey, I got a tripod!!” genre. These videos are often produced by a group or demographic that has so far not figured very prominently in amateur film research, namely teenage girls. Here again, we encounter what you might call a subjectivity effect of the “passage” of the tripod from being an element of the *appareil de base* to an element of the *dispositif* of amateur cinema: clearly, the ownership of the tripod has some kind of an exhilarating and maybe even empowering effect, an effect that I think we can discuss as yet another facet of the aspirational dynamic of the tripod.⁹

For the purposes of this paper, which is exploratory in nature, I can only propose a very preliminary approach to the mobile phone tripod in digital culture. Let me just highlight what I think are my two main preliminary findings, i.e., that tripods continue to be used widely in amateur film practices, and that the trope of the tripod as an aspirational device is very much alive and well in contemporary digital network practices of amateur video production and dissemination. With this in mind, I would like to turn back in time and have a closer look at the Carole Lombard advertisement of the Thalhammer tripod introduced earlier.

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THE PAST: THE THALHAMMER AMATEUR FILM TRIPOD

The advertisement with Carole Lombard, published in the December 1929 edition of the American Amateur Cine League Journal *Movie Makers*, is the first page-size advertisement for a Thalhammer tripod that can be found in this particular magazine. The magazine itself had been launched three years before in December 1926 as the first amateur film journal in the US. Manufacturer Thalhammer Inc. started publishing ads in this particular journal only from 1928 onwards—mainly advertisements for tripod or tripod-related tools (tripod heads, etc.). Preliminary research into this particular camera and movie equipment manufacturer, which was located in Los Angeles, might be indicative for the study of material objects of film history. The moment one leaves the path of major objects such as the movie camera and projector or if one looks beyond well-known fabricants and brands, not much research is available. This is particularly true for a device such as the tripod—a device that tends to remain invisible in film history, not least for being a rather supplementary and not quintessential tool of filmmaking. The rare moments a device such as the tripod surfaces, film history is related to moments of its own transcendence as in the so-called *entfesselte Kamera* of German expressionism, the handheld camera or the steadycam-body-tripod. So far, the tripod and its history (in film and beyond) remains to be written.¹⁰

The same seems true for the manufacturer of the particular tripod I am discussing here. From preliminary research, only a few things can be reconstructed: Thalhammer Inc. was most probably founded by Karl Wolfgang Thalhammer, an Austrian born in 1881 who had emigrated to the United States of America in 1904. In August 1941, at the age of 60, Karl W. Thalhammer became a pre-yellow-press people's news item in relation to a court case brought against him by what we must presume was his second or third wife, then aged 16. The news item was published in different local newspapers—each paper reported the story in a slightly cheesy manner. The reporters certainly did not shy away from revealing embarrassing personal information. In the *Ames Daily Tribune*, for example, one could read on August 20, 1941:

Karl W. Thalhammer, 60, a wealthy manufacturer of camera equipment, today sought to rid himself of a 16-year-old bride. [...] Thalhammer filed suit in superior court for an annulment. If the court did not consider the circumstances sufficient for an annulment, then, the suit said, he wanted a divorce on grounds of cruelty. He said the Schliessers “unjustly” accused him of having improper relations with their daughter, and she upheld them. “Unless you marry the girl, there are places where they put fellows like you for 20 years,” Thalhammer quoted Schliesser. [...] Their accusations were false, Thalhammer said, but he married her, rather than risk prosecution and having his business ruined by the publicity. He married her in Yuma, Arizona, last month, and he said he lived with her 11 days.¹¹

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That Thalhammer was wealthy is apparent from the monthly alimony claim of 3,000 dollars by Ester Schliesser. Adjusted for inflation, this sum would be the equivalent of about 46,000 US dollars today. As pointed out in the advertisement from December 1929, the Thalhammer tripod was available at “better 16mm dealers” and was marketed as the ideal solution to the “Christmas problem” of finding a gift for a person who already “has everything.” Taking the price of the device into account—around 35 dollars—including a so-called pano-tilt head, which made up about half of the prize as indicated by another ad, the brand was certainly an exclusive one and certainly for people who already had nearly everything. Adjusted for inflation, this tripod today would cost 550 dollars. Patent files show that Thalhammer's company had developed a series of camera and filmmaking gadgets over the years, ranging from several patents for tripods from the early 1920s onward. The last patents that can be found range from film reels in the 1950s to a patent filed in 1957 for a panoramic camera for photography.

As a side track, it might also be interesting to mention that Karl W. Thal-

hammer filed a number of patents related to telephony, doubtless with a view to the rapidly developing telephone industry. These patents include a coin-based lock for pre-paid telephones in 1926. This might be of particular interest today as we only start to realize the extent to which film and telecommunication history is intertwined in various ways—a history that did not begin solely with mobile phone filmmaking.¹²

CONCLUSION

Let me try to summarize. Bringing my working hypothesis about the tripod as an aspirational device and my discussion of the media archaeology approach to amateur films together with my two sets of examples, we can now outline an agenda for further research. Specifically with regards to the tripod as an element of the amateur film's *appareil de base* as well as an element of the *dispositif* of amateur filmmaking, the idea is to conduct a thorough analysis of both a significantly large set of data on contemporary digital-amateur practices to study the role and effects of the tripod, but also to extend the material base for a genealogical study of the various appearances and disappearances of the tripod on the scene of amateur filmmaking. Additionally, particular attention should be devoted to a study of the tripod as a material object. What this amounts to, then, is a general plea for a media archaeology approach to amateur film that looks for both continuities and discontinuities, for ruptures and dead ends, instead of a teleological model of history. It is also a plea for an approach that engages with a broad variety of material and articulations, with specific texts as aesthetic practices (or with certain aesthetical tropes as a handheld aesthetics and a smooth tracking and panning one), but also with discourses—artistic, promotional, and advertising ones. In this particular study, the tripod is the *fil conducteur*, the thread that binds these various materials and practices together and serves as a point of departure and a point of crystallization with the potential to open up an entire field of study. Amateur film history in that sense would indeed not be about the amateur versus the professional but rather about the engagement with the complex entanglement of the amateur in the professional and *vice versa*—intersected and crossed by respective contemporary discourses.



Imagining the User of Portapak: Countercultural Agency for Everyone!

Tom Sloatweg

SONY'S VIDEO ROVER ENSEMBLE, AKA THE FIRST CONSUMER PORTAPAK

Introduced by Japanese electronics manufacturer Sony Corporation in 1965, the portapak consists of a portable $\frac{1}{2}$ -inch reel-to-reel video recorder (DVK-2400) and an electronic tube camera (DVC-2400). This first mass-produced video ensemble was marketed as an easy-to-use portable system. The black and white camera measuring 2.8 inches (7.14 cm) in width, 5 inches (12.7 cm) in height, and 15 inches (38.1 cm) in depth and the recorder, measuring 4.9 inches (12.38 cm) in width, 11 inches (27.94 cm) in height, and 11.3 inches (28.73 cm) in depth together weigh around 15.4 lbs (7 kg), excluding a battery pack. The tape allowed for 20 minutes of footage. A manual crank attached to the recorder could be used to rewind the tape. The camera is equipped with an integrated electronic viewfinder and a mountable microphone.

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THEORETICAL FRAMING

In this contribution, the author offers a brief historical exploration of the discursive “imagination” related to the amateur user of the portapak video system in the late 1960s and early 1970s. This contribution does not explore video’s potential to be a media technology for educational purposes or guerrilla journalism. Neither does it trace its possibilities as a device that enabled users to record television programs and feature films and replay them at will. This entry will look at another possible emergence of video: as a tool to make and share experiences of everyday life. Whereas Sony’s marketing rhetoric mainly foregrounds an easy-to-use operation and functionality in everyday life, a selection of articles in the avant-garde magazine *Radical Software* (1970-1974) framed portapak’s technological characteristics to be perfectly suited for a countercultural appropriation by everybody.

IMAGINING THE USER OF PORTAPAK: COUNTERCULTURAL AGENCY FOR EVERYONE!

“The portable video camera-and-tape deck system, or ‘portapak’ has been called by some, the most revolutionary breakthrough in media since Gutenberg.”¹ With this short statement in the final issue of the American avant-garde magazine *Radical Software* (1970-1974), poet and media critic Phillip Lopate sums up in one sentence the ostentatious reception of an ensemble consisting of a camera and recorder, colloquially known as portapak.² Over the course of its publishing history, the magazine endowed portapak with a revolutionary potential to democratize audiovisual communication and knowledge dissemination.³ The video system was considered to be a groundbreaking technological tool to be seized by everybody around the globe.

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Lopate also signaled an appreciation for the electronic “handheld” aesthetic that resulted from the ensemble’s portability—prompting him to make a casual comparison with neo-realist cinema’s imperative to go out on the streets and “dig into reality.”⁴ Although he remains suspicious with regard to the magazine’s overall embrace of a revolutionary rhetoric, he acknowledges that the enthusiasm for portapak is not without reason. According to him, the video ensemble first and foremost represents an easy-to-use, portable, and possibly widely available cluster of media technologies for a “large number of users.”⁵ And perhaps even more important, he also understands the appeal of portapak’s promise to make possible for any “person to be the producer, director, and cameraperson of a videotape” that represents everyday reality and experience.⁶ As media historian Susan Aasman has argued recently, these ideals of a more participatory and personal form of media ownership, production, and distribution has been at the center of the history of *alternative media*.⁷ In addition to discourses on 16mm, 8mm, and super8 cameras—in which ease of use and portability were also perceived as important features for ordinary consumers—Portapak’s reception in *Radical Software* is part of a

parallel discussion of conceiving new media in terms of their possible widespread everyday use. Whereas this alternative conception of media technologies has gained prominence recently in relation to the proliferation of digital do-it-yourself media culture, Aasman rightfully reminds us that it was actually “a rather slow change that emerged in the 1960s, [which] grew stronger in the 1970s, before finally becoming mainstream just before the internet really took off in the 1990s.”⁸

MARKETING THE FIRST PORTAPAK

180 | Sony Corporation was the first consumer electronics manufacturer that sparked these expectations of an *electronic*, rather than a *photochemical*, tool with a revolutionary audiovisual potential for a “large number of users.” In 1965, the Japanese electronics giant introduced the first portable video ensemble on its domestic electronics market.⁹ Initially called the “Video Rover,” the

Now, a videotape recorder that goes anywhere you go.

He's taping that thrilling number, "Serenade in Peep Major" with the new portable, battery-operated Sony Videorecorder.

It records both picture and sound. (The camera weighs only 6 pounds. The recorder pack just 12.) Needs only you to operate it. And costs only \$1250.* Yet it can do just about everything one of those gargantuan mobile video units can do. Maybe even more.

It doesn't have yards of power cable to tie it down. (One thin cable connects the Camera and Recorder. That's all.) So it can go up in a plane and tape aerial views of potential factory sites. Tag along on an archaeological expedition. Or on a trip to the zoo with a bunch of first graders. Or it can even wiggle into tight places and crawl beneath machinery to record damage. (So only one person has to get his clothes dirty.)

Anyone can operate this Sony Videorecorder. All its level controls are fully automatic. And there's a TV monitor right inside the camera. So it's almost impossible to botch things up. (If you manage to do it anyway, no sweat. The tape is reusable.)

The nicest thing about the Videorecorder, when you come back with everything behind you, it instantly lets you have it all in front of you.

SONY PORTABLE VIDEORECORDER

*Suggested retail price. Actual price may vary. © 1967 Sony Corp. of America, 45-47 East 34th St., N.Y.C. 10017

Fig. 26: Advertisement Sony videorecorder 1967. Courtesy of Sony Corporation.

system consisted of a portable $\frac{1}{2}$ -inch reel-to-reel recorder (DVK-2400) and a black-and-white tube camera (VCK-2400). Aiming at a successful introduction on the consumer market, Sony explicitly marketed its portable video product line as a “videotape recorder that goes anywhere you go” (fig. 26). So how did the advertisement, from which the previous quotation originates, frame the complementary *functionality* of the portable camera and video recorder?

Most prominently, the system’s portability is highlighted as the most salient feature. The accompanying photograph serves as a strong rhetorical ploy—staging a videographer in a tree whilst enjoying a great sense of freedom to tape young chicks in a nest. To ensure further trouble-free portable usage, several other characteristic features of the ensemble are emphasized, such as a battery pack that enables thirty minutes of use without the need for a power outlet, fully automatic level controls, a mountable microphone for synchronous sound recording, and a 1-inch tube viewfinder to successfully frame the desired shot. All these additional features, as the advertisement’s description continues to foreground, will make it hard to “botch things up.” And when something is not taped as desired, the possibility to immediately re-watch the footage offers an advantage as well, since it will help the user to consider whether or not to re-use the tape immediately.

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It is important to note here that this discursive strategy in the design and marketing rhetoric—which specifically aims to “de-technologize” consumer electronics and stresses their ease of use—has been conceptualized in historical research of media technologies and the philosophy of technology as the “illusion of user control.”¹⁰ From the perspective of marketing and design, “blackboxing” the complex operation of the internal components of a device serves a specific purpose. The logic behind the strategy of blackboxing presupposes that obscuring the material and technological complexity of a device in an unintimidating and easy-to-use design will neutralize the ordinary consumer’s fear of being unable to successfully appropriate and control technologies in their everyday environment. Media historian Andreas Fickers regards this as a recurring discursive pattern in the design and innovation of media technologies, which is driven by the commercial desire to successfully bring these technologies into the homes and lives of a large number of consumers.¹¹ Or from a media sociological point of view, as Roger Silverstone and Leslie Haddon have pointed out, this moment signifies an early phase of the pre-domestication of media technologies.¹²

IMAGINING PORTAPAK'S EVERYDAY USER

Yet rather than exploring engineers and marketers' efforts to "configure users"¹³ according to how they imagine consumers to appropriate and use a blackboxed media technology in their everyday lives, this brief exploration will take another point of departure. Inspired by a small selection of articles in *Radical Software*, this entry will touch upon some of the discursive expectations, hopes, and desires related to the video system's possible role in counter-cultural practices of everyday life. Or more specifically, the chapter will focus on those discourses that shaped the notion of portapak as an ideal tool for everyday use in order to mediate and share personal experiences of everyday life. From a historical perspective, the period in which the magazine and portapak emerged is equally important to underline. As a distinctly new media technology, the ensemble was launched into a changing media landscape, which was under the intense scrutiny of cultural critics, political activists, and artists. Issues related to media ownership—and by extension media production, distribution, and reception—were widely discussed and politicized in artistic practices, scholarly circles, and the popular imagination.

Against this backdrop, the chapter will explore a specific *discursive pre-domestication* of home video. By foregrounding the American avant-garde's imagination of the video system's everyday use, this entry attempts to make a modest contribution to Deidre Boyle's work on portapak.¹⁴ In her canonical article "From Portapak to Camcorder," Boyle mainly reconstructs the radical appropriation and use of video by artists and political activists in the 1960s, 1970s, and 1980s. As media theorist James Moran argued, the historical avant-garde often appropriated and used consumer media technologies in order to be "socially and aesthetically radical."¹⁵ This historically recurring attitude created a problematic overlap between notions of everyday use, amateurism, and experimental artistic practices. Sidestepping a thorough reflection on this conceptual quandary, I will instead offer a historical insight into the pervasiveness of this attitude with regard to the video avant-garde's imagining of the everyday user of portapak in *Radical Software*.

As scholars ranging from Carolyn Marvin (1988) and William Boddy (2004) to Philip Sewell (2014) have shown, tracing the discursive imagination of possible usage is important to understand the socio-historical context in which new and old media technologies (re)negotiate their place within society.¹⁶ Although the spatial limitations of this chapter do not allow for a thorough theoretical and methodological reflection, I propose to regard the "imagined user" as an additional category in relation to the conventional "user typologies" that are applied heuristically in media historical research.¹⁷ In addition to the traditional typologies, I maintain that analyzing discourses on

imagined users has at least one important merit. It allows a media historian to understand the discursive existence of media technologies and their users in terms of several distinct “conditions of possibility.”¹⁸ Thus, this entry aims to explore the imagined “conditions of possibility” for the everyday use of a portapak. Furthermore, this imagination takes place at a specific socio-historical moment when video was pre-domesticated discursively as a tool for a socially and aesthetically radical practice to be embraced by everybody.

CONTEXTUALIZING THE VIDEO AVANT-GARDE WITHIN THE COUNTERCULTURAL MOVEMENT

Before I embark on a brief reconstruction of how the everyday user was imagined discursively in *Radical Software*, I will briefly sketch the socio-cultural context in which this magazine was embedded in the early 1970s. For this purpose, David Nye’s insights are useful. In *Technology Matters* (2007), he accounts for an artistic and activist tradition that was dominant in the American New Left during the 1960s and 1970s. Besides Marshall McLuhan’s influential notions of the “mass man,” the “linearity of Gutenberg technologies,” and the “electronic village”¹⁹ in popular, scholarly, and artistic discourses, Nye also accounts for the intellectual influence of Herbert Marcuse’s *One Dimensional Man* (1964) and Theodore Roszak’s *The Making of a Counter Culture* (1969).

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The works of these three theorists inspired numerous artists, academics, and students who started to reject the perceived technocratic power of media and bureaucratic institutions. Especially Marcuse—one of the main theorists of counterculture—played a pivotal role in the disapproving stance of the New Left towards the media landscape and the institutional power behind it. In his own provocative words, Marcuse believed that “[t]oday political power asserts itself through its power over the machine process and over the technical organization of the apparatus.”²⁰ Moreover, Marcuse identified a development in advanced industrial societies that curtails the true needs of the individual. In other words, technology, in combination with the logic of the expert and the manager, aimed to establish procedure and efficiency in society over individual needs. Intent to resist this overwhelming influence of society’s institutions and that of the media technologies at their disposal, Nye points out that many artists and students “sought [ways to do so] through a combination of Zen Buddhism, post-Freudian psychology, and the construction of alternative grassroots institutions.”²¹

This deferment to leave society’s bigness and complexity to the experts is certainly not the driving rationale of the avant-garde behind *Radical Software*.

What is remarkable in the magazine is its dualistic, perhaps even contradictory stance towards technology. On the one hand, media technologies are equated with the institutions that use them to exercise various notions of power over the helpless masses. On the other hand, the “technological spin-offs of TV” are seen as democratizing and emancipatory tools that break the dominance of “unidimensional” technologies operated by institutional experts and managers.²² They can offer unprecedented possibilities of audiovisual empowerment of individuals and communities. Fluxus video artist Nam June Paik, for example, mused on the radical potential that video and other new, existing, and hoped-for technologies might have for a global electronic community of academics and artists. In “Expanded Education for the Paperless Society,” he claimed that,

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video, film, audio devices, loop techniques, non-linear printing techniques, light art, stroboscope, medical electronics, brainwave transmission [sic] should be used for the total conveyance of great philosophers’ messages, and for the stimulation of students’ own “Philosophieren” and maybe for the preparation of post-McLuhan, non-linear, possibly more iconographic and totally involved 22nd century philosophy.²³

This specific vision of how several technologies combined will bring about a new “electronic age” might seem outlandish and painfully naive to contemporary readers. What Paik’s techno-utopian fantasies emphasize, however, is a strongly felt imperative within *Radical Software*’s avant-garde to reflect on potential holistic uses of existing, emerging, and imagined media technologies.²⁴ The idea that technologies can bring together people in collaboration globally, transcending national borders and institutional top-down constraints, is certainly part and parcel of the rhetoric in Paik’s utopian expectations of an un-hierarchical form of audiovisual knowledge dissemination and communication.

RADICAL SOFTWARE AND IMAGINED USERS OF PORTAPAK

James Moran characterized these countercultural discourses as being governed by a distinct “rhetoric of liberation.”²⁵ He also emphasized that video, within the context of the countercultural tradition of the 1960s and 1970s, was conceptualized by the avant-garde and postmodern theorists as the “anti-aesthetic” of television; the main top-down mass medium of the day. *Radical Software*’s chief editor Dudley Evenson offers one of the most comprehensive reflections on the potential of portapak for ordinary users in relation to tele-

vision.²⁶ In “Portable Video: The Natural Medium,” she argues that portapak is the epitome of a technological tool that can offer emancipatory agency to everyone who feels the desire to resist the aesthetic of everyday life as it is constructed by television.

This emancipatory agency already starts during production: “Anyone who has ever taken his portapak and a portable monitor into the streets and just let the tape roll, knows the power this little machine has in making things happen.”²⁷ What is more, the casualness with which the spontaneous use of—and a reaction to the use of—portapak in an everyday environment takes place will support another important form of empowerment. By virtue of portapak, the user is able to “regain something lost long ago to them in a world of corporate power structures, and that is the feeling of having control over their own destiny.”²⁸ Evenson nevertheless points to a constraint that lies at the heart of its “imagined” portable use. Although portapak was explicitly envisaged to be available to ordinary users, the bulky equipment²⁹ did not necessarily encourage widespread everyday use. Therefore, Evenson pleads for a more “organic video design which more nearly duplicates our personal vision.”³⁰ For her, the profound characteristic of portapak lies in the distinctly electronic aestheticization of a singular real-time experience. Hence, unrestrained portability and relative ease of use are essential, because only then will it be possible for *everyone* to use portapak. The hope that everybody has the ability to use it is pivotal, since “it is real live people who make up the diversity of human forms and only by tapping this vast range of life forces can we begin to realize the potential of our revolutionary course.”³¹

The revolutionary course of the “imagined use” does not stop after production. According to Evenson, when it comes to keeping and sharing, the produced videotapes also serve a specific purpose:

With video, we end up with a taped record of time past, a magnetic memory of our real life experiences to be stored in our memory bank (on the shelf as so many video tapes [sic] sit!) or to be shared with others as an enrichment [sic] to their own realm of experience.³²

Whereas video production is conceptualized to be the anti-aesthetic and a counter-practice of “government and corporate-run” television, its distribution should service communities and individuals around the globe; to learn from each other’s differing experiences of the world. Evenson therefore recommends people to keep sending homemade videotapes also to TV stations, in the hope that this act “can thereby expose many more people to humanistic ways of viewing the world.”³³

With these hopes and desires of portapak’s use in mind, I would like to

return to Phillip Lopate. He did not share the utopian fantasies of his contemporaries. The sincere belief held by Evenson and others that portapak makes it possible to record and preserve the unique point of view or consciousness of the videographer is downplayed by Lopate as slightly naive: “The only problem with this is that the taped image can never duplicate what the eye sees,” let alone what one’s consciousness experiences.³⁴ Furthermore, the quality of portapak-made videotapes by “ordinary people” available at the moment of writing did not inspire him to indulge in the same enthusiasm as his fellow authors did on the subject. Although he wants to embrace the notion of videography as a widespread practice, he nevertheless laments the fact that video’s use in his view “has not generated an artist of the originality and stature of a Griffith or an Eisenstein.”³⁵ Evaluating the results of early experiments with portapak enticed him to voice a minority opinion in *Radical Software*. Perhaps Lopate’s background as an art and media critic might explain his dismissive attitude towards a form of videography which did not coincide with more traditional artistic practices and aesthetic conventions. Nevertheless, his less celebratory perspective on the portable video system came at the end of the magazine’s four-year publication history. It arrived at a point when the revolutionary tone with a strong “rhetoric of liberation” had run its course in the final issue. And as Boyle showed, portapak’s *actual* use was mostly confined to artists and political activists rather than “everybody.”³⁶

The dream of video as a tool for a countercultural practice to capture and share everyday life did not become a widespread activity—at least not in the scope and magnitude the magazine prophesized. What the discursive expectations of portapak’s imagined user in this case enables us to better understand historically, however, is the way in which *Radical Software*’s avant-garde members gave shape to an early expression of the hopes and desires that, one day, everybody would be able to take control of the tube.



Fig. 27: Christiaan Sliker's kinematograph, marketed as *Edison's Ideal*.
Courtesy of Asing Walthaus.

Edison's Ideal and the Visual Technics of the Sublime

Gert Jan Harkema and Amanda du Preez

EDISON'S IDEAL (KINEMATOGRAPH)

Edison's Ideal was the first travelling kinematograph in the Netherlands. The projector is approximately 14 inches (35 cm) in height, 6 inches (15 cm) in width, and 4 inches (10 cm) in depth and is encased in a wooden box. The film roll was placed on the top reel. The device was manually operated by a lever connected to a wheel on the right side of the apparatus. This movement propelled the lower rolls that pulled the film-strip as well as the barrel shutter and the five-sided Maltese cross. Films were played at around 15 frames per second, causing a flicker in the projection. A limelight burner was placed behind the projector.

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THEORETICAL FRAMING

This chapter approaches the kinematograph used by Christiaan Sliker from a phenomenological and philosophical perspective. Inspired by film studies' recent turn to focus on experience, it argues that the archival object cannot be separated from the subjective relationship it had with its historical spectators. Theory on the material sublime provides a productive model for reframing the earliest projected moving images not as an object but as an intimate involvement between the "new object" and the body of the viewer. Hence, the introduction of the kinematograph can be seen as an aesthetic experience relating both to the familiar and the disruptive.

EDISON'S IDEAL AND THE VISUAL TECHNICS OF THE SUBLIME

From 1896 to 1907, Christiaan Slieker (1861-1945) took his Grand Théâtre Edison across the Netherlands visiting fairgrounds to showcase the projection apparatus *Edison's Ideal* (*Edisons Ideaal* in Dutch). It was the first film projector—or kinematograph akin to the Cinématographe (as developed by the Lumière brothers)—in the country. Although the Lumière brothers had already introduced their “living photography” in March 1896, and the Skladanowsky brothers had also demonstrated their new technology the following May in Amsterdam, the kinematograph bought by Slieker became the first cinematographic attraction that operated on a permanent basis in the Netherlands.¹ The projector is now part of the collection of the Museum Drachten. The actual projector is located at the front of the apparatus, while the rear part contained the limelight burner that functioned as the light source. The projector is approximately 14 inches (35 cm) in height, 6 inches (15 cm) in width, and 4 inches (10 cm) in depth and is encased in a larger wooden box. The film roll was placed on the top reel and ran over the lower two rolls. After it ran through the apparatus, it fell into a basket located under the projector, which the staff would roll up manually during breaks. Like similar kinematograph and projecting kinetoscopes from its time, this projector was manually operated by a lever connected to a wheel on the right side of the apparatus. This movement propelled the lower rolls that pulled the filmstrip as well as the barrel shutter and the five-sided Maltese cross. While the shutter caused a flicker at around 15 frames per second, the Maltese cross provided a relatively stable image.

In the late spring of 1896, the Dutch showman Slieker traveled to Berlin where he ordered a kinematograph from the factory of Foersterling & Co. The device was delivered and introduced to the public at a fair in Leeuwarden in July 1896.² Hermann O. Foersterling owned a company that “repaired and sold optical, electrical, physical, mechanical and artistic appliances.”³ Despite hav-

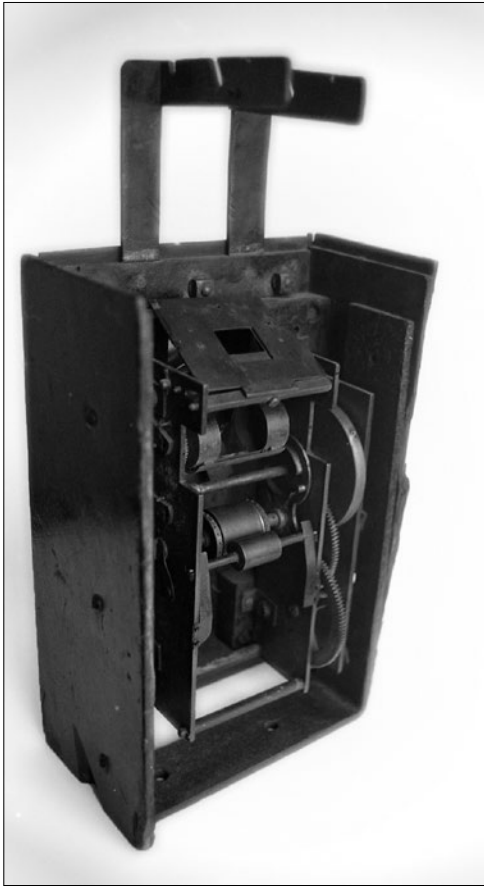


Fig. 28: Rear view of Slieker's kinematograph. Courtesy of Asing Walthaus.

ing already produced one projector, Foersterling did not invent the projectors he produced. It is most likely that Foersterling copied a projector that was invented by Pierre-Victor Continsouza. The inventor patented the apparatus in France on April 28, 1896, yet that patent did not include Germany. After all, the name *Edison's Ideal* can be seen as a marketing tool to connect the unfamiliar invention to the well-known name Thomas Edison.

Our approach to this technological device is phenomenological and aesthetic, as we hold that the introduction of the film projector in the Netherlands cannot be seen as separate from audiences' responses. Tom Gunning describes the viewing experience evoked by the cinematic technique in its very first spectators as a contradictory emotion propelled by an "aesthetic of astonishment."⁴ In this entertainment of shock and thrill, the spectator was torn between the illusionary realism of the screen and the "unbelievable and extraordinary nature" of the cinematic technique itself.⁵ In this chapter, we

will frame the disruptive experience of the earliest film spectator as a sublime aesthetic experience. More particularly, we propose that the “material” sublime—a critique on the Kantian transcendental sublime—can most accurately account for the disruptive experience in which the object (technology) and subject (experience) merge. Hence, the impact of the earliest moving images gave way to an experience of being present in an awe-inspiring moment. Accordingly, *Edison's Ideal* can be interpreted as a device that evoked sublime experiences, as we will explain shortly. Our analysis approaches the historical technology not as an archival object but as an intimate involvement between the “new object” and the body of the viewer.

RECEPTION

By definition, the impact of the initial viewing experience is lost as time passes and habitualization sets in. Yet one of early cinema studies' prime tasks is to reconstruct this viewing position theoretically. Written accounts from newspapers and diaries are often the only existent sources. Even though these journalist reports can be labeled as “metaspectatorship”—a form of reporting that focused both on what was presented on the screen as well as reporting the audience's response—such accounts can be helpful by restructuring an essential part of the introduction of the cinematic technique.

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From today's perspective, after a hundred years in which cinema became a dominant cultural medium, one would expect that the first kinematograph travelling through the Netherlands would have caused major upheaval. However, the historical reality is more complex. Alongside the exhibitions by the Lumières and the Skladanowskys, the Grand Théâtre Edison hosting *Edison's Ideal* was introduced as an interesting new technology but not strictly speaking as a revolutionary one. This is due to the fact that the technology was introduced within the milieu of technological inventions that were popularized and introduced to the public at the time. Attending a local fairground on August 15, 1896, a reporter for *Rotterdamsch Nieuwsblad* recounted that there were no less than six “special” attractions that had a portrait of Edison hanging on walls. At the same time, journalists who *did* go to see the “living pictures” were predominantly positive. What is more, the Dutch audiences' reception of Slieker's projector often runs parallel to the two-sided experience that Gunning describes. On the one hand, spectators were impressed by the naturalistic nature and truthfulness of the “living photograph,” while at the same time they were sensitive to the artificiality of the image as produced by a technology.

What made the viewing experience of the Grand Théâtre Edison's projector

pleasurable was the curiosity involved as well as the amazement with the new technological invention. On July 17, one day after its introduction, the local newspaper *Leeuwarder Courant* published a laudatory review of Grand Théâtre Edison's show. While there was "nothing new" to be noted at most shows at the fairground, there was one extremely interesting and yet unknown ("what is it?") show to be seen. Slieker's attraction was introduced as "a series of photographic snapshots, which, at life size and with all its magnificent colors are projected at a colossal speed so that street scenes, waterfalls, city scenes, etc., etc., are faithfully presented."⁶ Even though the objectivity of this review can be questioned, the newly introduced technology made a great impression on its early audiences in both Leeuwarden and the subsequent towns where the projector was showcased. The newspaper *Utrechtsch Nieuwsblad* published an inciting review about "an ingenious invented device [...] [by means of which] we see living pictures, the nature as it were brought to the screen."⁷ What mattered most for the truthfulness claim was the size of the projection on screen (Slieker's screen was around 5 by 5 ft [1.5 by 1.5 m]) and natural motion (his projection contained flicker but was relatively stable).

The pleasurable experience was enhanced and fuelled by curiosity for technological inventions. The late 19th-century audiences wanted to see and feel the newest technologies of modernity with their own eyes and senses. This was stimulated by the detailed technical descriptions with which the Grand Théâtre Edison was advertised. Slieker distributed handouts that explained in detail the functions of the projector, emphasizing the 900 images on 59 feet (18 m) of celluloid per minute.

Nevertheless, this pursuit for knowledge that could be labeled an "operational aesthetic" failed (deliberately) to deliver full understanding of the technology.⁸ In a 1936 interview, Slieker recounts the story of an early visitor who came repeatedly to the show, hoping that the outcome of a sexually provocative scene would differ at least once. Moreover, the strange and ghostly character of the scenes was also conjured during Slieker's show. At an early screening, a woman came up to the presenter with a picture of her deceased husband, asking him if he could bring him back to life in the moving images.⁹ On December 20, 1897, when *Edison's Ideal* and other kinematographs had already travelled throughout the country, *Rotterdamsch Nieuwsblad* stated that "these presentations arouse the highest attention with the public, all the more because they remain incomprehensible to many."¹⁰ While the audience did not yet comprehend the new medium of film, extensive newspaper reports about fires in Paris and Berlin made it clear that although the kinetoscopic screenings were enjoyable, the machines themselves were nevertheless dangerous and unpredictable. Thus, initially the function of the kinematograph was unclear: was it merely a fairground attraction with no future beyond these

parameters? It was only after scientists developed a proper purpose and place for the kinematograph that it could function beyond its unregulated and dangerous early displays. As Gunning explains, it was precisely the lack of understanding and the threat of danger that caused an ambivalent and astonishing thrill in spectators.

SUBLIME

The stirring experience evoked by *Edison's Ideal* can be attributed to more than a disruption in understanding what happens. It could, for instance, also be interpreted in terms of the affective and emotional response of viewers. Phenomenologically speaking, every event or rupture that occurs in the world resonates both inside and outside the viewer. Merleau-Ponty proposes that perception is always inseparably a matter of both object (the outer world) and subject (the individual body); as he concurs, "[E]very external perception is immediately synonymous with a certain perception of my body, just as every perception of my body is made explicit in the language of external perception."¹¹ Accordingly, it can be surmised that astonishment works both inside and outside the spectator and technology.

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The sublime is usually explained as an experience during which the beholder fails to fully comprehend what stands before her/him. The transcendental sublime, as theorized by Immanuel Kant, constitutes an interaction where the object cannot be grasped entirely by the subject. Form and concept fall short in trying to explain the event. Therefore, the sublime object becomes formless, as it pushes the subject into the supersensible realm of ideas and imagination. The object is freed, as it were, from constraining material conditions.

However, Johann Gottfried Herder—a student of Kant—expressed important criticisms against the notion of the transcendental sublime. In *Kalligone* (1800), Herder questions the unattainability of the “purely rational morality” of Kantian reason for “us as sensible beings.”¹² In fact, Herder argues that a “formless” object in nature is a contradiction in terms: “no object, no aspect of nature, can be understood as formless.”¹³ Aesthetic objects, and in Slieker’s case “living photography,” precisely give “form to great, potentially incomprehensible things such as death, divinity, fate, and infinity.”¹⁴ Thus, it is because we are embodied beings in and of the world that we can make some sense of sublime experiences. As humans, we add a sensible measure to the experiences of the sublime which then renders them meaningful,¹⁵ whereas in the Kantian account, we are required to act as disembodied and dislodged creatures in order to make sense of the sublime. In perhaps the greatest opposition to Kant, Herder states: “We belong to nature, we can know no sublime

fully beyond her.”¹⁶ Herder’s critique of Kant’s sublime places emphasis on the embodied and experiential (thus phenomenological) aspects of the sublime encounter. It is through giving form to the formless that we make sense of sublime experiences, and if this is not the case, Herder argues, the interaction cannot be deemed uplifting (as presumed in the disembodied Kantian version).

The material sublime thus offers an ontologically engaged and phenomenologically contextualized encounter with overwhelming materiality. Whether or not an object evokes a sublime experience does not solely depend upon the object but also involves the subject’s embodied position in the world and her/his relation to the object. As a result, the sublime is not located exclusively in nature but also in art. According to Herder’s aesthetics, subject (the spectator) and object are inextricably bound together. Similarly, the material sublime that he proposes does not distinguish between “things” (ontology) and “words” (epistemology). The result is “representation in the highest,” that is, an experience where representation through words and imagination coincides with the reality of things in the world.¹⁷ It seems therefore that showings of the Grand Théâtre Edison—as one of the introductions to cinema—created the opportunity to evoke sublime experiences, precisely because so much of the workings of the kinematograph and its moving images remained incomprehensible (and thus by implication formless) to the majority of its audience. In this regard, a journalist in the *Leeuwarder Courant* remarked as follows on *Edison’s Ideal*: “[W]e could add [to this newspaper article] a whole description of how it all happens. Many would still be none the wiser [...]. Whoever has seen it is ‘astonished’ by it.”¹⁸

At the same time, moving images marked an important step toward “representation in the highest.” Photography already turned the outside world into an object for direct representation. The kinematograph, presenting “living photography,” completed that trajectory by adding time and movement. Thereby, *Edison’s Ideal* was more than the shallow attraction that some skeptics wrote about.¹⁹ Even though the invention looked modest, the kinematograph provided the possibility that every street, and every living body on that street, could be captured and represented in time and movement. The machine could turn every subject into an object by recording her/him in the moment.²⁰ Like many quasi-scientific attractions on the fairground, *Edison’s Ideal* was heralded by Slieker with terminology that bespoke of the technological sublime, stating: “[T]he most beautiful, the most delightful invention so far in terms of electricity.”²¹ He promised to showcase the newest invention that would “amaze” every spectator. Yet the kinematograph’s impact was not a mere matter of marketing or gesture. Its impact was more fundamental, as it could present events in a new and impressive way that highlighted the “being

there” of the world in time and space. Viewers were confronted with the passage of time and the fleeting moment as it occurred in the outside world. At the same time, the device promised to keep dear ones alive through the phantom presences onscreen. These images seemed at once familiar and truthful representations, while referring simultaneously to an unusual ghostly, gray and framed-in place world.

Initially, before the technology was tamed and habitualized, encounters with Slieker’s projector were considered awesome and surpassed comprehension. This material sublime experience seems lost in time. Whereas *Edison’s Ideal* as the technological device is well-preserved, it is impossible to catalog an “experience” in the archive. However, as we have argued above, technology and experience cannot be separated, as object and subject became entangled in the material sublime experience. As a result, a historical device in the archive is always incomplete, as it is alienated from its viewer or spectator. To approach the initial impact of the cinematograph in terms of the material sublime confirms the recent tendency in film studies to move away from approaching the archival material as an object towards a mode of experience or reception.²²

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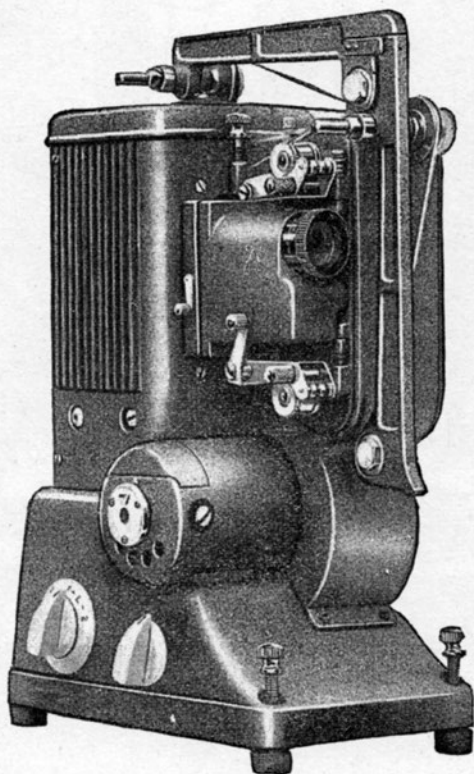
Our analysis of Slieker’s *Edison’s Ideal* marks the intersection of the apparatus with the viewer’s experience. Documents on reception of the cinematograph can be useful in reconstructing the perception of the technology. And yet, finding these accounts could prove to be quite problematic, considering that the material sublime is meant to leave the beholder speechless—such sublime experiences could simply not have been put into words. This may account for the absence of the moving images’ impact in many newspapers and diaries. Subsequently, it might be productive for historical research to move beyond the written words and facts in order to experiment and theorize. Even though the initial experience may never be fully reconstructed, re-enacting the historical viewing situation might bring us closer to the contemporary promises and possibilities of the cinematograph.²³ Hence we plead for research that is both historical and theoretical, thereby connecting knowledge from archives with concepts from phenomenology.

CONCLUSION

The initial impact of the cinematograph remains a challenge to both early film history and contemporary film theory. Film studies’ historical turn brought us important insights into spectatorship and specific contexts.²⁴ However, as we have tried to indicate with this brief analysis, the historical enquiry into the spectator’s experience could benefit considerably from a phenomenological

and aesthetic perspective. This framework provides further insight into the astonishing experiences that shaped early cinema because it also accounts for that part of the impact of the kinematograph that refused understanding and expression. A phenomenological perspective also allows us to locate the astonishing experiences in both the object (the kinematograph) and the subject (the spectator or observer). Hence the historical object is fundamentally part of the specific viewing experience, and *vice versa*. Above all, its place of residence—the archive—is not just a closed cabinet of newspapers or a projector exhibited in a collection behind glass: it is an object to engage and to experiment with, in theory and deliberation as well as in practice.

PART II
MEDIUM AND NOT EASILY
PORTABLE



SPECTO

16 mm. projector

VELE HONDERDEN

in gebruik op scholen in Nederland, robuust gebouwd, zeer eenvoudig in bediening, laag in prijs.

Leverbaar met 200 of 500 Watt-lamp.

Zonder transformator te gebruiken op 110, 127 en 220 Volt.

SPECTO 200 Watt projector :

Prijs : f 495.—.

SPECTO 500 Watt projector :

Prijs : f 625.—.

PRIJZEN INCLUSIEF LAMP.

Vraagt U eens een beschrijving bij :

J. P. VOS' CINEFOTO-IMPORT N.V.

LAAN COPES VAN CATTENBURCH 54 - DEN HAAG

Levering via de fotohandel

Fig. 29: Detail from an advert for the "Specto 500" 16mm Cine Projector, taken from a 1953 issue of *Mededelingen van de Stichting Nederlandse Onderwijs Film*. Courtesy of Nationaal Onderwijsmuseum, Dordrecht.

A Legal Alien: The 16mm Projector in the Classroom

Eef Masson

THE “SPECTO 500” CINE PROJECTOR

The “Specto 500” Cine Projector was released by Specto Limited of Windsor, UK in 1951. 8mm, 9.5mm, and 16mm models were available, as well as dual gauge models (8/16mm and 9.5/16mm). The projector worked with either a 200W or a 500W lamp and could be converted for sound playback. The machine shown in this advert from 1953 is set up for 16mm projection, with no sound. In Dutch schools—the type of institutions targeted by the ad—the projection of films with sound was still a rare occurrence at this time.

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THEORETICAL FRAMING

In this chapter I make a plea for the consideration of screening conditions in the analysis of classroom films (and by implication, the analysis of “useful” or “functional” media more broadly). Relying mainly on Dutch primary sources, I explore contemporary teacher attitudes towards the use of films and projectors in class and discuss how they translated into specific screening practices. Using the notion of *dispositif*, I make mention of a wide range of screening conditions—conditions which, in turn, made for a rather diverse set of interpretive frameworks for films shown in schools.

A LEGAL ALIEN: THE 16MM PROJECTOR IN THE CLASSROOM

The “Specto 500” Cine Projector, shown in the advert reproduced here, was one of a range of 16mm projectors marketed to the personnel of primary and early secondary schools in the Netherlands. Throughout the 1950s, adverts like this appeared in newsletters issued by the Stichting Nederlandse Onderwijs Film (NOF; Netherlands Foundation for Educational Films), the main producer and distributor of classroom films in the country at the time.¹ Yet despite the increasingly wide availability of easy-to-use equipment in the post-war period, the 16mm projector never acquired the status of staple classroom equipment. Rather, evidence suggests that the 1940s and 1950s were marked by a widespread attitude of resistance towards the screening of films in class.

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In this chapter I first take a closer look at the objections raised, relying primarily on Dutch publications from the 1940s and 1950s. I demonstrate that they derived in large measure from the concern among teachers that the use of films and projectors might (further) complicate their daily tasks. Therefore, using them was attractive only to those who were very confident about their classroom skills (both practical and didactic). Subsequently, I explore how this attitude affected the conditions of the films’ screening and what these conditions in turn must have entailed in terms of how the films were understood. I argue that the wide variety of screening conditions that took shape at the time made for a highly variable set of *dispositifs*, ranging from decidedly pedagogical on one end of the scale to highly recreational on the other. Depending on which of those *dispositifs* materialized, the films’ youthful audience would have been invited to perform a specific (type of) reading. By means of a hypothetical example, I make a case for accounting for said screening conditions, also in the context of a retrospective analysis.

RESISTANCE TO THE USE OF FILM IN CLASS

As educational historians point out, schoolteachers' reception of audio-visual classroom aids—and moving images in particular—has been lukewarm at best.² In terms of infrastructure, the immediate post-war period was a time of institutionalization. Throughout the Western world, agencies were set up to coordinate the production and supply of films for education, oftentimes with (financial and/or logistical) support from the state.³ These initiatives were able to benefit from the momentous spread of the small-gauge circuit during World War II. However, such efforts met with considerable resistance from the users targeted.⁴

The range of objections to the use of film in the classroom was extensive. Reservations of a pedagogical nature figure most prominently in contemporary sources. Many of these were psycho-social concerns deriving from the presumed inability of young children to accurately process mediated information, and especially combinations of images and sound.⁵ Another set of objections centered on the film medium, and by extension also the film projector, as being fundamentally alien to the task of schools.

A first series of arguments to this effect revolved around the status of film as an entertainment medium. Ever since the 1920s, when films for education were screened in so-called “school cinemas,” objections had been raised to its use for this very purpose.⁶ The problem was that film was associated with leisure and its enjoyments—and, in particular, the more banal and frivolous kind. This fundamentally clashed with the goals and conditions of education. As one commentator wrote:

Education presupposes seriousness and purity of intentions. It is not a matter of pleasure or relaxation, but rather of diligence [...]. This inevitably entails that the tools used in education should be exceptionally trustworthy also, and that they should serve its purpose without ulterior motives.⁷

For opponents of the medium, film did not meet these criteria. Even if purpose-produced materials had been made available, using them still entailed the risk that children would misunderstand the screening's purpose or status—or worse, that classroom sessions would encourage cinema visits of a non-educational kind.⁸ In religious circles in particular, this was considered a weighty argument.⁹

A second series of objections shifted the attention from the medium and its various entertainment associations to the projection apparatus that embodied them. Again, these arguments were rooted in a fear that what was considered an

“appropriate” classroom atmosphere would be disrupted. The contention was that teachers were insufficiently familiar with the technical features and operation of the film projection process, and that the accidents that might result would cause a racket in class. No matter how adamant adverts were about the user-friendliness of the machines they promoted—the “Specto 500” advert being a case in point here—showing films in class required a new set of skills that were very different from the ones most teachers in the 1940s already had.¹⁰

Educational historians have demonstrated that the fear of losing control over the classroom is a constant in texts reflecting on the pros and cons of audio-visual media in education.¹¹ Larry Cuban, author of a sizeable body of work on the history of media technologies in the classroom, argues that control is a necessary precondition for instruction. Without a minimum of order, teaching simply cannot occur—especially the kind of teaching that is conceived of as a transfer of knowledge or skills from one party to another (a persistent model in the 1940s and 1950s). In view of this reality, teachers need to be pragmatic and avoid any methods or tools that involve the risk of making an already heavy task even more arduous.¹²

Post-war policymakers, in their unrelenting efforts towards educational reform, were often accused of ignoring this fact. Even those in favor of new methods and aids would voice complaints:

Another problem in the New School is: *discipline*—an issue that is all too often disregarded. Those who, within the classical school system, have a problem with classroom order, who experience it as a difficult matter on a daily basis, or who cannot keep it unless they use military-like measures, should not experiment with a more “relaxed” system.¹³

The more “relaxed” classroom atmosphere that didactic choices such as the screening of films entailed seem to have been closely associated with the possibility of unpredictable behavior on the children’s part; among others (although not exclusively) reactions provoked by problems associated with the operation of a projector. Using film, contemporary accounts suggest, required from teachers a more-than-average confidence in their own competencies as instructors, including also the certainty that order *could* still be restored should the need for it arise. Pre-existing projection skills, in this context, were an extra asset, as classroom interaction could more easily be protected if quirks of the machinery were swiftly dealt with.¹⁴

However, the importance of practical objections to the use of film should not be overstated. As I argue elsewhere, resistance was inspired not only by the teachers’ fear of losing functional classroom control but also by a reluctance to let go of their intellectual authority. Above all else, educators seem to have

been wary of relinquishing ownership of the knowledge or skills that had to be passed on. This danger was considered particularly acute in the case of films with sound, which basically robbed a teacher of his or her voice—the historically most firmly established channel of knowledge transfer—and passed it on to a surrogate.¹⁵ In response to this concern, the Dutch NOF delayed the distribution of sound films until as late as the mid-1950s.¹⁶ This in turn explains why newsletter issues from earlier in the decade promote mainly silent projectors—like the Specto apparatus shown above.

CLASSROOM SCREENINGS: CONDITIONS AND INTERPRETIVE FRAMEWORKS

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As it turns out, projection skills were a decisive factor for both the frequency and type of film use in schools. Although sources on the topic are scarce, those that are available suggest that the medium's deployment was highly diverse in nature.¹⁷ It seems to have ranged between two extremes on a much more varied scale.

On one end of the scale I would place those screenings that marked some kind of an event: a public holiday (the children's festival *Sinterklaas*, or Queen's Day), a headmaster's birthday, or an upcoming break. Here, a film being shown was an exceptional occurrence—something that happened once or twice a year—and an occasion in itself. Performances would often be attended by large groups of students and therefore take place in communal areas (school attics, assembly halls) rather than classrooms, as the films' distributors ordained.¹⁸ In addition, the films that were shown rarely matched the audience's lesson programs. Since they served a recreational purpose rather than an educational one, they often also included fictional narratives (among others, shorts intended as aids to speaking or composition practice).¹⁹

On the other end of the scale I would situate a type of screening that clearly did serve an educational purpose. Witnesses also attest to a more pedagogically embedded kind of use, where films were chosen to fit the day's lesson program. As a rule, they were preceded by an introduction that drew attention to academically relevant facts and followed up with a class discussion and/or written exercise or test. Barring practical impediments, such screenings were held in the children's own classrooms and in the presence of their regular instructors. Although not necessarily following it to the letter, teachers would stick to the distributors' user advice in spirit. In terms of overall frequency, such screenings were less common than the more "occasional" type. However, their initiators, often highly dedicated to the cause, would organize them regularly, and as such may still have been responsible for a considerable percentage of the projections that took place.

Both types of usage must have relied primarily on those more technically skilled among a school's teachers: those who either had prior projection experience or had received special instruction. In the 1940s in particular, the latter was common; in the Netherlands, for instance, the NOF required interested teachers to follow a course, which on successful completion yielded a user permit that provided access to its services.²⁰ The more "embedded" type of screenings, sources suggest, would have been the work of a small pool of people, often males, with a clear predilection for the medium. At least some of the teachers concerned were small-gauge amateurs: family filmmakers or members of amateur film clubs.²¹

Although enthusiasm about the medium may have been one reason for those instructors to screen films frequently, another motive can also be inferred. In accordance with the logic followed above, it can be argued that showing films often was one way of ensuring the maintenance of classroom order (a basic condition for pedagogical exchange). In its publications, the NOF insisted that teachers should avoid at all cost that the use of a film in class be experienced as something exceptional; in order for it to do its job, it had to be perceived as a didactic tool like any other.²² One way of ensuring this was to properly embed screenings; another—hinted at more indirectly in relevant publications—was to show films more than just occasionally.²³ While advice like this should not be taken at face value, as it is evidently part of an effort to promote an institution's services, it also makes sense to read the proposed strategies as an example of didactic pragmatism. Retrospective accounts of the more occasional type of screening attest to merriment and rowdiness in the audience; viewers of embedded screenings, however, rarely have such recollections.²⁴ While this may indicate that the teachers responsible were well equipped to maintain order in the classroom—possibly due in part to a lack of fear of the projector—any routine that could help "naturalize" the use of film in class must have reassured them further.

Each of the scenarios sketched above has its own consequences in terms of how the films were framed—consequences that need to be taken into account in interpreting the materials shown. This is best illustrated by means of a hypothetical example. Consider, for instance, the (silent) film *GIETHOORN* (1942), an early NOF production that consists of a series of views of the eponymous Dutch town, mostly shot from aboard a small vessel. Indebted to a much older pre-war tradition, the film presents a tourist's perspective, placing a number of natural and cultural sites on display, and in the process also miming the act of visual appropriation.²⁵ Without any further context, it does not suggest in any way that it was made specifically for a school audience or, more particularly, as an aid to lessons in geography.²⁶

Therefore, if a teacher wanted to use it as an actual educational aid,

it would have required quite an effort to frame it as such. For instance, the instructor could have underscored the film's status as a tool by embedding the screening in a series of classes on the physical features and socio-economic activities of various Dutch regions, or by introducing or accompanying the film with an account on the particularities of the area where the action is set. Also, the teacher could have warned the children that the screening would be followed by a written test. Assuming that the teacher had enough authority to keep the children quiet during the preparation of the classroom—the threading of the projector and the screening itself—this combination of circumstances would have made for a decidedly pedagogical *dispositif* and at the very least proposed a reading of the film with focus on any academically relevant information (regardless of whether individual viewers would have agreed to read it as such).

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Alternatively, the film's projection might have been part of a longer program, presented on the last day before a summer break. With children from several age groups gathered in a large hall, the atmosphere would have been more boisterous. In this scenario, the teachers present would have intervened only when things threatened to get out of hand, for instance during the breaks in between successive films as the projector had to be rethreaded, or whenever a film derailed or broke. Within the more recreational *dispositif* taking shape here, the members of the audience would have been able to infer that the only purpose of the screening was to keep them busy until the end-of-term bell rang. If willing to interpret at all, they would have been free to read the film presented purely in terms of the associations it evoked with the playfields of their upcoming holidays—rather than in terms of what it might teach them about the geography of a particular location.

For most children who saw films in schools, this last scenario was the more familiar one. In the decades after World War II, the film projector definitely had a place in schools, but it never became a common educational tool. In classrooms, sources suggest, it continued to have the status of an “alien”—albeit a “legal,” officially condoned one.



Fig. 30: EIKI EX-4000P 16mm film projector with a filmlooper designed by Ruud Molleman at Studio 2M and René Welker. Courtesy of Marijke van Warmerdam.

The Analog Film Projector in Marijke van Warmerdam's Digitized Film Installations¹

Julia Noordegraaf

THE EIKI 16MM FILM PROJECTOR

For the exhibition of her film installations, Dutch artist Marijke van Warmerdam preferred the EIKI EX-4000P, a portable 16mm film projector designed by the Japanese firm EIKI (1979). The projector is fitted with a 550-watt xenon lamp and measures 18.5 inches (47 cm) in length, 8.6 inches (22.5 cm) in width and 18 inches (45.6 cm) in height. In order to realize the uninterrupted screening that Van Warmerdam's short film loops require, film technician Ruud Molleman designed a specific looper system that can be attached on top of the projector. By early 2000, EIKI stopped the production of film projectors, entirely focusing on the production of digital projectors. Nowadays, the 16mm EX-4000P projector is only available second-hand or via rental services.

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THEORETICAL FRAMING

This chapter focuses on the role of projection technology in the exhibition of 16mm film-based artworks in the gallery space. The analysis of one particular case, the transition from analog to digital projection in the exhibition of the film installations by Dutch artist Marijke van Warmerdam, serves to address the more fundamental question of how analog film technology relates to the appearance and meaning of film-based artistic work and how this relation changes with digitization. With reference to the theoretical debate on indexicality as film's defining feature, the chapter points out that digital projection maintains the cinematic qualities of the original works; nevertheless, documenting the analog origins of these projections should remain a necessity, as a loss of this specific history is at stake.

THE ANALOG FILM PROJECTOR IN MARIJKE VAN WARMERDAM'S DIGITIZED FILM INSTALLATIONS

INTRODUCTION

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In 2011, the Museum Boijmans Van Beuningen in Rotterdam organized a monographic exhibition dedicated to the work of the Dutch artist Marijke van Warmerdam, titled *Close by in the distance*.² Van Warmerdam is best known for her film-based installations which present simple settings or movements—such as a girl performing a handstand—in short film loops that are projected in the gallery space. The exhibition also included a selection of Van Warmerdam's non-filmic works, including photographs, prints, and sculpture. During the preparations for this retrospective, the artist made the decision to have her films digitized, and in the exhibition they were shown as digital projections for the first time. This meant that, from 2011 onwards, most of the EIKI 16mm film projectors previously used for the exhibition of her work have disappeared from view.

The replacement of the analog 16mm projectors by digital ones is remarkable because the projectors, with their physical and audible presence in the gallery space, have always been part of Van Warmerdam's works. Together with the looped film and the projected image on the wall or screen, the projectors would enter into a sculptural relationship with the space in which they were exhibited.³ A case in point is *KRING (CIRCLE)* (1992), a film portraying a circle of people recorded at a square in Marrakech by a rotating camera, which is projected on the four walls of a room by a rotating 16mm projector placed on a pedestal at the center of the room. The fact that the rotating projector mimics the rotation of the camera generates a flashlight effect, lighting up the people as the projector moves around. This setup encompasses the viewer and evokes the impression that one is being observed by the people portrayed.⁴ In other cases, such as the work *HANDSTAND* (1992), the projector and screen are

positioned freestanding in a larger gallery, with the projector positioned on a tabletop or specially designed pedestal. The digital projectors chosen for the 2011 exhibition lack such a visible and audible presence: they were suspended from the ceiling, were barely audible and projected images that seemed to be generated by screens that stood on the floor or hung suspended from the ceiling. This raises the following question: to what extent does the transition from analog to digital projection impact the appearance, content, and interpretation of Van Warmerdam's work.

Van Warmerdam belongs to the generation of visual artists that around 1990 began to rediscover film as an artistic medium and use it in new ways. This generation includes, among others, Stan Douglas, Tacita Dean, Matthew Buckingham, and Rodney Graham. After the age of video art in the 1970s and 1980s, which had distanced itself from cinema, at the dawn of the digital age these artists once again started exploring the moving image in relation to cinematic tropes and conventions.⁵ The use of visible and audible projection technology is part of this re-engagement with cinema as a historical medium.⁶

The pervasiveness of analog film stock and projection equipment in the gallery space in the early 1990s coincided with the centennial of cinema's existence and the theoretical debate about the medium's supposed demise at the dawn of the digital age. The debate centered on the question whether the emergence of digital recording and exhibition equipment—which translates a recorded image in binary code and thus lacks photography's direct, physical relation with external reality—marked a break with film's indexicality and thus signaled the end of cinema as a distinct medium.⁷ Seen against that background, the fact that analog film projection transferred from the cinema theaters to the gallery space may be seen as a moment where the medium becomes "historical"—a thing of the past.⁸

Previous studies of the use of 16mm film in contemporary art have focused on the ways in which the use of this obsolete technology thematizes cinema's historicity.⁹ By extension, I focus on a case where the original 16mm film projector *disappears* from the gallery, and in the process obscures the analog origins of the work. In the light of the debate on the impact of digitization on cinema's ontology, this raises the question of what, in Van Warmerdam's digitally projected film installations, is left of cinema? As such, it serves as a case to address the more fundamental question of how film technology relates to the appearance and meaning of film-based artistic work and how this relation changes with digitization. In the following, I address this question by investigating the role and place of the analog origins of Van Warmerdam's works to show how they influence the appearance and meaning of the works.

MARIJKE VAN WARMERDAM

Marijke van Warmerdam (born in 1959) was trained as a sculptor at the Rijksakademie in Amsterdam and in New York and Berlin and lives and works in the Amsterdam area. Characteristic of Van Warmerdam's work is the lack of any form of narrative in her films. The films focus on simple, everyday actions or settings, such as the swirls of milk poured into a glass of water (*DREAM MACHINE*, 2006), a man taking a shower (*DOUCHE [SHOWER]*, 1995), or the white condensation patterns that airplanes leave behind against a deep blue sky (*SKYTYPERS*, 1997). In addition, Van Warmerdam realizes unreal or fantastic scenarios in her films, whereby simple objects become involved in strange occurrences—such as a hat dancing in thin air (*LE RETOUR DU CHAPEAU [THE RETURN OF THE HAT]*, 1998); parrots turning a summersault on their perch (*RRROLLE – RED*, 2011, and *RRROLLE – BLUE*, 2011); or a storm—complete with rain, lightning, and hail—breaking out over a bathtub (*WEATHER FORECAST*, 2000). Because of the complete lack of narrative, the viewer's eyes are drawn to the formal arrangement of the images and their colors, pattern, and rhythm—with the emphasis on the elapse of time.

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Due to its documentary, observant nature, Van Warmerdam's work is close to life. As the artist herself says: "I like art especially when it is mixed with life. Art can give a twist to life and vice versa. I really enjoy it when a work comes very close to life and almost merges with it but stops just short."¹⁰ Her works invite us to focus on the minor details of reality, settings, objects or simple, everyday actions that we normally overlook. She uses the highly constructed setting of a film shoot to highlight the beautiful and miraculous aspects of reality, such as the drops of water dripping from the inside-out pockets of a boy's swimming trunks in *LICHTE STELLE* (2000).

Van Warmerdam uses film, but she considers herself a *visual artist*, not a filmmaker. In an artist's interview conducted in 2003 and 2004 with Jaap Guldemond (then curator of the Museum Boijmans Van Beuningen) and Mark-Paul Meyer (curator at EYE Filmmuseum), she indicates that her film-based works are deliberately created for the gallery space instead of the black box of the cinema theater.¹¹ The artist emphasizes the sculptural character of her work: the looped film, the projector, the projected image on the wall or screen, and the positioning of the installation in the room are all part of the entire work and enter into a relationship with the space in which it is exhibited.¹² Rather than in the traditional cinema theater, then, where the projection setup is hidden from view, her works should be displayed in galleries that are sufficiently lit to be able to distinguish all elements of the installation.

The use of space in Van Warmerdam's film installations can be roughly divided in two categories. First, there are installations that immerse the view-

er in the work, such as *KRING* discussed above. A second category comprises works projected on screens or walls installed in a larger space, where the viewer can walk around them, as in the case of *VLIEGTUIGEN* (*AEROPLANES*, 1994).¹³ Besides the use of space, another element that determines the sculptural character of her work is the size of the projection. *KRING*, for instance, should ideally be projected with the film image having a projection height of 240 cm—so as to make the people portrayed appear life-sized. In addition, Van Warmerdam prefers the image of *KRING* to start on the floor, in order to “ground” the people portrayed, as it were. So in many cases the decision to “ground” the projections functions to create a fluid transition between the reality of the viewer and the filmed reality. This is the case in *HANDSTAND*, where the lower part of the image also pictures a floor.¹⁴

216 | DIGITIZING VAN WARMERDAM'S FILMS

As Van Warmerdam explained in the artist's interview, she preferred the photographic quality of the film image above that of video because of its higher and more stable image quality. Yet, by the time of her solo exhibition at Museum Boijmans Van Beuningen in 2011, the quality of digital images had improved to such a degree that, to her mind, it very nearly approached that of analog film. Also, it has become increasingly difficult to find the hardware needed for the analog projection of her works: the EIKI 16mm film projectors with xenon lamps that she prefers can only be found with great difficulty on second-hand markets and have become quite expensive. A third factor is the disappearance of the expertise required for operating analog projection technology: Ruud Molleman, the technician who was responsible for most of the technical modifications made to Van Warmerdam's projectors, has recently retired.¹⁵ So by the time of the Museum Boijmans Van Beuningen show, where 20 of her film loops would be projected, Van Warmerdam was more or less forced to find a different solution.¹⁶

In preparation for the exhibition, EYE Filmmuseum digitally transferred and restored several of the artist's film loops, which were eventually presented in the form of Apple ProRes HQ 422 files, played with QuickTime and projected using Panasonic PT-DZ570E projectors.¹⁷ In the 2003/2004 artist's interview, Marijke van Warmerdam already indicated that she could imagine a future where a work like *HANDSTAND* would be shown as a digital projection. She said that in such a case, it would not make sense to replace the visible analog projector with a beamer, since a lightweight beamer does not require the sturdy table an analog film projector needs and thus there would be no logical connection between the two. She also clearly indicated the sound of the projector was not

important to her: she does not consider it an essential part of the work. Moreover, she indicated that maintaining the sculptural aspect of her works is important but that this can be achieved by other means than a visible projector. So in her view, the visible presence of the projector is not a requirement to achieve the sculptural presence of her film installations.¹⁸

For curators, conservators, and conservation theorists, this is quite a striking view, since the disappearance of the 16mm film projectors in the 2011 exhibition—including, in most cases, their visible presence and the characteristic noise they produce—significantly alters the aesthetic experience of Van Warmerdam's works. In addition, one can ask—as does Michael Friend, archivist at the Academy of Motion Picture Arts and Sciences—to what extent “the physical values, the original aesthetic, of celluloid based moving images can accurately be captured and rendered—back to film and on digital screens.”¹⁹ However, as we will now see, from the perspective of contemporary film theory—in particular the debate on the transition from analog to digital film—Van Warmerdam's decision to go digital makes perfect sense.

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ANALOG VERSUS DIGITAL FILM

Since the first experiments with digital technology for creating special effects in the late 1970s, the role of digital technology has increasingly permeated all aspects of the production, distribution, preservation, and exhibition of films. Today, both contemporary and restored movies have largely become analog-digital hybrids: digital technology is usually involved in some stage of the production, distribution, or exhibition process.²⁰ This is particularly clear in museum galleries, which often have to accommodate a great many projections running at the same time and whose “white cubes” are not designed for analog film projection.

The current transition to digital exhibition in cinema theaters preludes to a (very near) future where most audiences will experience movies only as digital projections; the analog originals will soon only be accessible through the vaults and screens of cinematheques.²¹ For many filmmakers, critics, and archivists, the fact that digitization pushes analog film to the margins of the industry signals the end of cinema as a distinct art form. This is particularly felt by artists and filmmakers for whom the material base of analog film, the celluloid carrier, is the basis for their artistic expression. For example, the British artist Tacita Dean found out in 2011, to her great dismay, that the London laboratory that handles her films had ceased the printing of 16mm film—a decision that forced her to find another laboratory abroad for the production of 16mm exhibition prints of her film-based artworks.²²

British poet, novelist, critic, and film editor Dai Vaughan nicely voices the fear of the end of cinema in this quote from a text included on the exhibition website of Dean's Tate Turbine Hall commissioned FILM (2011): "The analogue has been the mode for human consciousness ever since we first carved a reindeer on a piece of antler. We are now, within a mere couple of decades, casting it all away. This may mean the end of us."²³ Vaughan voiced similar concerns in an article published in 1999, tellingly titled "From Today, Cinema is Dead."²⁴ For many artists and filmmakers, working with analog film is attractive because of its indexical relation to reality: the fact that there is a direct, physical link between the reality depicted and the image on the film, literally sculpted in the emulsion by light rays reflecting from the object depicted. The cinephile argument is that once this link is broken, as in digital photography and film which translates the image into binary code, film is no longer film.

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In his 2004 article "What's the Point of an Index? or, Faking Photographs," the American film historian Tom Gunning puts this view into perspective. First, he counters the claim that there is an opposition between the digital and the indexical, the idea that digitization would sever photography's indexical relation to reality—and thus by extension also that of cinema, given that it is a photography-based medium. As Gunning argues, storage of information in terms of numerical data does not eliminate indexicality: digital images, just as their analog predecessors, can serve as passport photographs and other legal evidence or documents that photography usually supplies. Besides, Gunning reminds us, the indexical itself is not the exclusive domain of photography: "Long before digital media were introduced, medical instruments and other instruments of measurement, indexical instruments *par excellence*—such as devices for reading pulse rate, temperature, heart rate, etc, or speedometers, wind gauges, and barometers—all converted their information into numbers."²⁵ Moreover, Gunning argues, the fact that photography combines indexical and iconic signs does not mean that the two are necessarily related: an index need not resemble the thing it represents. Seen from that perspective, the numerical data produced by a digital camera and the image of analog photography are both indexically determined by objects outside a camera.²⁶

Secondly, Gunning posits that, rather than focusing on its indexicality, our interest in the photographic image should be explained from a phenomenological perspective. We are fascinated by photography's capacity to present us with an image of the world: "[...] whereas signs reduce their reference to a signification, I would claim the photograph opens up a passageway to its subject, not as a signification but as a world, multiple and complex."²⁷ Rereading André Bazin's and Roland Barthes's definitions of photography, Gunning argues that if we focus less on the photograph's indexical qualities and look at other aspects of its visuality—such as its excessive detail, lack of

selection, uniqueness, and contingency—digital photography just continues a tradition of creating artificial realities that respond to our delight in visual illusion, including the panorama, the diorama, and early animations: “[...] rather than maintaining the absolute barrier of the indexical, we might want to place photography into this tradition, accenting its visual acuity and excessive quality to[o] often bypassed by recent commentaries [...].”²⁸ So where the overwhelming detail of photographic representations makes them less useful as unambiguous signs and sources of indexical data, this excessive “noise” is the defining feature of photography’s realism as well as its sense of uniqueness and contingency. Seen from this point of view, there is no essential difference in the experience and appreciation of analog and digital photography; they both share the same perceptual realism.

Seen against the background of Gunning’s view on digital photography, it can be argued that the transition from analog to digital does not affect the integrity of Van Warmerdam’s works. I would argue that in most of her film installations, the artist is primarily interested in the “reality effect” that Gunning sees as the basis of our investment in photography-based media—whether analog or digital. Thematically, Van Warmerdam’s work is very much about letting us see reality from a different perspective; and film, with its abundance of details and its focus on capturing a unique, fleeting and contingent moment, is very suited to focusing our attention on those wonderful aspects of reality that we normally tend to ignore. The fact that the artist often “grounds” her images by letting the projections start from the floor also supports this reading: she uses this “grounding” to suggest a smooth transition between the reality of the viewer and the reality of the filmed images. This is the same effect as the one achieved in the 19th-century panorama, which contained a transition zone with props to create an uninterrupted illusion transferring the viewer to the painted world on the circular canvas.²⁹

However, the transition to digital does not make sense for all of Van Warmerdam’s works. In some cases, the sculptural quality that the artist values so highly would be severely compromised if projected digitally. An example is *KRING*, where the rotation of the projector mimics that of the camera and thus directly refers to the original setting of the analog recording. Other examples are *RIJST* (RICE, 1995) and *PASSAGE* (1992), which in their projection setup—with a small projection screen fixed to the projector—evoke an intimacy that should be maintained. These works would look odd when shown with a digital projector. It is also different for works that thematize film’s indexical, material qualities. For example, Nam June Paik’s film installation *ZEN FOR FILM* (1964) consists of the projection of an unexposed film strip, showing nothing but the wear and tear caused by the repeated projection runs. The viewer here is presented with nothing but the passing of time. In digital form, as with for

instance a video registration on YouTube, this work no longer makes sense: the digital copy stops the degradation process and thus freezes time rather than exposing it.³⁰

DOCUMENTING THE ANALOG PAST

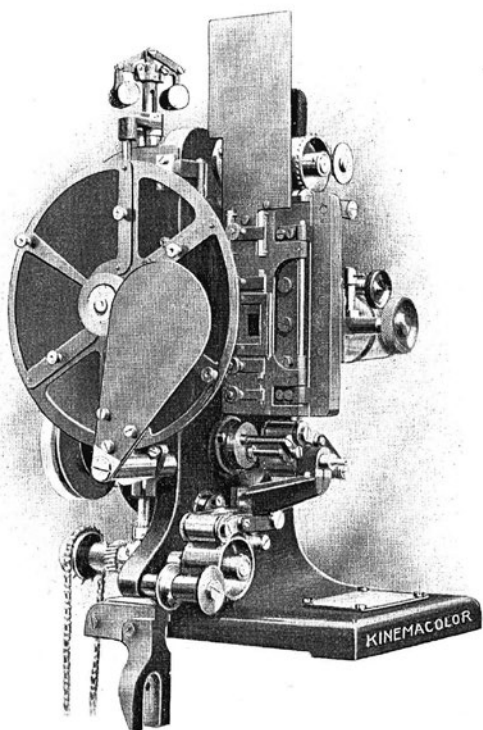
I have argued that the transition from analog to digital in Marijke van Warmerdam's film installations is perfectly understandable if seen from a perspective that emphasizes film's phenomenological, rather than indexical, qualities. It fits with the concept and theme of her works as well as her views on their sculptural presence in space. In a more general sense, then, we may conclude that the phenomenological qualities of cinema can be maintained in digital projection. Only when the hardware itself is conceptually or aesthetically relevant, as in Van Warmerdam's *KRING* or *RICE*, should it be considered an essential part of the work that cannot be replaced by digital equivalents without fundamentally changing the appearance and meaning of the works.

However, the question still remains how cultural heritage institutions, burdened with a specific historical responsibility, should handle the analog past of her works. The catalog of the 2011 exhibition often emphasizes Van Warmerdam's use of loops and analog projection but makes no mention of the fact that these have disappeared from view in the exhibition. For example, Michaela Unterdörfer writes: "[Van Warmerdam's] films are mostly without soundtracks; just occasionally there may be sounds or perhaps even some words. The main accompaniment is the hum of the running projector."³¹ Also, some of the reviews of the show explicitly mentioned the silence in the galleries, without noticing that the analog projectors had disappeared.³² Is that a logical consequence of the theoretical argument I presented above, or is it a case of amnesia?

In my view, it is very important to acknowledge the active, mediating role of technology: we should stimulate awareness among curators, critics, and audiences of the role of technology as actor rather than as an exchangeable means to an end. In 1997, art historian and curator Lynne Cooke described the sound of the projectors used in Van Warmerdam's work as an integral part of the installations: "[...] the mechanism of the projector provides a discrete aural accompaniment, an integral part of the technology on display."³³ Although I have argued that the disappearance of the analog projectors from the galleries does not in any way diminish the appeal of her work, and that the artist herself does not consider their sound essential, it is important to acknowledge that historically, the projectors *were* audible and visible and therefore influenced the viewers' perception of the works. The great challenge for contemporary

art conservation and research is to find ways to acknowledge the analog past of moving image-based artworks, to do justice to their historical appearance and transformation. Like the artist herself, these works have a biography that deserves to be documented and remembered—if only because it shaped the memory of her work in the heads of a whole generation of museum-goers. Acknowledging these life histories in exhibition catalogs and press releases will allow us to recognize their analog origins in an increasingly digital future.

GENERAL VIEW OF THE KINEMACOLOR
PROJECTOR.



KINEMACOLOR MECHANISM.

Back View, showing Color Filter and Automatic Light Cut-Off.

Fig. 31: The Kinemacolor projector as illustrated in the 1910 *Kinemacolor Equipment Catalog* (London: The Natural Color Kinematograph Co).

The Illusion of Movement, the Illusion of Color: The Kinemacolor Projector, Archaeology, and Epistemology

Benoît Turquety

THE KINEMACOLOR PROJECTOR

Produced between 1910 and 1914 by Natural Color Kinematograph Co., Kinemacolor projectors used panchromatized black-and-white 35mm film. The Kinemacolor projector in the Will Day collection at the Cinémathèque Française is 18.5 inches (47 cm) high, 11.4 inches (29 cm) long, and 13 inches (33 cm) wide. The cast iron encasement is inscribed with “Kinemacolor Urban-Smith Patents,” after its patent holders Charles Urban and George Albert Smith. Besides the usual shutter, a rotating disc fitted with red and green colored filters is mounted at the back of the machine, between the light and the film gate. An automatic light cut-off behind the disc prevented the heat of the light from burning the gelatin filters when the projector was stopped.

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THEORETICAL FRAMING

This chapter explores an archaeological and epistemological approach to Charles Urban’s Kinemacolor projector as a machine. Archaeology considers machines as archives. Three types of archives can be distinguished: users’ gestures, performance practices, and specific modes of perception—the viewer’s perception of a Kinemacolor film resembles no other visual experience. The epistemology of the machine aims at reconstructing the set of concepts that constitute its basis and conditions of possibility. To achieve this, a precise technological description of the apparatus is needed, a description that reveals the perfect coherence of the technical, economical, aesthetic, and political aspects of Charles Urban’s enterprise.

THE ILLUSION OF MOVEMENT, THE ILLUSION OF COLOR: THE KINEMACOLOR PROJECTOR, ARCHAEOLOGY, AND EPISTEMOLOGY

Kinemacolor, the first “natural color” process commercially exploited—and with great success—by Charles Urban between 1908 and 1914, has been the object of a revived interest in recent years, from both a historical¹ and archival² perspective. Kinemacolor was patented in Great Britain by George Albert Smith in 1906 as “[i]mprovements in and relating to Kinematograph Apparatus for the Production of Coloured Pictures.”³ Patents then followed in the next years in most Western countries. Kinemacolor is an additive, two-color system: black-and-white panchromatic film is shot and then projected through a rotating disc fitted with two colored filters of red and green gelatin. The process thus required the modification of the projectors in every theater wishing to project “natural color” moving pictures. As this arrangement proved to be unsatisfactory, the Natural Color Kinematograph Co., the sole producer of Kinemacolor films set up by Charles Urban in 1909,⁴ started selling specific Kinemacolor material⁵ in specific projectors in 1910. These projectors,⁶ which were designed by Henry W. Joy who had been collaborating with Urban for several years, differed from other projectors in several ways. The specific color shutter was mounted at the back of the machine, between the light source and the film gate. An automatic light cut-off behind the disc prevented the heat of the light from burning the gelatin filters when the projector was stopped. Unlike most of the other projectors of their time, the Kinemacolor machine “was never hand-operated but was always attached to a motor which governed the speed,” at least in Great Britain.⁷ Its mechanism had another peculiarity: besides the usual dog roller ensuring the intermittent motion of the film, it was equipped with a secondary dog roller “set at a radius to minimize the blow of the main dog roller.”⁸

These technical characteristics are linked with the structure of the process. Kinemacolor is based on two fundamental ideas. The first is that color

is somewhat akin to movement, so that “persistence of vision”—which was then understood as the basis of the illusion of movement in film—could also be used to synthesize colors: the eyes would blend the three primary colors as they did the successive photographic images, recreating a “natural” color palette as well as continuous motion. As formulated by G.A. Smith in the 1906 British patent, his method “is based upon the well-known principles of 3-colour photography, but use is made of the principle of persistence of vision to effect the necessary superimposition of coloured images.”⁹ This proposed solution to the “natural color” problem in cinema is far from obvious. In fact, it derives from a 1899 patent by Frederick Marshall Lee and Edward Raymond Turner, a patent which had been bought back by Urban but gave no satisfying result.¹⁰ Whether due to scientific impossibility or limitations of his mechanical constructions, G.A. Smith never managed to produce a working three-color apparatus based on this principle: the three successive color records could not register and superimpose efficiently for the spectator to be able to synthesize colors. So he decided that besides the principle of persistence of vision, another aspect needed to be added to the apparatus: “Compressing the colour records into a less number than three, so as to give the least possible interval of time between successive presentations.”¹¹ In fact, as Urban and Smith later disclosed, both were pleasantly surprised by the quality of the results given by this daring and almost desperate move: instead of the supposedly necessary three colors, only two primary colors—red and green—were used. That should not have worked, but somehow it did. Indeed, Urban was satisfied enough with the results that he decided to patent and exploit this two-color method. As summarized in the British patent: “By my method 2 colours only are recorded, red & green, & these two records are exhibited in such rapid alternation that persistence of vision causes the colours to blend into one view, which appears in approximately correct colours.”¹² The secret—and ultimately the curse—of the process lies in the word “approximately.”

So how did it work precisely? Additive processes had one advantage: they could use “normal” black-and-white film stock, made sensitive to all colors including red, through the chemical process of panchromatization. For Kinemacolor—as opposed to Gaumont’s 1913 Chronochrome process, which was based on different principles—this was an important aspect. In fact, Urban and Smith made the decision from the outset “[t]o conform to the condition that any scheme must be easily applicable to the existing cinematograph machinery, and that the standard film with standard perforations must be used, so that any successful results must be readily adopted by every cinematograph user without much trouble or expense.”¹³ It was both a technical and a commercial choice: the fact that this additive system required a specially modified projector was to be compensated by the easiness and cheapness of

the modification. Chronochrome needed a specific, three-lens projector that could only exhibit Chronochrome views. In theory, Kinemacolor views could be shown with a usual projector, provided the empty areas of its shutter were equipped with red and green color filters. With projectors of the day, whose shutters were located outside the mechanism, it was a fast and easy manipulation. Therefore, a specific Kinemacolor projector was by no means a necessity.

Using this panchromatized black-and-white film stock, the views were taken with a camera whose shutter had been equipped with color filters. To achieve the required sixteen *images* per second, or—to phrase it differently—to successfully blend the colors for the spectators' eyes, the camera had to run at twice the usual speed, meaning about 30 frames per second (fps). Kinemacolor thus forced one to differentiate between a frame and an image: here, a frame was not an image but only part of one; *two* frames (and the projector) were needed to make *one* “complete” color image. The black-and-white negative thus showed 30 successive color records per second, whose gray densities corresponded alternatively to the red and the green of the scene. On the set, this meant that the exposure length of each frame would be half of what it normally was. Moreover, the filters cut away an important share of the light reaching the film. Thus in practice, Kinemacolor needed bright sunlight, which was only available in the British summertime, or in the warmer countries of the Empire.

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As a result of the increased speed, the Kinemacolor projecting system also needed to run twice as fast. This resulted in a significant mechanical effort for both machines and film, as well as problems of a screen illumination that was too low. Thus, if Kinemacolor views were to be projected with a usual machine, it produced such an inconvenience that eventually Urban decided to produce his own equipment, following the specific requirements of his process.

Urban's projector was supposed to run at 30 fps, but also had to support the “normal” speed of sixteen to twenty fps to show black-and-white views: it had been decided from the start that a Kinemacolor projector also had to be able to project the usual standard footage. It thus had to be motor-driven, because hand-cranking would hardly be compatible with these constraints. The wear on the film was diminished thanks to the double dog mechanism, which meant that the film was not entirely motionless when the main pull was given. The double speed also required greater mechanical precision in the construction for it to work efficiently. The filters required that the projector be fitted with a powerful lamp, as the 1910 Kinemacolor equipment catalog indicated: “Upon the quality of the carbons used for Kinematographic Arc Lamps the success of the display very largely depends, especially where the intense currents necessary for Kinemacolor exhibition are dealt with.”¹⁴ This in turn required the attachment of an automatic cut-off. Constructed in cast iron,

“[t]he Kinemacolor projector was heavier and more substantially built than conventional machines to reduce vibrations which would otherwise occur during the double speed operation.”¹⁵ While this reduced the wear on the machine and film, it also produced a steadier moving image on the screen. Instead of mounting the filters on the shutter, two separate rotating discs were installed, the color disc becoming a different apparatus from the usual shutter and easily removable to switch from Kinemacolor to black-and-white views during the exhibition.

All those specificities made for a very expensive machine, which was entirely coherent with Charles Urban’s marketing strategy. Urban positioned his Kinemacolor projecting outfit at the higher end of the cinema production. According to him, “marketing its aesthetic, scientific, educational and high cultural values”¹⁶ meant producing non-fiction films that were to be shown in luxury theaters, properly equipped so that spectators could enjoy high-quality projections. The resulting high admission prices were part of his plan to attract the higher classes to the new medium. The 1910 Kinemacolor equipment catalog mentions that the complete “Kinemacolor projecting outfit, suitable for exhibiting both monochrome and Kinemacolor pictures” would cost £10,000. Interestingly, this comprehensive set included an “optical lantern, for lantern slide projection,”¹⁷ which shows that a 1910 typical—or even high-level—projection booth not only contained solely one film projector but also a magic lantern. That is quite revealing of the composition of the screening programs of the time, at least in Great Britain.

Thus, besides its characteristics—shape, mechanical structure, weight, price—the Kinemacolor projector system represented a whole set of practices. As the philosopher of technology Gilbert Simondon wrote, “What lies in machines is human reality, human gesture fixed and crystallized in functioning structures.”¹⁸ As solid as gestures are evanescent, machines are archives of actions and procedures. Preserving a Kinemacolor projector is preserving the complex arrangement of technical, economical, and aesthetic elements that was the Urban system, as it could be conceived only around 1910. It also means preserving precious information regarding the projection practices of the time, the organization of screenings, as well as the precise visual quality of the viewer’s experience.

A machine is not only an archive of its users’ gestures; it preserves, at least as a potentiality, what it is meant to produce. The Kinemacolor projector is an archive of a very specific, peculiar mode of perception. It enabled the first “natural color” system exploited on a wide scale, which in itself makes it rather interesting: the study of its reception at the time in trade journals or general criticism is rich with information on the medium’s relation with color and indexicality.¹⁹ Admittedly, it is a rather unique process. Firstly, being based

on only two primary colors, it produces a singular color palette, lacking deep blues as well as pure whites. Strikingly, this has rarely been singled out in general criticism: the *Variety* comments on Kinemacolor films throughout 1913, for instance, had only the highest praise regarding the luxuriousness of the colors. Competitors, of course, were quick to emphasize the defects of the process, while technicians and specialists remained skeptical regarding the idea, even though they did recognize the surprisingly pleasing quality of the result, despite the theoretical absurdity of the principles.²⁰

In addition, Kinemacolor produced a second singular visual specificity, thus described by Frederick A. Talbot in 1912:

Another disconcerting feature which has aroused considerable comment in the public mind is the apparent duplication of the outlines of figures near the camera. The most uninitiated observer cannot fail to see the outlines in green and red, as if the superimposition is out of register. “Fringing,” as this defect is called, is difficult to eliminate in many instances, and although often it is only momentary, it is decidedly distressing.²¹

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The two color records constituting the base for the synthesis of “natural” colors are in the Kinemacolor process exposed *successively* and not simultaneously. This implies that color records of moving objects, being at different positions in the image on each frame of the shot, cannot possibly superimpose adequately. That was particularly true of the figures placed close to the lens, as the interval between two successive positions in the image of each frame was the greatest in this case. It was a structural defect of the apparatus and could not be eliminated. Consequently, each motion on the screen was emphasized with the apparition of more or less pronounced red or green fringes. As Herbert T. Kalmus, founder of Technicolor, amusingly formulated:

Since Kinemacolor photographed the color components by successive exposure, it was nothing for a horse to have two tails, one red and one green, and color fringes were visible whenever there was rapid motion.²²

Among commercially exploited processes, Kinemacolor was the only process that presented such visual conditions. Again, reading the general criticism of the time leads to the stunning conclusion that this rather annoying commercial “defect” of the system was left unnoticed by almost all film critics. The “considerable comment” mentioned by Talbot was in fact practically restricted to discussions among technicians and to the promotional discourses of Kinemacolor’s great rival, Pathé, the leader of the market of color film with their mechanical stencil process.

Kinemacolor is thus a rather strange, theoretically and perceptually complex process. On the visual level, the experience of viewing a Kinemacolor film remains quite unfamiliar to the contemporary spectator, even though its peculiarity may have been eroded by a digital transfer. Today, the specific color palette highly depends on the principles and methods adopted for the restoration; but the limited color range of the palette produces an unusual filmic universe, with an almost dreamlike quality. To that is added an uncertainty of lines, a trembling of photographic contours which has no equivalent in any other visual apparatus.

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The interest of the Kinemacolor visual experience is not only purely perceptual or sensual: to the epistemologically inclined, those fringes are theoretically captivating. What a Kinemacolor screening allows the spectator to see is the *photogrammic interval*: the viewer is able to experience the cinematic principle as a work in progress by actually seeing the series of photograms and intervals behind what is usually understood or presented as a flow of continuous movement. Disregarding the question of color realism, one begins to see something entirely different: instead of “natural color,” one sees the fundamental interval at the heart of the cinematic apparatus, manifested as red and green flashes all over the screen.

Making use of “persistence of vision” to synthesize color as well as movement, the Kinemacolor system assumes that color and movement share enough qualities to be synthesized by the same principle, thus revealing a basic epistemological assumption of the color cinema apparatus. The hypothesis of this kinship is somehow confirmed by the machine, in the sense that it *works*. The equivalence between color and movement appears as the basis of what is shown, a basis whose strangeness we must learn to rediscover. As Colin Bennett noted:

Thus, in the case of Kinemacolor, the willing member of the audience is treated to not one, but two separate and complete illusions, for whereas the black and white exhibitor merely makes you believe you see movement which is not there, the Kinemacolor operator does the same for the perception of colour also.²³

Color is not inscribed on the celluloid itself; it is created through the projection performance. Thus color, “natural” though it may be, can be described here as an “illusion.” But in this system, the simultaneous representation of both color and movement apparently becomes too difficult for the machine to handle. If color is synthesized through movement, then movement tends to turn to color, and moving objects, in effect, gain color fringes.

From a historian’s point of view, Kinemacolor may be described as an

exemplary failure in the evolution of “natural color” in cinema. Nevertheless, its influence on the evolution of the cultural status of film in the transition era may also be considered strong, as has been argued by Eileen Bowser:²⁴ the fact that it enjoyed several years of success could substantiate such a view. But beyond the study of the particular context of its commercial exploitation, the analysis of the Kinemacolor projector in itself as well as its uses and its genesis can provide much information on the history of cinema as modes of performance and perception, and on its epistemological history. The machine, as an archival trace, is a testament to what it meant to be a projectionist and to what spectators *saw* in the theaters of the 1910s. It also exposes the theoretical framework in which cinema was conceived at that time, the network of concepts that were thought to provide a solution to the problem of natural color in cinema,²⁵ and a certain epistemological moment in the evolution of the apparatus. That “persistence of vision” could be believed to enable the synthesis of color as well as movement is surprising even today. Watching that equivalence uncover the photogrammic interval *at work* is another surprise—an unwanted feature of the apparatus that today becomes one of its most fascinating consequences. The findings of an archaeological and epistemological approach can then make us resituate the apparatus within another context: that of experimental installations working at the “structural” level of the medium. In 1975, media artist Paul Sharits created SHUTTER INTERFACE: four colored film loops were projected simultaneously, the images partially superimposed on the screen. For Sharits, the constant colored flicker and transformation of hues were meant to show the spectator one precise movement: that of the shutter.²⁶ His installation was meant to demonstrate that the interval between the photograms is something that the spectator *does* see. This is exactly what the Kinemacolor projector was already doing in the 1910s, in an entirely different context.

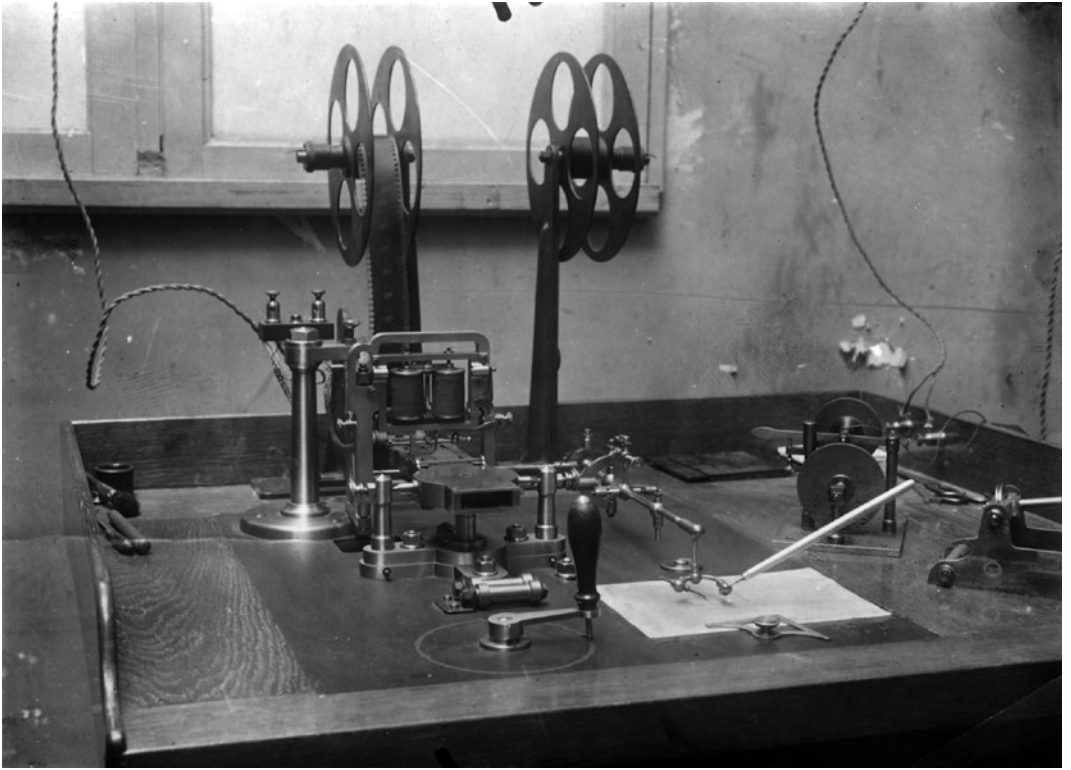


Fig. 32: Pathé Frères' stencil-cutting apparatus, developed by Pathé and the technician Jean-Antonin Méry circa 1909. The devices were installed on worktables measuring approximately 24 x 36 inches (c. 60 cm x 90 cm). Image courtesy of Laurent Mannoni and the Cinémathèque Française.

Stenciling Technologies and the Hybridized Image in Early Cinema

Joshua Yumibe

PATHÉ FRÈRES' STENCIL-CUTTING APPARATUS

The French company Pathé Frères was the foremost producer of colored films in the first decade of the 1900s. The Pathé Frères' stencil-cutting apparatus, which dates to circa 1909, was installed on a worktable measuring approximately 24 x 36 inches (c. 60 cm x 90 cm). The apparatus combines two separate innovative patents, the first for the stencil-tracing stylus, which was developed by the technician Jean-Antonin Méry and licensed by Pathé (French patent 373,502, filed January 14, 1907 and awarded March 19, 1907), and the second for the electromagnet slicer in the middle of the device, which was patented by Pathé in 1909 (patent 414,341, filed June 16, 1909 and awarded June 17, 1910).

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THEORETICAL FRAMING

This chapter examines the technical history of film stenciling from a media archeological perspective. Given the recent development of various digital methods of adding color to the moving image, it is useful to look back to prior instances of artificial coloring, such as a century earlier at the beginning of the 1900s. The hybridized image of stencil coloring—combining as it does mechanical and manual as well as photographic and animated techniques—provides an instructive technological genealogy for thinking through the layered effects and modalities present in the digitally graded image of today.

STENCILING TECHNOLOGIES AND THE HYBRIDIZED IMAGE IN EARLY CINEMA

The French company Pathé Frères was the foremost producer of colored films in the first decade of the 1900s, and the device illustrated here was one of its stenciling machines, which date to circa 1909. The apparatus combines two separate innovative patents, the first for the stencil-tracing stylus, which the technician Jean-Antonin Méry developed and licensed to Pathé (French patent 373,502, filed January 14, 1907 and awarded March 19, 1907), and the second for the electromagnet slicer in the middle of the device, which Pathé patented in 1909 (patent 414,341, filed June 16, 1909 and awarded June 17, 1910).

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Stenciling (*pochoir*) was an applied coloring process with intermedial roots stretching back to some of the earliest Paleolithic cave paintings, in which hands were used as stencils over which an illustrator blew pigment to create the negative stencil impression of handprints. In antiquity, inverse stenciling techniques were also used, in which ink was sponged through stencil cutouts to create positive, ornamental impressions decorating Egyptian tombs and wall designs in Greece and Pompeii. The technique grew in popularity from the 1700s on, particularly in France for the coloring of wallpaper, fabric, and print media such as postcards and playing cards, and it was a favored coloring practice in design traditions of arts and craft, art nouveau, and art deco in the early twentieth century.¹ As will be discussed below, the fantastic color worlds crafted through stenciling techniques in the first decades of the twentieth century have a genealogical relationship to the digital hues that have proliferated in contemporary media.

Stenciling was adapted for coloring film prints in the early 1900s in ways that at first approximated the wonders of hand-colored films and soon surpassed them.² Pathé was the leading innovator of the technique, and continued using it into the 1930s; however, film stenciling's heyday was by and large prior to World War I. Since the inception of filmic technology in the 1890s,

colored prints were extremely popular with the Lumière and Edison companies, which produced numerous hand-colored works for the Cinématographe and the Kinetoscope respectively from 1895 on. Georges Méliès also began to distribute elaborately hand-colored trick and fairy films at the turn of the century. Audiences flocked to these prismatic gems, and exhibitors often had to pay more for popular colored prints than for black-and-white ones. Before these filmic practices, color was integral to various moving image media of the nineteenth century such as chromatropes, transforming lantern slides, phenakistoscopes, and Charles-Émile Reynaud's Praxinoscope and Théâtre Optique. Cinema thus emerged within a chromatic culture of new media—one as saturated with novel hues as is the digital environment surrounding us today.

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Though finely crafted colored films were popular, they were initially difficult and expensive to produce, as individual prints had to be hand-colored frame by frame. Females almost exclusively carried out this labor, for indeed print coloring was the first and primary production work available to women in the early film industry. Coloring firms, such as the well-known workshop run by Elisabeth Thuillier in Paris, are testaments to this labor. Beginning as a lantern-slide coloring lab, Thuillier transitioned the company's focus to film at the turn of the century. Thuillier managed over 200 female colorists at the peak of her business in the early 1900s when she colored films for companies and filmmakers such as Méliès' Star Films, Pathé, and Raoul Grimoin-Sanson.³ While outsourcing work to Thuillier, Pathé also developed its own in-house coloring lab at its factory in Vincennes, managed by Henri Fourel who rapidly expanded its workforce of colorists along with the workshop. In 1906, for instance, he increased the number of colorists from 65 to approximately 200, and even invited Thuillier to co-manage the lab, though she turned down the offer to maintain her independence.⁴ Parallel to these labor developments, Fourel also oversaw the firm's technical innovations for print coloring, most specifically its development of stenciling. Due to the success of its stenciling process, along with various other efforts to industrialize its means of production, Pathé went on to dominate global film markets during the first decade of the 1900s—far outperforming companies such as Méliès' Star Films, which by and large did not transition from hand-coloring, maintaining instead an artisanal approach to its craft.

Stenciling worked through the production of separate printing stencils, one for each color of a film. The stencils were made on 35mm film stock, and each frame of the stencil would align with identical frames of the black-and-white print being colored. In each section of the image to be colored, small incisions were made in the corresponding stencil—so for example in a scene with a blue sky, every frame in the blue stencil would have the sky portion cut

out. If large portions of each frame were to be colored a specific hue, alternating frames would be cut out, to maintain the strength of the stencil record.⁵ The prepared stencils were then lined up over a black-and-white print of the film, one stencil at a time, and ink was brushed through the stencil cuts, coloring the emulsion of the film print. Typically between three and six different stencil colors would be applied in succession to a film, building up the prismatic layers of the work. Depending on the precision of the stencil application, prints might also be touched up by hand on a case-by-case basis. The stencils were labor-intensive to produce, but once cut they could be reused on multiple prints of a film, thus mechanizing the coloring process to save money and labor on longer print runs. The colored images of stenciled films were inherently hybridized—both in terms of how the process relied on the manual cutting of the stencil plates and then on the mechanical application of dyes through the stencil cuts, and in how it produced an image that combined a photographic base with artificially applied animated hues superimposed in the emulsion of the print.

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Initially, as documented in Pathé's business minutes ("Procès-verbal de la séance du conseil d'administration"), the company's stenciling experiments ("coloriage mécanique") began in January 1903 as reported by Charles Pathé, the co-director of the company, and he had samples to show the board on March 26 of that year.⁶ Also, as detailed in Pathé's concurrent patent filings, its stenciling work was carried out amidst a series of other coloring innovations, including a chromolithographic dye-transfer process for print coloring (French patent 328,321, January 7, 1903 and awarded April 27) and a process that used Newton discs to color films, apparently in projection (patent 331,859, filed May 8, 1903 and awarded August 8). Neither of these methods seems to have been developed further from the patent-prototype stage, but Pathé's stenciling innovations continued over the ensuing years. Its early stenciling attempts would have been relatively crude in comparison to what could be achieved with its 1909 stencil-cutting device. Modeled on stenciling practices in other media, film stencils were initially cut by hand with scalpels, and the technician would use black-and-white prints of the film as the actual stencils, thus ensuring that the correct portions on each frame were cut out. The emulsion of the stencil would then be carefully washed off, leaving a clear, smooth stencil record that could be lined up by its perforations with the print to be colored. Ink would then be hand-brushed through the incisions onto the colored print being produced. Given the miniaturized and repetitive nature of the work across a series of tiny film frames, early film stenciling was relatively imprecise, and the variances in coloring across frames were amplified when enlarged through projection. Pathé's experiments and refinements of the process from 1903 onward aimed to increase the precision of the process.

As the Pathé technicians Louis Didiée and Marcel Ruot noted in 1924, one of the first modifications that Pathé carried out was in the print-developing stage. In order to ensure the precision of the stencil-coloring process, the company needed to develop an exact means of printing black-and-white positive prints from a negative with the sprocket holes in perfect alignment. In normal printing, small variances in registration were of little consequence, but for stenciling, this would result in wide discrepancies, such as pronounced fringing during projection. Accordingly, the company developed a film printer that could keep black-and-white positive copies in exact alignment with the original negative.⁷

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In addition to its precision printer, Pathé carried out a series of refinements on the stencil process to bolster the exactness of the stencil cutting and dye-application stages. Along with expanding and training its workforce of female stencil cutters, the company sought a mechanical means of bolstering the precision of the cutting work. Initially, the company developed a workstation similar to the one imaged above to assist in the manual cutting of the stencils, consisting of a light source, cutting plate, and rewind apparatus.⁸ The next major development in the stencil-cutting process came when Pathé recruited the technician Jean Méry in 1908 to collaborate with the company. Prior, he had patented an early version of the cutting apparatus while working independently in 1907, and Pathé was able to license the device through their subsequent contract with him. Méry's device worked as a mechanical assist for stencil preparation. Instead of hand-cutting the stencils with a scalpel, his machine deployed a tracing apparatus known as a pantograph, typically used for illustration work to trace enlargements or miniatures. In the illustration above, the pantograph is the connecting apparatus between the tracing stylus in the front center of the image, above the white glass plate, and the stencil-cutting mechanism in the middle of the image. The film frame to be cut would be enlarged and projected from underneath the table onto the glass plate on its surface, and the laborer would use the stylus to trace over the parts of the image that were simultaneously being cut out of the stencil for a specific color. Through the pantograph, the movements of the stylus would correspond precisely to movements of the slicing edge on the stencil cutter. Given the enlarged frame for tracing, the stencil cutting could thus be more precise than when the stencils were cut by hand on 35mm frames, though the machine-cut stencils would still need to be touched up by hand to remove hanging bits of celluloid. When one frame was completed, the laborer would advance both the stencil frame and the projection frame to the ensuing one, thus meticulously working through the section of film being colored—for a skilled colorist, on average three feet an hour.

Initially, when Méry filed his patent application in 1907, the stencil device

employed a simple needle for the slicing, which worked similar to a sewing machine. As work with the machine progressed, Pathé developed a new electromagnet-cutting apparatus, as pictured above. When the tracing stylus would touch the glass enlargement plate, the slicer would engage, reciprocating the cutting point back and forth, neatly slicing out the stencil frame. The added precision provided by both the pantographic tracing arm and the electromagnet slicer provided remarkable results on Pathé's stencils in terms of the accuracy of the cuts made, frame by frame in the prints. Méry collaborated with Pathé through 1911 before moving on to Éclair, but based on his initial work, Pathé continued to modify the stencil-cutting machines and techniques through the 1910s and 1920s.

In addition to the cutting apparatus, the other stenciling device that Pathé developed was a specialized dye applicator for the actual coloring of the release prints. Stencil coloring was initially carried out by brush, but with the mechanical applicator, prints could be colored more quickly and accurately. The experiments overseen by Fourel at Vincennes culminated in a stencil-coloring apparatus that was patented by Pathé on October 22, 1906 (submitted; awarded on October 23, 1907 as patent 373,502). The device was in fact designed for Pathé by the technician Joseph Florimond, and the company licensed it from him for 10,000 francs, with additional royalty payments up to 40,000 francs based on the amount of footage actually colored by the machine.⁹ By December 28, 1906, the company had placed an order with Florimond for one hundred of the devices, soon to be ready in the new year. With each machine, Pathé estimated that one could produce 300 meters of color footage per day, as opposed to the approximately 27 meters that could be colored by hand in the same amount of time.¹⁰

Pathé further refined the dye-application process through the development of its own device patented in 1908 (French patent 402,086 filed August, 19, 1908 and awarded August 20, 1909). Méry also developed an earlier dye applicator, which he had filed for patent under his own name on February 28, 1908 (French patent 397,629, awarded May 13, 1909), but of the various devices, the Pathé-patented one was the most advanced. It was comprised of a large drum with moveable sprocket teeth for aligning the stencil records with the print being colored. The print and the stencil would move over the sprocket drum, and in the process would come into contact with the coloring ribbon—a velvet loop that also ran through the dye tank before coming into contact with the stencil and film print. As contact was made, the dye would seep through the stencil onto the print, frame by frame. The machine could be adjusted so that the amount of colorant passing through the stencil could be regulated to ensure the proper saturation levels on the final print.

With these technical refinements in place, Pathé was also able to trans-

form the style of its colored films. At the beginning of the 1900s with hand-coloring and early stenciling, many of the hues that were used on films tended towards heavy saturation—bright reds, and blues, yellows, and oranges. However, by the end of the first decade of the 1900s, the discourse and preferences in color design began to shift towards a more subdued approach to color, aiming to bring it in line with the emerging norms of unobtrusive narration. With Pathé's technical innovations of its stenciling-apparatus in place, the company was able to produce stenciled historical films such as *THE SIEGE OF CALAIS* and *CONSPIRACY IN THE REIGN OF HENRY III* (both from 1911) that exemplified the period's stylistic as well as narrative transition. As I have discussed elsewhere, the stencil colors of films such as these tended toward pastels—purples, pinks, yellows, and light blues—and oftentimes referred to paintings and painterly effects.¹¹ Focusing on the technical aspects of this transition brings to the fore the intermedial and industrializing innovations that enabled such formal transformations. A symbiotic relation between film form and technology thus grounded cinematic color from the very emergence of the medium.

Given the recent development of various digital methods of adding color to the moving image, it is useful to look back to prior instances of artificial coloring, such as a century earlier at the beginning of the 1900s. The hybridized image of stencil coloring—combining as it does mechanical and manual as well as photographic and animated techniques—provides an instructive technological genealogy for thinking through the layered effects and modalities present in the digitally graded image of today. Lev Manovich has noted that there are significant parallels between the digital-painting effects of new media and the aesthetic functions of early, applied coloring in silent cinema.¹² In view of the symbiotic relationship of technology and film style established with the emergence of cinematic color, one can trace parallels in the ways that new technologies have affected contemporary practice. As with the emergence of film stenciling, digital developments today are incremental and inherently intermedial, as techniques and technologies that were developed for other medial practices—for example, video gaming, medical imaging, and architectural modeling—inform the saturated hues of film today, and vice versa. Similarly in terms of labor, just as Pathé's technical developments necessitated the parallel expansion of its remarkable workforce of female colorists at Vincennes, post-production firms specializing in digital grading, such as Film-Light, have supported a growing independent network of innovative colorists spread across the globe, for instance in Bangkok, Sydney, Beirut, Beijing, London, and Los Angeles.¹³ Such a diffusion of labor is enabled—and exploited—through digital technology in a way not imaginable in the early 1900s, when Pathé centered its coloring work in the Parisian neighborhood of Vincennes.

The hybridity of color has expanded globally in the current medial climate, when completed films are increasingly produced from disparate layers of effects created by contract workers in locations, studios, and digital workshops scattered around the world. As the history of early stenciling techniques and technologies reveals, a media archaeology of color from early cinema to the current digital ecology comprises the sifting through of interlacing layers of technical innovation, aesthetic norms, and labor practices. Maintaining a critical perspective on these relations is vital not only for interrogating the layered history of chromatic media but also for imagining its potential future.

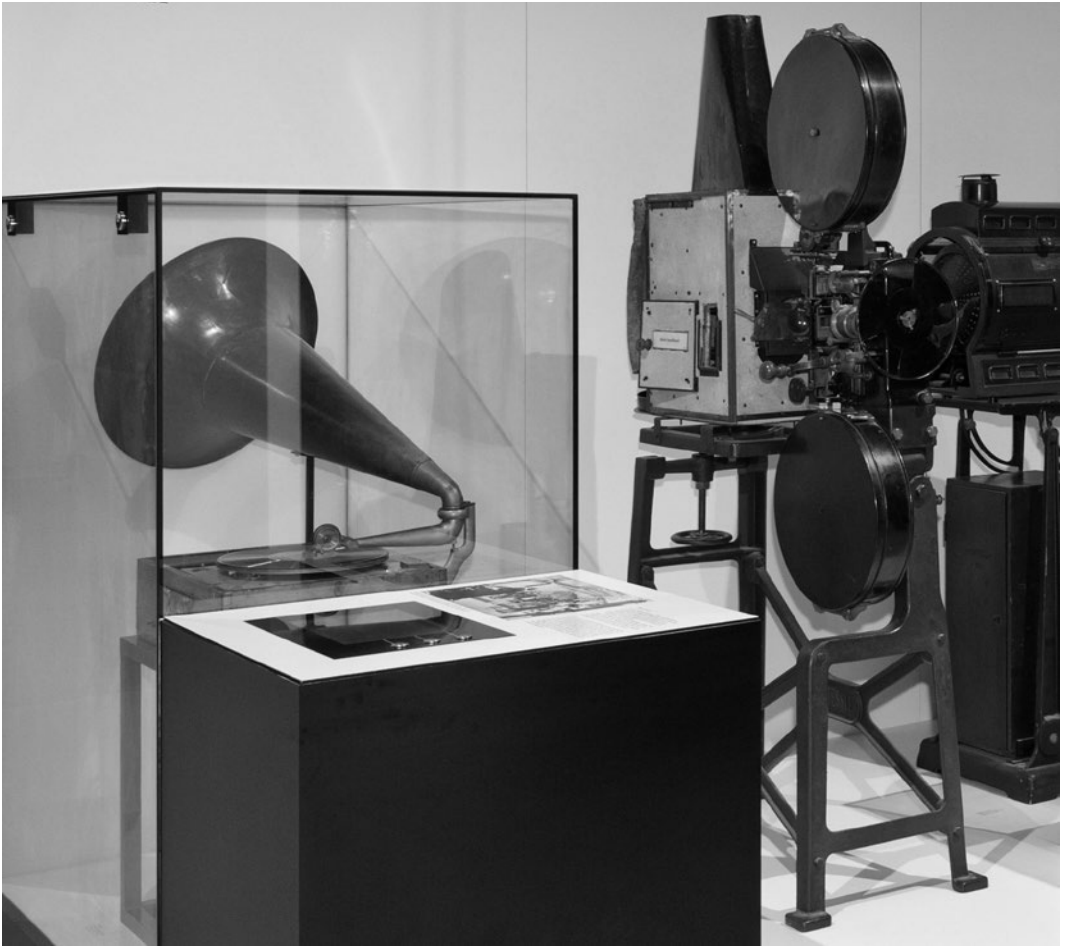


Fig. 33: The Biophon system displayed at the Deutsches Museum, Munich, source Deutsches Museum, München, Archiv, CD_L_6734_323.

Understanding Early Film Sound: The Biophon Sound-on-Disc System

Sonia Campanini

THE BIOPHON SYSTEM

The Biophon system consists of two devices, a film projector and a gramophone, coupled together in order to allow the synchronized presentation of sounds recorded on shellac discs and moving images recorded on film stock. The system was first patented by German pioneer Oskar Messter in 1903, and made possible the production and distribution of early sound films in Germany as well as other European countries in the first decade of the 19th century. Messter patented different devices in the following years in order to improve the functioning of the system. Few devices of this system survive today. One Biophon system is displayed at the Deutsches Museum in Munich: it consists of the film projector Panzerkino—which measures around 6.1 ft (185.3 cm) in height, 1.4 ft (43 cm) in width, and 3.2 ft (97 cm) in depth, and the gramophone Biophon—which measures 2.6 ft (78 cm) in height, 1.7 ft (52 cm) in width, and 3.1 ft (96 cm) in depth.

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THEORETICAL FRAMING

The Biophon system, one of the earliest sound-on-disc systems, is described in this chapter for two purposes. The first aim is to offer interpretive tools for understanding the functioning of early sound-on-disc systems, which are the systems that used the recording of sound on discs to accompany film exhibition. Second, the description of this system can contribute to the outlining of differentiations between the concepts of device, *dispositif*, and system, which are key terms in the field of contemporary media studies. In this elaboration, particular relevance is given to the performative dimension of film exhibition, which prompts one to reinterpret the concept of *dispositif* as a situation of interrelation between the technological devices and the human actors.

UNDERSTANDING EARLY FILM SOUND: THE BIOPHON SOUND-ON-DISC SYSTEM

The audiovisual device described in this chapter is the Biophon system. As the etymology of the name suggests—*bio* (life) and *phon* (sound)—the main characteristic of the Biophon system is playing recorded sounds in synchronization with the projection of moving images. Patented by the inventor and entrepreneur Oskar Messter in 1903, the Biophon system was one of the first devices, together with the French Phono-Cinéma-Théâtre and Chronophone, that enabled the synchronization of recorded sounds with moving images.

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My purpose in presenting the Biophon system in the context of this publication is two-sided. First, an analysis of the Biophon system can offer a new perspective as well as new tools for revisiting other early film sound systems. Second, an analysis of this system and, in particular, the dimension of the performance in exhibition practices, can be used to define and differentiate the theoretical concepts of device, *dispositif*, and system. With these purposes in mind, the first part of the chapter will deal with the historical and technological dimensions of the Biophon system, while the second part focuses on the concepts of *dispositif* and performance in relation to the specific characteristics of the device.

THE BIOPHON SYSTEM AND TONBILDER FILMS

The Biophon system was used to produce and exhibit early sound films named Tonbilder films. The term *Tonbilder*—comprised of the words *ton* (sound) and *bilder* (images)—refers specifically to films accompanied by synchronized soundtracks that were produced and distributed in Germany in the 1900s and 1910s. Tonbilder films had the peculiarity of being recorded on two distinct carriers: one for the image (in most cases a 35mm nitrate film base), and one

for the sound (a gramophone shellac disc). The separation of the image and sound carriers is correlated to the configuration of the devices used to produce and exhibit the Tonbilder films. During production, there were two recording devices: the camera that captured the image and the gramophone that recorded the sound. Similarly, during exhibition there were two playback devices: the projector to display the images on the screen and the gramophone that played the discs. The synchronization between sound and image was obtained through the linking of the projector and gramophone.

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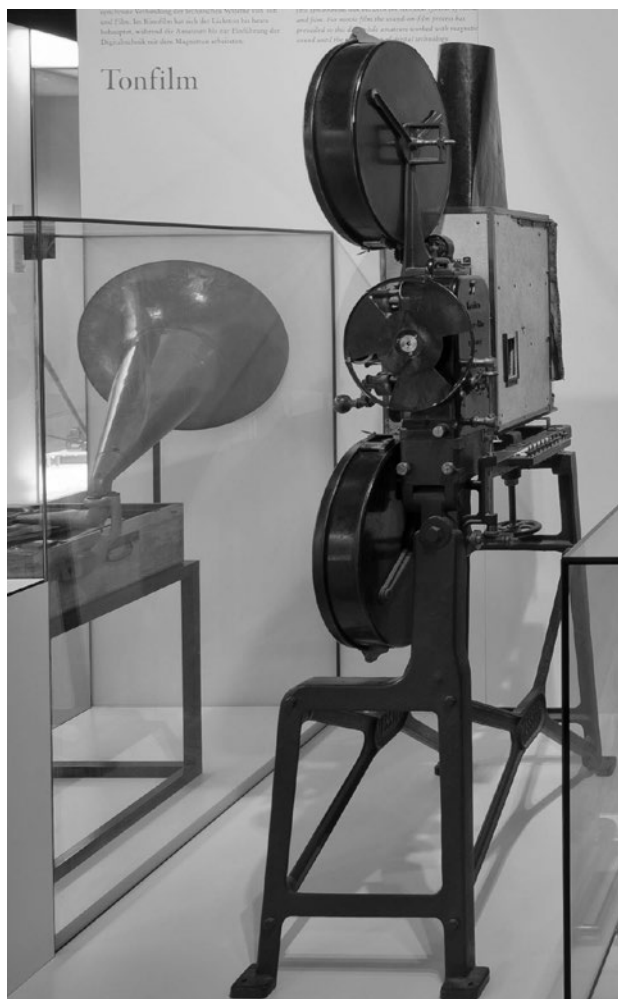


Fig. 34: The Biophon projector device Panzerkino displayed at the Deutsches Museum, Munich, source Deutsches Museum, München, Archiv, CD_L_6566_075.

Fig. 35: The Biophon gramophone displayed at the Deutsches Museum, Munich, source Deutsches Museum, München, Archiv, CD_L_6734_325.



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In terms of narrative content, the Tonbilder films were short films presenting drama or comedy scenes that often included a song or a musical piece that was performed alone or inserted into a dialogue scene, a short sketch, or a dance scene. The presence of songs and musical pieces was meant to show the novelty and attraction of the Biophon system, namely the possibility of performing recorded sound in sync with the image. The musical numbers were adopted from musical theater, cabaret, and variety shows; the songs were either borrowed from popular Berlin musical theater shows or from arias from operas and operettas. The narrative form of Tonbilder films was deeply influenced by the separation of sound and image in two carriers: the fact that the sound was stored on gramophone discs meant that the duration of a single movie could not exceed the length of a disc, which at that time was about three to five minutes.

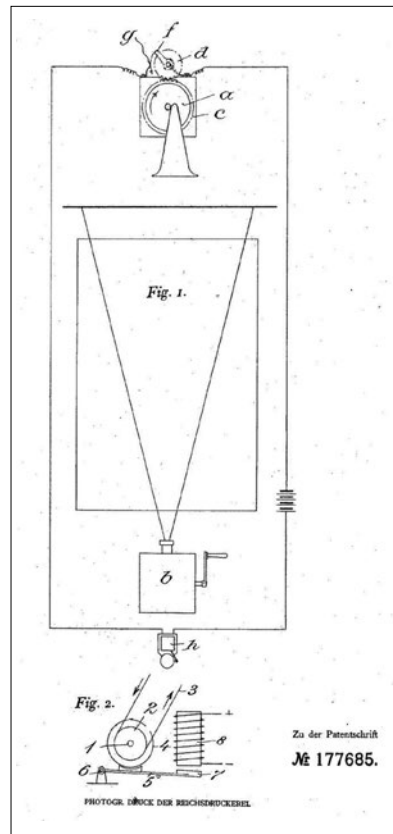
The novelty of hearing the actors talking and singing through the movie projection determined the big audience success of Tonbilder films in Germany from 1903 to 1914, a period defined as the Tonbildboom.¹ The Tonbilder films became so successful that other German film companies developed sound-on-disc systems similar to the Biophon system, which were used to produce and distribute Tonbilder films: Alfred Duskes constructed the Cinephon for the Duskes Kinematographenfabric; Guido Seeber developed the Seeberophon and the Synchroscope; and Karl Geyer produced the Ton-Biograph for the Deutsches Mutoskop- und Biograph GmbH.² The Biophon system was in fact only one among many early film sound systems that were developed in the 1900s in Germany and Europe. Since most of the early film sound systems were based on the principle of linking together a projector and a gramophone, it is possible to use the analysis of the Biophon system to understand the functioning of the other Tonbilder systems and, more generally, of other sound-on-disc systems.³ The Biophon system can serve as a productive example, since it was the first and most successful system in terms of production and reception: of the 1,500 Tonbilder movies distributed in Germany from 1903 to 1914, around 500 were in fact produced with the Biophon system.⁴ Moreover, the Biophon was also the system used most often for projecting sound-on-disc films in Germany. Due to good documentation, many related documents regarding the Biophon system have survived, together with some exemplars of Biophon devices, which are part of the film equipment collection that Oskar Messter donated to the Deutsches Museum in Munich.

THE FUNCTIONING OF THE BIOPHON SYSTEM

In the following sections, I describe the technical details and technological development of the Biophon system, providing the information that will help clarify the theoretical definition of *dispositif* given in the final part. The company of Oskar Messter, which produced film and film equipment, patented a first version of the Biophon system in 1903.⁵ According to the patent drawing,⁶ the Biophon system used for exhibition was composed of two playback devices: the gramophone placed behind the screen and the projector placed in the auditorium.⁷ The projector and the gramophone were electrically linked together with an electromagnetic coil system that regulated the speed variations of the projector's and gramophone's motors, enabling the two devices to form a united playback system.

It should be noted that in the 1900s both the gramophone records and the films did not have a standardized playback speed, since the motors of the camera and gramophone lacked a fixed rotation speed. Film speed was stand-

Fig. 36: Patent drawing for the Biophon system (Oskar Messter, 1903): Gramophone (a), Projector (b).



ardized to 24 frames per second (fps) only after the adoption of the optical soundtrack system at the end of the 1920s;⁸ before this time, the speed could vary between 14 to 22 fps.⁹ Similarly, gramophone records did not have a defined speed (rpm, revolutions per minute) at first, but ranged from 60 to 130 rpm; it was standardized to 78 rpm only around 1925 with the introduction of electrical recording systems. For this reason, the achievement of synchronization between recorded images and sound was very challenging at that time; different devices and systems were thus patented to overcome the challenge with diverse solutions.

In order to better describe the functioning of the Biophon system as well as other sound-on-disc systems, I refer here to the considerations of film historian Harald Jossé, who identifies different recording and playback techniques to classify early sound-on-disc systems.¹⁰ Jossé describes three main techniques applied in the production of sound-on-disc films: 1) the film shooting could precede the sound recording in the “post-synchronic sound record-

ing” (*postsynchrone Tonaufnahme*), 2) the sound recording could precede the film shooting in the “pre-synchronic sound recording” (*präsynchrone Tonaufnahme*), or, 3) sound and film could be recorded simultaneously in the “simultaneous recording” (*Simultaneaufnahme*). During exhibition, the phonograph and projector could be linked in a “unity method” (*Unitätsmethode*) if they were driven by a unique motor, or in a “dependence method” (*Dependenzmethode*) if the motor of one device led the other. With the “indicator method” (*Indikatormethode*), the two speeds of the projector’s and gramophone’s motors were indicated in a unique measuring scale, which showed when the two speeds diverged.

Following Jossé’s terminology, the Biophon system worked according to the “pre-synchronic sound recording” principle during production and the “unity method” during exhibition. The shellac disc was recorded first, before the production and shooting of the film: the disc could be recorded for the purpose of the film, or alternatively, records produced for the music market were used, for instance arias or songs performed by famous opera singers like Enrico Caruso. During filming, the shellac disc was played and the actors on stage tried to follow with the lip movement and mimic the soundtrack. The films were shot in a single take, and there was no editing afterwards. This enabled the synchronism between image and sound to be maintained.

THE EXHIBITION PRACTICE AS PERFORMANCE: THE INTERRELATION BETWEEN PROJECTIONIST AND DEVICE

During exhibition, the projectionist loaded the projector and put the disc on the gramophone, trying to start both of them in sync. To help him, sometimes there were specific marks on the film roll as well as on the shellac disc that indicated the starting point. However, matching the starting points of image and sound did not guarantee synchronization. Many technical problems could occur during the screening and cause a loss of synchronization: a jump of the gramophone needle on a groove because of a scratch, a film splice or a tear that caused parts or entire film frames to be missing, or a current fluctuation that produced a change in the transport speed of the machines. In those cases, the projectionist had to adjust the speed of the projector in order to regain synchronization during the screening.

The projectionist had thus a decisive role in the synchronization results of the projection. For this reason, I would argue that the historical exhibition practices of Tonbilder film can be interpreted in terms of performance, since the way in which the projectionist acted and interacted with the machine deeply influenced the spectacle. Even though the concept of performance is

usually reserved for live performing arts such as theater and music, it can also be used to define to some extent cinema, despite the fact that it is based on media reproduction.¹¹ This idea is particularly evident in early cinema exhibition: each screening was a performance, a unique event depending on the exhibitor's choices of the accompaniment, live music, programs, theatrical décor, and stage attractions. If early cinema presentation in general can be interpreted as a performance, then this certainly applies to Tonbilder exhibitions in which the projectionist's actions determined and influenced the synchronization between images and sounds. The exhibition of sound films with the Biophon system can in fact be described as the result of the technical device in combination with the performance given by the projectionist.

In order to improve the efficiency of the adjustment operations, Messter implemented a warning device (Synchrophon) that used a flashing light to signal whenever the projector and gramophone speeds diverged. As reported by Jossé, this device and the technique involved followed the principle of the “indicator method,” according to which the projector and the gramophone were connected to a speedometer which used an indicator to display the speed of the two devices.¹² During the screening, the projectionist continuously had to pay attention to whether the two speed arrows were aligned. Otherwise, asynchrony would result and he needed to speed up or slow down the projector speed until sound and image were in sync again. The speed of the gramophone was typically left unchanged, since altering the speed of the sound was usually much more disturbing than changing the speed of the image. In this kind of device, the quality of the projection and the efficiency of the synching effect depended greatly on the capacity and attention of the projectionist.

Messter continuously improved the Biophon system in order to ameliorate the synchronization between image and sound, as demonstrated by the 35 patents for synchrony devices that he submitted between 1903 and 1908. In 1906, Messter released a new patent¹³ for a device that was connected electrically with the gramophone and mechanically with the projector: the motor of the gramophone set the speed while the projector's motor followed the speed of the gramophone.¹⁴ Jossé calls this synchrony technique the “dependence method” because one device, the projector, depends on the other, the gramophone. Jossé explains that the leading device is the gramophone because the inertia of the eye allows a certain freedom in the speed range of the projector, while the ear notices immediately if a record is played too slow or too fast.¹⁵ Even though the device used in the “dependence method” was more expensive to produce and more difficult to integrate with existing machines, Messter decided to adopt it and abandon the “indicator method.” The “dependence method” allowed him to improve synchrony by making it more dependent on the projection device than on the projectionist.

One of the main problems of early sound systems was sound diffusion: the gramophone was placed behind the screen, but the sound could not traverse the whole auditorium, especially in the case of a large theater. To solve this problem, Messter decided to improve the sound volume by using more gramophones linked together and adopting a bigger horn (two meters long). He placed the gramophones near one another behind the screen or in different places in the auditorium, creating a sort of multi-channel diffusion. This solution still had some problems: increasing the volume meant an intensification of the noise and crackle created by the phonograph. Additionally, if the gramophones were not started at the same point and at the same time, they could also generate an echo effect. These problems were overcome in 1910 thanks to the introduction of the *Auxetophon* patented by Deutsche Grammophon AG: this device amplified the sound through the use of compressed air so that it could be heard by everyone in the auditorium.¹⁶ The Biophon system was thus adapted to the physical space of the exhibition.

Considering the importance of an adequate space for guaranteeing a good exhibition, Messter decided from the very beginning to open a theater in the center of Berlin, the Biophon-Theatre, which had 280 seats with an average audience of 500 people per day.¹⁷ In this theater Messter could set up the Tonbilder films with the maximum amount of control over the exhibition space, the technological devices, and the human operators. This fact sustains the idea that Tonbilder exhibition can be interpreted as a performance, where contributing factors include the interrelation of technological devices and the human operators in the *dispositif* situation, as will be discussed in the final part of this chapter.

THE BIOPHON AS DEVICE, *DISPOSITIF*, SYSTEM

The description of the Biophon system can be used for elaborating on the concept of the *dispositif* in relation to the notion of device. The analysis of the development of the Biophon system brings me to consider the *dispositif* as the situation of interrelation between human and technological actors, where the “technological actors” indicate the devices and equipment that enable the film to be produced and displayed, and the “human actors” refer to the subjects that interact with the devices.¹⁸ As Frank Kessler argues in “Notes on *Dispositif*,” the French term *dispositif* is poorly translated into English as apparatus or device: “‘apparatus’ does mainly underscore the ‘mechanical side’ of the term, and less the aspect of a specific ‘disposition,’ both in the sense of ‘arrangement’ and ‘tendency.’”¹⁹ The conception of *dispositif* as including the human subject is already present in the theorization of *dispositif* elaborated by Jean-Louis Baudry:

In a general way we distinguish the *basic cinematographic apparatus* (*l'appareil de base*), which concerns the ensemble of equipment and operations necessary to the production of a film and its projection, from the apparatus (*le dispositif*) discussed in this article, which solely concerns projection and which includes the subject to whom the projection is addressed.²⁰

Following Baudry's distinction, I differentiate between the concepts of apparatus and *dispositif*. The term apparatus, I would suggest, then refers to all of the technological devices (mechanical, electrical, digital) that are involved in the processes of the production, distribution, exhibition, preservation, and presentation of film heritage. In contrast to Baudry, I would not restrict the notion of *dispositif* solely to the moment of projection but also to other phases: I believe it is important to consider the human actors involved in a *dispositif* situation to comprise of not only the audience but also the technicians and operators who interact with film devices during production, exhibition, and also preservation. Following this line, I propose to use the term *dispositif* to describe the situation of interrelation between the technological devices and the human actors that can take place in the context of the production, distribution, reception, and preservation of films.

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This elaboration of the concept of *dispositif* can be better clarified in the light of the case presented. The description of the Biophon, as a specimen of early film sound systems, can in fact be used to illustrate the difference between the theoretical concepts of device, *dispositif*, and system. The projector and the gramophone, considered singularly, are *devices*: they are independent and can function alone. A *system* is formed when different devices are linked together and function in an integrated way. In the case under examination, the projector linked together with the gramophone constitutes the Biophon system, as described in Messter's patent. The same devices linked together with another type of connection compose a different system, like for instance the Chronophone or the Vitaphone. When the devices are linked together in a system, set up in a particular space, and operated by a human actor, they constitute a *dispositif*. The human actor and the technique that he or she uses to operate the devices play a decisive role in defining the form that film takes both in production and projection.

The considerations regarding the role of the projectionist in guaranteeing the synchronization of Tonbilder films demonstrate the importance of the human actor and of his or her interaction with the technological device in defining the *dispositif* situation during exhibition. The development of the Biophon system can thus be interpreted in terms of the relationship between human and technological actors in the screening situation: while in the "indi-

cator method” the result depends mainly on the human actor, synchronicity in the “dependence method” depends more on the technology (the connecting of the motors of the two devices) and less on the technique and operational capacity of the projectionist.

When used as a tool for interpretation, this particular notion of *dispositif*, intended as the relation between human and technological actors, can underline where the emphasis in a particular system lies, that is, in the actions of the human operator or in the functioning of the device. The conception of *dispositif* as a mere device (apparatus) would not permit taking into account the role of the operator as well. Messter’s struggle for continuous improvement of the Biophon system can thus be interpreted in the light of a continuous re-adjustment of the human-device relationship in the context of exhibition as well as that of production.

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To conclude, the analysis of the Biophon system encourages one to rethink the concept of *dispositif* in terms of an interrelation between human and technological actors, and the moment of exhibition in terms of performance. The nature of the Biophon system underlines the importance of performance: the overall result of Tonbilder exhibitions, as well as the cinematic experience connected to it, depended to a certain degree on the live performance of the projectionist,—in other words, on the interaction between the projectionist and the technological device. In the light of these considerations, film exhibition can thus be conceived as a *dispositif* situation where human actors (the projectionist, the audience) and technological actors (the devices, such as the projector and sound diffusion systems) interact and determine a network of material and symbolic relations that make each screening a unique cinematic event and experience



Fig. 37: The Christie DLP Digital Cinema Projector.

Digital Frontiers: 2k to 4k and Beyond

Ian Christie

THE CHRISTIE CP2220 DLP DIGITAL CINEMA PROJECTOR

The Christie DLP Digital Cinema Projector is a DCI-compliant projector using a Texas Instruments 1.2" 2K 3-chip DMD DLP chip, intended for normal cinema use, offering a resolution of 2048 x 1080 pixels and able to fill a screen measuring up to 70 ft (21.3 m). Described by its manufacturer as "the workhorse of the industry," it also looks to potentially changing standards, being upgradable *in situ* to 4k resolution should this become the new exhibition norm, is 3D ready, and can be adapted for HFR (high frame rate) presentation. Measuring 19 x 25 x 46 inches (48.3 x 63.5 x 106.9 cm), it is compact, ergonomic in design, and accepts a range of lamps.

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THEORETICAL FRAMING

Widely installed in cinemas around the world, Christie DLP projectors have become the equivalent of the major brands that dominated 35mm film projection in the later 20th century. This chapter reflects on how 2K resolution became a standard that encouraged wide conversion to digital exhibition, especially with the incentive of 3D initially offering higher returns to exhibitors, while noting that academic film studies has paid relatively little attention to this technical revolution, other than to lament an aesthetic "loss," or to its profound implications for archiving—with digital-era standards likely to continue evolving and proliferating. Today's archivists may need the support of information scientists, but they also have remarkable tools for retrieving and reproducing the experiences of cinema's past.

DIGITAL FRONTIERS: 2K TO 4K AND BEYOND

I am a giant proponent of giant screens. But I accept the fact that most of my movies are going to be seen on phones.

—George Lucas (2006)¹

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What does 4k mean for film archives, if anything? More broadly, what does the flurry of new presentation standards and technologies of recent years mean for archives, most of which are still wearily grappling with long-term storage and preservation issues created by the photochemical era of cinema? If nothing else, the unveiling of 4K projection and High Frame Rate (HFR) for *THE HOBBIT: AN UNEXPECTED JOURNEY* (2012) reminds us that the digital era in cinema already is hardly new, with a history stretching back to the 1990s. But I want to argue that the challenge of digital for archives, although very real, may also be an opportunity to rethink what and why they are collecting.

FILM INTO DIGITAL

Digital is not new, and film sound was in fact the first element to exploit digital technology from capture to theatrical presentation, with a group of pioneering releases that replaced the optical soundtrack with a digital six-channel system in the early 1990s for the films *DICK TRACY* (1990), *BATMAN RETURNS* (1992), and *JURASSIC PARK* (1993).² Despite the sound chain becoming effectively all-digital from the turn of the century, and picture editing also becoming digital during the 1990s, the film image was still generally projected from 35mm and 70mm film throughout the first decade of the 2000s. A milestone was reached with the creation of a 2K digital standard in 2004. With this, the

major studios' Digital Cinema Initiatives group (DCI) set out the "specifications and requirements for the mastering of, distribution of, and theatrical playback of Digital Cinema content," with three ambitious aims:

The Digital Cinema system shall have the capability to present a theatrical experience that is better than what one could achieve now with a traditional 35mm Answer Print.

This system should be based around global standards, or DCI specifications, that are embraced around the world so that content can be distributed and played anywhere in the world as can be done today with a 35mm film print [...].

To the extent that it is possible, the Digital Cinema system shall emulate theater operations and the theater business model, as it exists today.³

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This intriguing document, written in a combination of "normative" and "informative" language, established criteria that were effectively mandatory for all manufacturers and operators wishing to claim "2K" status, which referred to the encoded image having a 2048 x 1080 pixel count, yielding 2.2 megapixels.⁴ Ostensibly, it was intended to ensure that audiences would not experience any loss of quality as a new generation of digital projectors replaced film projectors. In practice, they soon began to experience a general improvement—or at least a greater uniformity of picture quality—as digital projection became the norm. But even though equipping to meet this new standard has proved ruinously expensive for many smaller operators, it was a compromise.⁵ Like the compression and sampling formats used for audio CDs and DVDs, which exploit known limitations of human hearing and vision to deliver a minimum of information compatible with audience expectations, the 2K standard was designed to be *sufficient* rather than offering a significant enhancement.

For some filmmakers, such as Steven Spielberg, Christopher Nolan, and Quentin Tarantino, this compromise has amounted to a downgrading of what they could achieve with the 35mm system at its best—even if this was not how many audiences experienced their work, even in cinemas.⁶ For others, led by George Lucas and James Cameron, persuading the cinema industry to "go fully digital" has been something of a crusade. Early in 2002, Lucas convened a forum for leading filmmakers to sample the state of digital filmmaking and debate its viability.⁷ Although interest in fully digital cinema continued to grow during the early 2000s, the level of take-up by exhibitors—which had proved crucial in earlier technological transformations—remained low, and

a protracted dual economy of analog and digital seemed likely. Not until the extraordinary success of *AVATAR* in 2009-2010, which demonstrated the immersive appeal of digital 3D, did there appear to be compelling commercial reasons for a majority of exhibitors to invest in digital projection, charging premium prices for 3D in order to help amortize their costs, together with elaborate distributor-led schemes such as the “virtual print fee.”⁸

That it was the “return” of 3D made possible by digital projection has led many to see this as a strategy cynically intended to persuade exhibitors to overcome their reluctance to embrace digital projection. But whether or not 3D presentation finds a permanent place in the spectrum of commercial cinema presentation, “digital” now offers the potential of a wide range of formats and contents. A sharply diminishing proportion of productions continue to be shot on film before being inevitably released in digital. New digital camera systems have proliferated, offering contemporary filmmakers many choices. Films from every period of cinema history have been restored with digital tools and almost without exception—except at specialist festivals and cinemathèques—shown digitally. And in addition to new high-budget productions and animation, there have been “arthouse” 3D films such as Werner Herzog’s *CAVE OF FORGOTTEN DREAMS* (2010) and Wim Wenders’s *PINA* (2011), while existing films have been converted to 3D for re-release, such as Lucas’s *STAR WARS* sequels *EPISODE I – THE PHANTOM MENACE* (1999) and *EPISODE II – THE ATTACK OF THE CLONES* (2002), Cameron’s *TITANIC* (1997), and even Bertolucci’s *THE LAST EMPEROR* (1987). However, perhaps the most significant long-term development made possible by wholesale conversion to digital projection has been a growing range of non-film presentations. These range from major opera and theater productions, both live and recorded, to guided tours of museum exhibitions. Known within the cinema industry as “alternative content,” these now provide an important and reliable source of income for exhibitors but are also beginning to redefine the experience of the cinema theater.

The issue of digital projection as the final link in the film system has loomed large in debates about “digital cinema,” perhaps symbolically, since theatrical screenings account for a relatively small percentage of actual film viewings.⁹ It has also encouraged filmmakers such as Cameron and Jackson to seek ways of intensifying the theatrical experience, by promoting the higher image resolution of 4K and, separately, an increase in frame-rate from the equivalent of cinema’s longstanding 24 fps to 48 fps. With many films being shot on cameras that offer a resolution much higher than 5K, the relatively low quality of 2K projection, especially on very large screens, has become more apparent. Both Jackson and Cameron believe that the 3D experience can be improved by using a higher frame rate, and that 24 fps remains a relic of cin-

ema's distant past when it was adopted as the minimum speed necessary to secure sound and image reproduction at the beginning of the Talkies—replacing variable and generally slower speeds before 1929. But in spite of these “high-end” developments, and irrespective of their own preferences, all filmmakers have known for many years that their work is destined to be seen in a variety of formats and on many different scales—now including the screens of smartphones and tablets, two of the fastest-growing new viewing devices.

It could be argued that “film” itself was one of the “survival forms” from the ferment of image experimentation in the 1890s; and what became “cinema” in the second decade of the last century has lived through at least two periods of intensive experimentation with technology and formats. The outcome of the first, at the end of the 1920s, was the relatively stable form of the synch-sound feature; and from the early 1950s—after the widespread adoption of Cinemascope and similar anamorphic formats—a continuing interest emerged in “panoramic” aspect ratios and large-scale images. It was undoubtedly the inhibiting effect of the commercial exhibition system that moderated and standardized these outcomes.¹⁰ But in the accelerating digital economy of today and the foreseeable future, there are no equivalent constraints linked to the equipping of cinemas; and already both ultra-short form content (YouTube and smartphone videos) and extended TV and internet drama series have achieved a significant market share among viewers alongside conventional feature films.

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HOW AND WHAT TO ARCHIVE?

What does all this disruption in the apparently long-settled technology of cinema mean for archives? First and foremost, it means that henceforth there will only be digital copies of films to collect, which are subject to irreversible degradation, unless filmmakers start to demand archive-quality separation masters on film—recording red, green, and blue data separately on black and white film—which remains the only stable long-term storage format.¹¹ Few may have the power to do so, which opens up the problematic issue of digital conservation: only migration and duplication appear to offer any guarantee of long-term preservation. But even if better solutions are found in the near future, archives are faced with a dramatic expansion in the range of versions of any given title that might be preserved: 2D as well as 3D, normal and high frame rate, 2k and 4k? In reality, films have always existed in multiple versions intended for different markets, display systems, and categories of viewer. But archives have traditionally been concerned with securing the “text” of films—ideally in their original format, although in practice often in whatever form they can obtain them.

The proliferation of yet more versions in the digital era re-opens some important and long-ignored questions about what it is that film archives believe they are actually collecting. We might consider this polemically: is a film primarily a reproducible audiovisual experience, or is it a decipherable “text”? Suppose we were told by an art museum that it only had a small-scale copy of a picture or sculpture, which we were welcome to see—would this satisfy us? For many purposes, it might be quite satisfactory, if we merely wanted to see what was “in” the picture or what the sculpture portrayed. This, I would suggest, is essentially what most Film Studies scholars and teachers have been content to do. Almost all forms of analysis—iconographic, thematic, generic, psychoanalytic, and semiotic—have been practiced on the basis of either remembered cinema viewings, low-quality 16mm copies, or occasionally with access to editing tables or “analytic” projectors. It is difficult to think of any major writings in the canon of film studies that refer to a particular print of a film or say anything about the copies viewed.¹² The film or films discussed existed in a more or less immaterial realm—and indeed were often described in vague or inaccurate terms before the era of home video made detailed referencing both possible and necessary.¹³

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If the “film” in film studies is rarely an experience in space and time, much less of the senses, this may relate to the nascent discipline’s need to distance itself from the terrain of film reviewing, closely linked to press shows and festivals, and from the commercial industry’s typical promotion of production logistics and personalities. It may also point to an undercurrent of technological disavowal that first became apparent during the introduction of the Talkies, when a number of defenders of “the seventh art” voiced their opposition to the “unnecessary” addition of sound.¹⁴ Most of cinema’s subsequent technological innovations have initially been deplored or resisted by those seeking to secure the medium’s artistic status in the name of “specificity,” even if they have been later accepted and even celebrated as significant stylistic episodes.¹⁵

Whatever film studies has had to say (or, mostly, not say) about the viewing experience, the film industry has rarely stood still in its restless search for novelty that will sustain and refresh consumer demand, understanding the need to innovate in presentation to retain its audience in the face of competing entertainment technologies. The early 1950s saw an intensive period of innovation, no doubt motivated by the desire to compete with television, with many new formats that would pose a considerable challenge to archives. Since most proved short-lived and were often treated with contempt by critics, their disappearance was hardly regretted until, with the aid of digital processing, some have been successfully restored and won belated critical admiration. Two late examples of the use of a short-lived novel format are Hitchcock’s *DIAL M FOR MURDER* (1954) in polaroid 3D and *HOW THE WEST WAS WON* (1962)

in Cinerama. Both have been rescued from “the condescension of posterity” (to borrow the historian E.P. Thompson’s phrase from a very different context) by means of digital re-presentation.¹⁶ In both cases, it was the film’s original producers that had preserved the primary materials, and the restoration process was funded as a commercial venture, leading to home video release.¹⁷ Another example of a commercial publication performing what might be considered archival scholarship is the Criterion edition of Terry Gilliam’s *BRAZIL* (1985), which includes both a specially made “director’s cut” and the much shorter release version of the film, thus making possible detailed textual comparison.¹⁸

Resources such as these appear to be aimed at a market that is neither strictly archival nor scholarly, but might be better described as collection-oriented. And, indeed, historically film collectors have long been an unacknowledged, somewhat shadowy feature of the film preservation landscape. All archives have benefited to varying degrees from the purchase or deposit of collections, most of which include material which could not be obtained legally. Since film distribution contracts traditionally include the requirement to return or destroy materials at their conclusion, it is only by individuals ignoring such injunctions that many films have survived. However, modern collectors need not hold illicit prints but can buy elaborate “restorations” produced to satisfy their enthusiasm for this quite literal form of “film history,” which stands outside what might be conventionally described as scholarship and archiving, although it undoubtedly draws on and contributes to both.

ARCHIVING FOR THE FUTURE OF THE PAST

Digital formats pose two kinds of challenge to the institutions of scholarship and archiving. One is essentially aesthetic, or part of the history of taste, and requires coming to terms with cinema as a technological medium. I have suggested that the canonization of cinema as “art” has involved various forms of resistance to cinema’s constantly changing technologies; and the transition to digital in the late 1990s and early 2000s provoked a much more vocal and concerted reaction than synch sound had done seventy years earlier.¹⁹ While some of this resistance was easily explained in economic terms, what also emerged was an almost fetishistic attachment to the apparatus and materials of cinema as they were imagined to be—a strange inversion of Benjamin’s distinction between traditional and mechanized arts, whereby cinema was invested with its “aura.”²⁰

The other challenge is technological and belongs to the larger realm of information science. How to preserve increasingly complex objects that

depend upon inherently unstable media—once photochemical, now digital? All institutions that deal with preserving information face similar problems as the quantity of information available increases exponentially, while demand has also increased. The root problem may be economic, and particularly acute at a time of waning state support for cultural institutions, but it is also intricately linked to changing expectations of what an audiovisual archive does.

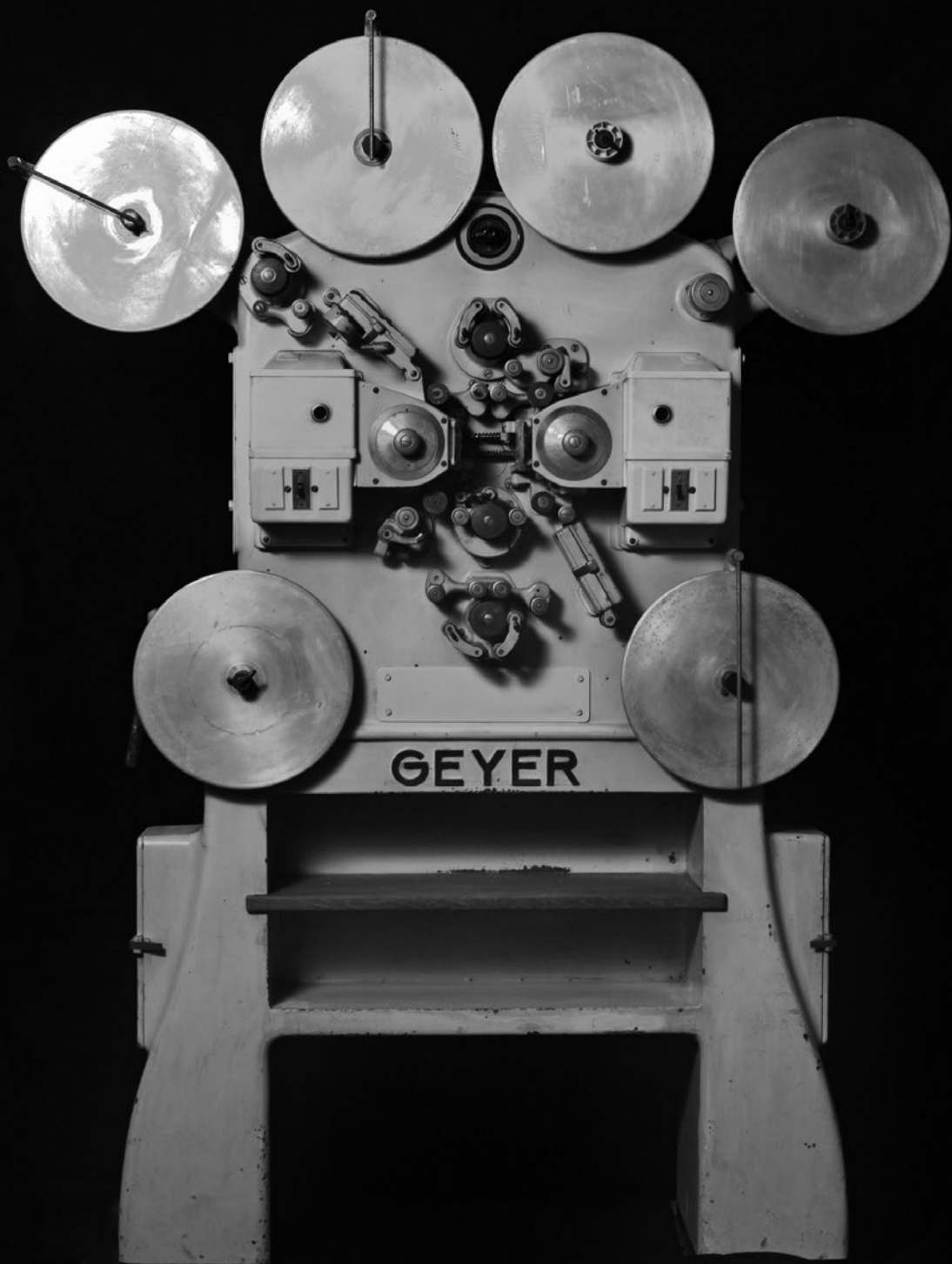
It should be remembered that film archiving has itself been in a state of almost constant flux during its short history, faced with constant challenges to the ingenuity of pioneer archivists. What survives of early British filmmaking is largely due to Harold Brown at the National Film Archive, who found ways of coping with the shrinkage and damaged perforations that are typical of surviving nitrate elements, in order to make new printing negatives from these in the era before digital methods were developed.²¹ Similarly, Kemp Niver's work in re-photographing the Library of Congress's Paper Print Collection, although routinely criticized and subsequently revised by later copying, was also an important landmark in the history of recovering hitherto unknown chapters of early cinema.²² Subsequent preservation projects, such as the conservation of the Jean Desmet color print collection by the Nederlands Filmmuseum (now EYE) and the Mitchell and Kenyon corpus preserved by the British Film Institute National Archive, have all posed new problems and often set new standards. And as in archaeology and some other material sciences, later work has often brought about criticism of earlier methods and solutions. Paolo Cherchi Usai's dictum holds truer than ever: "films do not exist in a void, but are made constantly, after they are shot, printed and shown."²³

I chose to highlight the Christie DLP digital projector, described by its manufacturer as "the workhorse of the industry," as a key device for the continuation of the commercial film exhibition industry. Thanks to this and other makes of digital projector, the once-unimaginable conversion of the global industry has been faster and less fraught with dissatisfaction than might have been expected. Indeed, the average quality of film presentation—especially away from major city venues—is almost certainly higher than it was in the last decades of the analog era. And cinema, born in the era of "machines," has been successfully reinvented as a key part of the array of digital services and devices that connect the modern world.²⁴ But this very success has brought additional problems for today's and especially tomorrow's archivists, who face ever-expanding challenges in collecting and conservation, as well as having remarkable digital tools for restoration—much of which may well happen outside the archive *per se*. While the pursuit of higher resolution in theatrical presentation is continuing to drive cinema's appeal to audiences, other branches of the same sophisticated digital technology can also retrieve a film like Robert Paul's *THE SOLDIER'S COURTSHIP* (1896), Britain's first true fiction

film.²⁵ We can obviously rejoice in this and embrace it, even if we might only be able to watch it on an iPad. Living in a multi-platform world offers us many new opportunities, but it also brings new responsibilities—to understand how images reach our platforms, and what factors condition their circulation. Perhaps the new, wider challenge for archives is to educate us in how films have survived and what ultimately governs their seeming ubiquity today.

PART III

LARGE AND NOT PORTABLE



The Geyer “Rekord” Continuous Contact Printer

Martin Koerber

THE GEYER “REKORD” CONTINUOUS CONTACT PRINTER

The Geyer “Rekord” printing machine is a continuous contact printer for 35mm film designed in the 1930s in the Geyer laboratories in Berlin. It made combined distribution prints—prints that carried image and sound on the same film strip—from two separate negative film strips for sound and picture. The “Rekord” was able to run prints at 3,937 feet (1,200 m) per hour, which was a high output rate in the 1930s, hence the proud naming of the device. The “Rekord” was the first printing machine with plates at the front facing the operator, making it easier to load film. Its cast iron body with the word GEYER, cast in a “Neue Sachlichkeit” typeface, had little built-in shelves and flaps that stored accessories and film cans, thus facilitating the operation of the machine in the dark.

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THEORETICAL FRAMING

Using a combination of historical fact, personal recollection, and written discourse, Martin Koerber explores the history, product design, and workings of the Geyer “Rekord” printing machine and reflects on the issue of media obsolescence. Focusing on film post-production technology and practice, Koerber gives a candid insight into museum collecting practices in a bid to bring a neglected part of the industry to light.

THE GEYER “REKORD” CONTINUOUS CONTACT PRINTER

The Geyer “Rekord” printing machine is a continuous contact printer for 35mm film designed in the 1930s. Its purpose is to make combined distribution prints—prints that carry image and sound on the same film strip—from negatives that carry sound and picture on two separate strips, hence the two printer heads on the left and the right, with the respective gates for the exposure of sound and picture. By lacing up the machine differently on only one printer head and by using a different gate, the operator could make direct prints from a combined duplicate negative carrying sound and picture on only one film strip.

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The Geyer “Rekord” printing machine was built in a period when it was customary to print reels only up to 300 meters. The plates, therefore, could not hold more film than this amount. A closer view at the front plate of the machine shows that there is no automatic light change mechanism, but there are dials which allow for manual adjustments to calibrate the printer light (in 50 steps). Hence it is clear that this is a machine suitable for the mass production of prints from graded duplicate negatives, but not for making first prints or interpositives from camera negatives which need grading adjustments scene by scene. Once the calibration between negative and raw stock is established through a test print, the dials and filters are set accordingly and printing is done with one light at high speed. Efficiency is also gained through the fact that the machine can be run forward and backward—which saves two-thirds of the set-up time—as compared to a machine that can only be run forward and would require rewinding and reloading of the negative. With the “Rekord,” the operator only has to take off the exposed film after the first run, load more raw film for the next print, and run the machine again in reverse, and so on back and forth until the desired number of prints have been exposed.

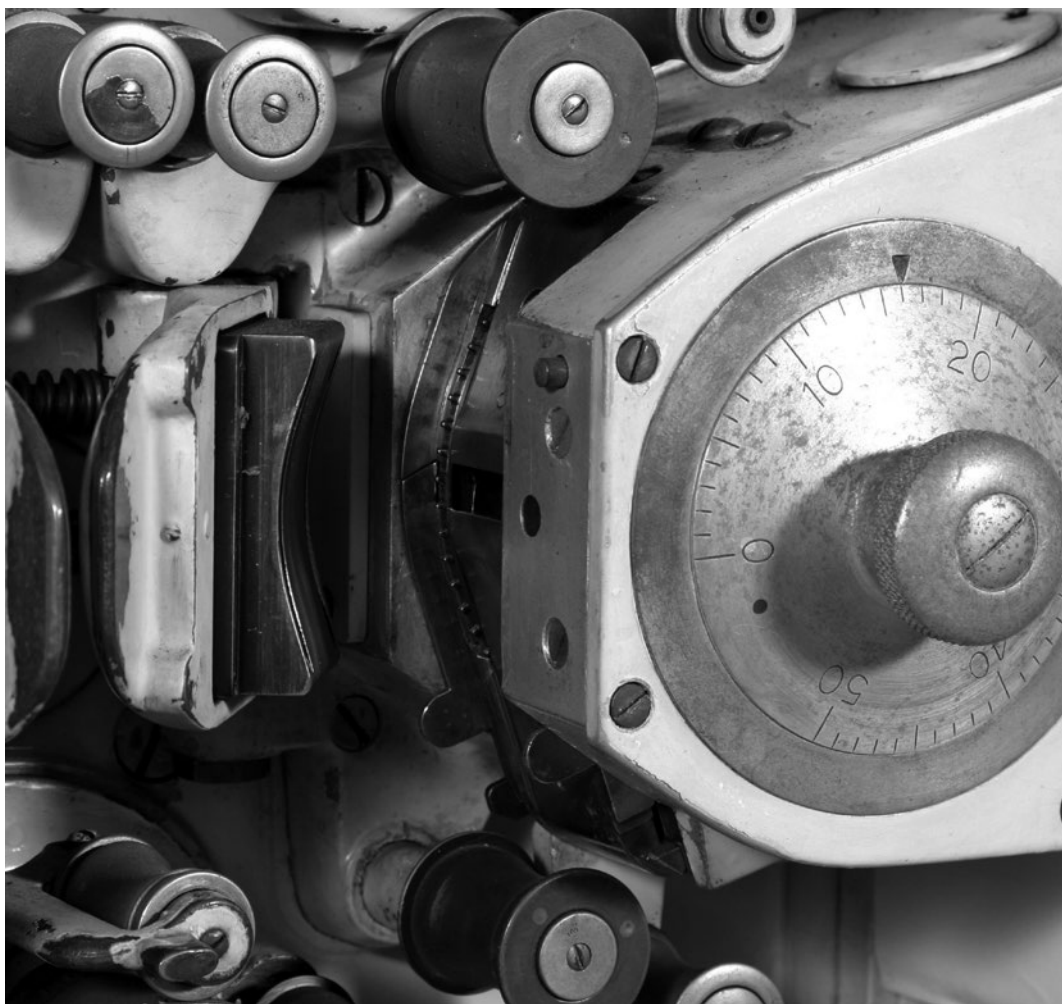


Fig. 39: One of the gates where the film is printed in contact with the negative running on the inside and fresh stock on the outside of the toothed drum. Note the dial that allows one to control the intensity of the light. Photo by Wilfried Busch.

Contact printing is known to give the best result in transferring detail and tone scale from a photographic source, usually the negative, onto a duplicate, usually a positive. The first printers in film history were modified camera mechanisms (in the case of the Lumière Cinématographe and some other early devices, the camera itself could be set up as a printer), in which the negative and the raw stock for the positive could run in contact through a gate where the exposure happened. Image after image would be exposed step by step, just as in a camera. Step contact printing is the best method to obtain a perfect

copy of the negative; however, the speed of printing is limited by the capability of the mechanism and the movement itself. A slow printing method assures high quality but does not lend itself for producing large numbers of prints in an efficient way. It also tends to destroy the perforations of the negative—caused by the claws that pull the film strip by the sprocket holes into an intermittent movement—after a certain number of runs. Once the film industry had the need for large print runs produced in an industrial fashion, a different method of making these “release prints” had to be invented.

In 1911, the first ever continuous contact printer was invented by Bell & Howell. This company built thousands of these printers and was constantly improving the technology from model to model. Their modern ultra-high-speed panel printers are still one of the most popular machines for making release prints today, and will remain so until the end of commercial release printing of film as a regular practice, which will come when this book goes to print. The Geyer “Rekord” printing machine also follows Bell & Howell’s principle of transferring the image from the negative to the receiving unexposed film by running them in contact over a toothed drum, in which an illuminated slit provides the exposure.

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From Geyer’s own pamphlets, we know that the “Rekord” was able to run prints at 1,200 meters per hour, which was a high output rate in the 1930s, hence the proud naming of the device. It is interesting to note that the German car factory Opel came out with their model “Olympia Rekord” at about the same time in the mid-1930s, obviously aiming to cross-brand the vehicle with the Olympic Games that were to be held in Berlin in 1936. Quite possibly Geyer was trying to do the same thing when naming their printer “Rekord.” Leni Riefenstahl’s epic four-and-a-half-hour film about the Berlin Olympic Games was being prepared for release in a special wing of the Geyer laboratory exclusively dedicated to the post-production of her films; a wing originally set up for the post-production of *TRIUMPH DES WILLENS* a few years earlier. Her special relationship with Geyer laboratories dates back to her first film as a director for *DAS BLAUE LICHT* (1931).

INDUSTRIAL CONTEXT OF THE “REKORD” PRINTER

Let us now focus our attention on the particular industrial context of the machine in question. The “Rekord” printer was developed around 1935 in the Geyer Machine Works (Karl Geyer Maschinen- und Apparatebau), a department of the Geyer laboratories in Berlin, one of the oldest post-production houses in the world. The Geyer laboratories were founded in 1911 by Karl August Geyer and Paul Tesch with the explicit purpose of being a “Filmfabrik”

for post-production only.¹ Karl Geyer had been the technical director of the Berlin branch of the American-run Mutoscope and Biograph-Company (Deutsche Mutoskop- und Biograph GmbH) since 1906, and had come to the conclusion that “the mixing of studio-filmmaking in its decidedly artistic or even bohemian style with the strictly industrial and technical workflow in post-production was extremely counter-productive.”² Sold by the Geyer family in the mid-1990s and now operating within the framework of the “Cinepostproduction” company, the laboratory is still active today as a technological leader in digital post-production and as a provider of intelligent technological solutions for production and post-production workflows. At the time of this writing, it is struggling through an insolvency for the second time in a decade and recently had to close down its photochemical wet-lab department.

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In *25 Jahre Dienst am Deutschen Film*,³ a lush brochure published by Geyer laboratories at the occasion of their 25th anniversary in 1936, the “Rekord” printer with its unique design and elegant appearance was celebrated for its high-speed output. It was presented as the high point of the longstanding achievements of Geyer machine making, which had started in 1911 with the manufacture of their first step contact printers and perforation machines. Besides designing several generations of printers since the 1910s—Geyer was the first in Germany to manufacture automatic developing machines in the 1920s—Geyer had developed a line of editing tables and rewinds for the handling of film in the assembly of positive projection prints as well as negative cutting, and offered accessories like splicers. Geyer machinery dominated the German market in the mostly Berlin-based post-production industry until 1945, and then was largely forgotten after Geyer ceased to make machines under their own brand. Even so, single machines survived here and there within actual production contexts well into the 1960s, usually heavily modified for current needs. Some were mummified in (quasi) museum contexts. In 1995, I ran into a 1924 Geyer Type IV step contact printer—in many ways a machine similar to the famous Debrie “Matipo”—rusting away outside the former laboratory of the Staatliches Filmarchiv der DDR in East Berlin, where it had been used as a flower stand next to the main entrance. A bird was nesting in the lamphouse. (Needless to say, we later salvaged this machine and brought it into our collection, with the kind permission of the Bundesarchiv, which had taken over the archival laboratory after 1990.) A beautifully preserved specimen of the Geyer Type II printer survives at the National Technical Museum in Prague. Whether more Geyer printers exist in collections, private or public, still has to be established.

The first “Rekord” printer is said to have been released on October 24, 1935. The chronicle of the Geyer laboratory, which is archived at the Deutsche Kinemathek, mentions it as a “high performance machine” and “double-printer,”

and specifies its purpose as follows: "It is meant to avoid the need for printing sound and image after one another in two runs and can print image as well as sound in one run."⁴ According to the chronicle, the machine had been thoroughly tested since March 1935. The main issues were obtaining good contact on the toothed drum and at the gate, and, in a second test phase, the electrical calibration of an automatic light-changing mechanism for 18 light steps. (As mentioned earlier, this mechanism is not on the machine we have, but photographs from the 1930s show it. With this modification the printer could also make light changes during a print run, either prompted by a notch in the perforation, or the so-called "Geyer-Klammer," a small metallic bracelet that would be clipped into the perforation.) The design of the "Rekord" machine differs significantly from earlier printing machines built by Geyer. Previous printers had been set on one central cast-iron column, to which the various elements (lamphouse, spools, printing mechanism) were then attached. Negative and raw film rolls were running on opposite sides of the machines, left and right, and were put in contact through a "Debie-loop." Thus, the machines had to be operated from both sides. The "Rekord," on the contrary, had, for the first time, all film plates oriented towards the front of the machine and facing the operator, making it simple to load all film by eliminating the need to walk around the machine to do so. Accessories like different spare plates for the image and sound gates were held in place beneath flaps that opened in the body of the machine to the left and the right, and thus could easily be found in the darkness by someone who knew the machine well and kept everything tidy. Film cans could be placed on a little shelf that was built into the machine below the main mechanism. Thus the functional design of the machine eliminated unnecessary movements, which saved time and made things easier—a most welcome requirement, seeing as all tasks had to be performed in the darkness. The solid outward appearance of the machine was given by its cast-iron body. The oversized word GEYER, cast in the modernist "Neue Sachlichkeit" typeface marking the company's corporate identity since the mid-1920s, clearly shows how proud the makers were of this innovative design. The impressive if not imposing exterior of the machine, however, also had its drawbacks.

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Looking at the ergonomics, the "Rekord" expresses a certain moment in the development of laboratory technology; it embodies (but also freezes) a workflow that sooner or later would become obsolete. In release printing, high efficiency is top priority; achieving higher speeds became one of its most important goals as the development of new printer technology shows. This is where the drawbacks of the "Rekord" come in. Higher speeds demand a change in film travel through the machine in smoother loops than are possible on a "Rekord." Also, higher speeds bring the need to load more film onto

the machine, so that the time needed for reloading is reduced. A few years after the introduction of the “Rekord,” printing in 600m reels rather than 300m reels began, which was another innovation that could not be exercised by the “Rekord,” since it had everything “built in.” Its unrelenting cast-iron body simply did not lend itself for modification. Ironically, the makeshift design of the Bell & Howell continuous contact printers—which allowed the feed and take-up reels as well as other elements to be freely moved around the central support of the machine, giving it a spider-like appearance that was far less beautiful than the “Rekord”—proved to be more flexible and thus won out over the “Rekord’s” cast-iron elegance. The exterior of the “Rekord” was one of a kind and was only echoed throughout the 1950s in the design of the “Optima” printers built by the Berlin-based “Union Tonfilmmaschinenbau,” but then was given up in favor of the modern panel printer, which can be mounted into any pre-fabricated industrial cabinet.

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PROVENANCE AND COLLECTION POLICIES

The Deutsche Kinemathek received the Geyer “Rekord” printer over 20 years ago. Where it came from exactly, and when, is impossible to establish from our records. It seems possible that the machine had been in use in the laboratory “Zentrales Kopierwerk” (ZKW) run by Defa, the state-owned film company in East Germany. Being outdated and no longer efficient in modern production, legend has it that the printer was then possibly used in the education department, where apprentices of the laboratory learned the principles of the trade. When the lab was closed in 1990, we heard ZKW had sold their modern equipment to other laboratories, but much of the equipment was very old and was probably going to be scrapped. So we went to look for machines that could be saved for the collection of the Deutsche Kinemathek and for our future film museum.⁵ In the remnants of ZKW’s education departments, we found a treasure trove of historical apparatuses that had been kept in fine working condition. Through the years, many of these machines had been handed down to ZKW in a manner that no one can really establish any longer. Among these machines, we retrieved a wonderfully preserved “Goldberg Densograph” from the 1920s, with which the apprentices of the lab were supposed to establish density curves the way they used to do in the old days. Beautiful wooden rewinding tables still showed inventory tags from the former Tobis laboratory (established around 1929). Printing machines from almost all major makes around the globe, both of pre- and post-war vintage, had been kept in active service up until very recently before our arrival and were in perfect working order. We salvaged several truckloads full of “historical” equipment which had

not been seen fit for sale upon closure of the lab. However, I cannot remember when and where the “Rekord” became part of this transaction, and I was no longer involved when the actual transport to the depot of the Kinemathek took place. Thus, we have no official record nor unofficial memory of its provenance and must rely on hearsay. This is quite typical for a large part of our technical collection, which can at best be traced back to the collector it came from but not to its original production context. Many of the early apparatuses we keep come from the private collection of Gerhard Lamprecht, who established the Deutsche Kinemathek in 1963, after he had been collecting films, film-related material, and film apparatuses for at least five decades. Since 1963, the collection has grown considerably, but even Lamprecht’s successors often seem to have considered it more important to catalog the machines in the collection according to the specifics of their acquisition rather than researching and proliferating knowledge of their specific origin. There are typical exceptions: we do have “personalized” collections of cameras which were used (and usually modified to specific needs and preferences) by particular cameramen, in some cases even with oral history records (written or taped), explaining how these cameras were acquired and for which films they were used. Nonetheless, the origins of most of the equipment typically remains untraceable and anonymous... Be it lamps or microphones, editing tables or any other post-production equipment, no personal history can be attached to them. This is particularly true for anything coming from the so-called “black box” that the film laboratory still seems to be for most people, even film historians. Equipment from that part of the process of filmmaking is rarely collected. One reason for this could be that the equipment is too bulky; another perhaps that it cannot be handed down to a collector by an individual owner. In which case, before being discarded, it could well be set aside in a workshop of the laboratory where it is most likely picked apart for spare parts to be used for other machines still in use. After decades of such use and re-use, these stripped parts of what was once a fantastic technological achievement are no longer complete or telling enough to be of interest to a collector, even if he or she might stumble upon them. So for a multitude of reasons, it seems to be difficult to get hold of material evidence of those parts of the film production process which seemingly remain anonymous because we do not know the names and stories of the dozens or hundreds of people involved, whose names are never mentioned in the credits. Even so, I always found it a shame that their history is not only not recorded but also not even thought about, as if films magically appear by the sheer willpower of a few key people, such as the writer and director or producer, and are still not seen as the result of a complex industrial operation involving a multitude of people and their particular skills, who also have interesting stories to tell, and who, after all, represent the “industry” in the word “film industry.”



Fig. 40: Jean-Luc Godard using a Steenbeck film-editing table.

Jean-Luc Godard, the Video Editing Table, and *Histoire(s) du cinéma* as a Laboratory for an Art of Archives¹

Céline Scemama

THE STEENBECK EDITING TABLE

The Steenbeck film-editing table was invented and manufactured by Wilhelm Steenbeck in Hamburg, Germany in 1934, but was only imported into Britain and America in the 1950s and 1960s. In 1960, Steenbeck presented the first dual-frame editing table with a video camera adapter. In 1965, the first electronically controlled editing tables for 16mm and 35mm film were manufactured. In 1975, a new kind of film-editing table was developed: the first-generation editing tables were upgraded, and picture and sound quality were improved (a modern amplifier system with integrated circuits ensured HiFi sound quality, which also enabled the editor to mix sound). These improved editing tables were released from 1978 onward. Steenbeck went on to develop a compact video sound postproduction machine with a rigid interlock between a standard video recorder and a sound-editing table. In 2003, Steenbeck moved from Hamburg to Venray in the Netherlands. With the film archives becoming more and more important, Steenbeck began work on new developments for these archives in 2005.

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THEORETICAL FRAMING

The aim of this chapter is to show that Jean-Luc Godard uses video—which he calls “cinema’s daughter”—because it enables him to archive cinema, the latter being an ideal locus for working on the archives, drafts, and proofs that time has left behind. This chapter argues that in *HISTOIRE(S) DU CINÉMA* (1988–1998), which opens the final period in Godard’s work, the archived and fictitious images are neither mixed up nor amalgamated but are methodically combined according to a certain conception of history: Godard, the heir to Bazin, demonstrates how important it is to shoot, edit, and show films, as they are an integral part of the world and as such can become a powerful means of resistance, action, and transformation. Godard uses video because it enables him to show this.

JEAN-LUC GODARD, THE VIDEO EDITING TABLE, AND *HISTOIRE(S) DU CINÉMA* AS A LABORATORY FOR AN ART OF ARCHIVES

Jean-Luc Godard has never stopped experimenting with art technical features. As far back as 1959, for instance, he began using ultra-sensitive photographic film for his first film *À bout de SOUFFLE* (1959) in order to shoot without artificial lighting. For *Éloge DE L'AMOUR* (2001), he used digital film, and one of his last films, *ADIEU AU LANGAGE* (2014), was partly shot in 3D. Between his first and his last film, an important part of Godard's work concerns the use of video (editing). But whatever the technique he uses as an instrument, Godard makes *cinema*. Using 3D in *ADIEU AU LANGAGE* (2014), Godard continues to advocate for what cinema can ultimately be: an instrument to see the world more profoundly. In *ADIEU AU LANGAGE*, he shoots the dog Roxy who looks at the world around him with great attention. At that very moment in the film, the audience is being told that man cannot look at the world because he is blinded by his consciousness. While Roxy looks, really looks, we human beings, blinded by our consciousness, are suddenly forced to look at the things as shown by Godard's camera too: Godard's use of 3D brings a new dimension to the viewers that allows them to see the world differently, to see it better, like the dog Roxy. Video, for Godard, was as much a part of this great but slightly disparate project as anything else. André Habib remarked:

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According to Godard, the end is as much a closure as it is an opening, which fitfully shows a point of origin—constantly offset, multiplied, in search for a front (language, name, fall, image, word), offered as a chance of a new beginning, always deferred, which will maintain at the same time the negative facing forwards: "The image is happiness but it also dwells in the nothingness."²

Godard has been interested in video since 1967, two years after the famous 1/2 inch, black-and-white Portapak appeared on the US market and was sold by Sony in the French commercial circuit. More accurately, it was in 1973 that Godard “entered the world of video” with his partner Anne-Marie Miéville: at that point, he had abandoned the traditional system of film distribution and left Paris to settle in Grenoble. Furthermore, he founded the production company, Sonimage, and installed a video studio with the help of two specialists, Jean-Pierre Beauviala and Gérard Teissèdre. In this period, he made films *outside of the cinema* and this included films for television: *ICI ET AILLEURS* (1974), *NUMÉRO DEUX* (1975), *SIX FOIS DEUX (SUR ET SOUS LA COMMUNICATION)* (1976),³ and a series of twelve 26-minute-long films called *FRANCE/TOUR/DÉTOUR/DEUX ENFANTS* (1977).⁴ Then, in 1977, still with his partner Anne-Marie Miéville, Godard left Grenoble and the studio of Sonimage to settle in Rolle. Now, video became central in his cinematographic, partly autobiographical, essays. His studio became part of his inner world, both in a domestic sense (his house was equipped with a studio) as well as in a mental sense. Godard’s *AUTO PORTRAIT DE DÉCEMBRE* (1995) is a telling example of this preoccupation with video. The path that led Godard to video is aptly explained by Antoine de Baecque. According to him, Godard chose video because it allowed ways of sound mixing which were to become increasingly important in his compositions:

“Editing is not enough, you also have to mix [Godard said in 1982].”⁵ Thanks to Musy’s [one of Godard’s technicians] advice, the filmmaker can follow this command: mix the sounds! Godard’s choices are ergonomically tailored to his needs, both technical and economic: he builds a recording studio suited for him. Sometimes the two men clumsily make the wrong choices, but Musy resells the inadequate equipment and they start over in another direction. Soon everything is set up in the auditorium of Rolle, where, thanks to a Steenbeck editing table with six plates and a modified amplification system, Godard can simultaneously edit image and sound, and carry out the sound mixing, all operations that are usually done at different times by specialists, such as Antoine Bonfanti, who did the sound mixing of Godard’s films from the late 1960s and early 1970s. The machines are separated, but placed side by side: thus Godard is able to oversee all sound operations. Now he has learned, with the help of his technicians—Pierre Bingelli, Jean Menoud François Musy—how to do the lighting, the film recording, the color grading, the sound mixing and dubbing, all operations that most filmmakers delegate [to specialists] without acknowledging their aesthetic impact [...]. This technical independence shapes Godard’s ideal of being an artisanal master, craft-

ing in solitude with his own instruments. [...] Godard likes to be able to do everything that is needed to make a film, whatever that is. [...] Like the shoe cobbler repairs his shoes or the mechanic repairs his cars, Godard is the total artisan of his own films.⁶

For all video allowed, it was perhaps the tool that uniquely enabled Godard to make the films he wanted to make, that is to say, to bring things together exactly as he wished. The starting point was that, unlike film, video allowed an immediate assessment of the recorded material. Godard: “This is why I’m interested by video [...] because I see right away the image on the screen.”⁷ This is what he demonstrated a year after the release of *PASSION* (1980), *SCÉNARIO DU FILM PASSION* (1981), in which Godard himself is seen making and editing a film with video, his Steenbeck and two screens in front of him. Video helped him to make that crucial point that film is “a thought that forms a form that thinks.”⁸ These words were to become essential in *HISTOIRE(S) DU CINÉMA* (1988-1998). Godard always defended the idea that films were meant to think. In that respect, *HISTOIRE(S) DU CINÉMA* achieved a true apotheosis. As Laura Mulvey wrote in *Death 24x a Second*, a title not accidentally alluding to Godard’s work:

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Film’s ageing process and its critical, but benevolent, collision with new technologies combine to give the representation of time, always present in and on film, new significance. [...] To turn to the past through the detour of cinema has a political purpose. Jean-Luc Godard’s *HISTOIRE(S) DU CINÉMA* (1998), his extraordinary reflection on the cinema’s own history, entwined with its recording of the history of the twentieth century, is emblematic of such a move.⁹

Unsurprisingly, then, this monumental film of four hours and twenty-five minutes, divided into eight chapters, opening the final period in Godard’s work, is an apotheosis. The first major formal characteristic of this film is that everything—photography, painting, engraving, sculpture, literature, archives, philosophy, poetry, discourse, history, and films—is edited and mixed and treated as a trace of the past destined for archives. It is, in the most radical way, a work of montage and mixing and (though not the usual format) a work of history. Godard fully exploited cinema’s potential to reveal the workings of history, proving that research is not a prerogative of science in the process. He functioned as an “operator of associations,” the operator of a thought process that cannot realize itself without the help of machines, since every shot and every sound recording is shown and heard as if it were a sample to be sent to a laboratory for analysis. Godard used video because it enabled him to archive

the history of the cinema, the latter being an ideal *locus* for working on the archives, drafts, and proofs that time had left behind. The film thus became a genuine laboratory and a work of art, which revealed numerous processes and discoveries, and also a certain vision on the world. The editing room was at once a workshop and a laboratory.

Godard produced this monumental *opus magnus* displaying the full power of film editing. Paradoxically, he used the editing and the mixing that video allowed to reveal cinema's most lively mode of expression. But Godard in fact considers video as one of the avatars of cinema. Video is then used here to show how *film can think* and more specifically how it is able *to think the historical process*. The form of the film becomes a research laboratory to make history in HISTOIRE(S) DU CINÉMA. This way of thinking, which is only possible on a screen, is fundamentally reliant on editing, that is, on juxtapositions and associations.

284 | The film's poetics cannot be considered without taking into account how Godard puts the techniques of cinema to the test. In HISTOIRE(S) DU CINÉMA, strangely enough, the innovation does not lie in the adoption of any technological novelty but in the way Godard uses methods and processes that are in fact very old, which also lends the film a melancholy and tragic dimension. This is even the case when he uses technology that were new at the time.

In HISTOIRE(S) DU CINÉMA, Godard used old and obsolete cinematographic techniques ("a wonderful legacy of the past"¹⁰) paradoxically combined with the possibilities offered by new technologies available to him between 1988 and 1998. Iris-ins, iris-outs, fast motion, slow motion, superimpositions, old-fashioned fade-outs: HISTOIRE(S) DU CINÉMA integrates all the outdated effects and cinematographic tricks that Epstein used to theorize and experiment with, and that were already regretted by Élie Faure. The difficulty implied by this method is to provoke and wait at the same time: "Provoke the unexpected. Expect it," writes Bresson.¹¹ This is a fine paradox which goes together well with that other great principle on which HISTOIRE(S) DU CINÉMA is based: that this film is a *thought that forms a form that thinks*.¹² This phrase is not more rhetorical than Godard's transformation of Cartesian certitude (*Cogito Ergo Video*), as Godard's statement does not exist independently from the images that appear edited together on the screen, which amounts to saying it does not exist without the syntax Godard uses to work with his material, a syntax which wholly depends on the instruments of cinema and, in this particular case, of video. Generally speaking, video and cinema may be considered as two separate art forms, but Godard himself implies no such thing: "I'd say there was no very big difference between video and cinema and you could use one like the other. [...] Video came from cinema..."¹³

However, Godard explains that what he realizes in video could not be done

through cinema. According to Godard, video offers something film does not offer: the *immediacy* of the mixing and combining of images only possible with video. This enables Godard to tease out the effects of an image, a sound, a word, a title, or a bit of dialogue: from an infinite number of possible juxtapositions, Godard chooses only one. Even though none of all this would be possible without the use of (video) technique, Godard nevertheless rejects the primacy of technique in the foundations of art and thought. However, by going back to the origins of cinema—the infancy of an art form—by using what video allowed between 1988 and 1998, he brought the mechanical characteristics of the cinematograph back to the foreground.

Godard made a work of history by putting the images to the test. Images are also called “épreuves” in French, which means *tests* as much as *prints*. Godard thus follows the teachings of Bresson: “*Cinema* movies are historical records whose place is in the archives.”¹⁴ The images are evidence, and motion pictures are testimonials. Images contain memories, and the film material becomes the memory of the world. The screen on which HISTOIRE(S) DU CINÉMA is projected is an “écran souvenir.” What lights up on the screen is the unconscious. What was repressed in the world returns on the screen of HISTOIRE(S) DU CINÉMA. Its main principle is that of association, which is the way to facilitate the projection of memories on the screen. Understood in this way, HISTOIRE(S) DU CINÉMA is like the folds of time in which so many bodies are wrapped alive. The problem is that these folds cannot be unfolded in a systematic or organized way. Symptomatically, the film’s unfolding is not straightforward as the pain is not orderly nor is the unconscious. What was repressed and kept within can only return suddenly and evasively, like an explosion.

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The phrase pronounced by Godard in HISTOIRE(S) DU CINÉMA, “Equality between reality and fiction,” has often been misunderstood. What is actually to be seen on the screen of HISTOIRE(S) DU CINÉMA are images—both fictional and archival—that meet and interact. “Never close-ups, the suffering is not a star”; Godard said this in the first chapter (1a) of the film when we see a blurred image of a body being thrown into a mass grave. This image is not shown demonstratively. It appears and disappears, as in history: engulfed, buried in darkness.

A constellation of such images from all around the world is presented, alternatively archival images and fictional ones. It starts with a shot in black and white with bare feet walking on dark and damp earth. From this black-and-white image we jump to the most vivid colors, and from the earth we go to heaven with *Le Champ de blé aux corbeaux* by Van Gogh. There is a shock of the contrast here, and it is even bigger when we arrive at the very blurred image in which we nevertheless distinguish a body thrown into a mass grave. The reverse shot of this archival image is a shot from the film by Andrzej Munk,

PASAZERKA (1963). Godard does not conflate these two images. To bridge is not to confuse: the formal difference between the images is clearly shown here: one is blurred, indistinct, and ill-defined, while the other one, of the woman, the Nazi officer, is very clear and very well-defined. These two images are formally kept well apart, yet Godard nevertheless produces a connection between these two shots: barbed wire crisscrosses the space of the woman in parallel to the concentration camp's universe of which she is the guardian. In her strict and rectilinear uniform, she looks away with a stern and authoritarian air. What she seems to look at, in Godard's editing, is the body thrown into its grave. What Godard shows with the shot of the Saint Francis missionaries' bare feet, so well-intentioned but so helpless, is that these feet are doomed to walk the earth—the very same one that contains all these bodies that could not be saved.

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In Godard's film, editing has become a primal gesture: it brings images together without denying each its own nature. The montage of the historian is not an amalgam. However, he can show how some images are alike, like some paintings by Goya for example and some of these "survivors' pictures" from the concentration camps. Using the archival images from the camps, Godard retains their invisibility, their fuzzy and rough appearance. Violence reflected in these images is transmitted into the way they appear on the screen: as electric shocks, choppers, lightning, gunshots. These are images that were nearly destroyed which are brought to the screen as "images that have survived in spite of it all." These "survivor" images cannot be shown other than in the mode of "rescued against all odds" for he who undertakes to make history.

All images from HISTOIRE(S) DU CINÉMA retain a consistent theme of disaster. Everything seems to die, to shine in a last flash. There are two explanations for this, and both are probably true because they are in fact deeply intertwined. Godard tells the story of all that is wandering, that is drifting in history, the history of all that was left unfinished, everything that is not absorbed by time, rejected the way a body rejects what is discomforting or the mind that represses the unbearable. All the injustices of the past do return with what has irreversibly broken all belief in humans: the crimes against humanity. A certain idea of humanity has been eternally affected, and so everything bears the scars of the disaster. Nothing can be viewed as before and thus we are caught in an everlasting cycle.

*An element of heaviness is typical of the human being, which we need to overcome. But this weight and this revulsion have never been as heavy as they have become since Auschwitz [...]. From that moment on, the image of the man is inseparable from [that of] a gas chamber...*¹⁵

These words by Georges Bataille describe exactly what we feel about all the images of HISTOIRE(S) DU CINÉMA: the shock provoked by the montage, the use of the deathly slow motion, the expression of emergency induced by the use of acceleration: this terrible impression that every image of something *still alive* is systematically covered with something dead which inescapably destines it to death and mortification. Such violence affects all images in HISTOIRE(S) DU CINÉMA. The historical existence of the camps is projected onto all the stories, eternally. The screen of HISTOIRE(S) DU CINÉMA becomes the visible space of time, because time has slipped into these images; that is how Godard worked the archival footage together with fictional imagery into this immense work, creating a laboratory for an art of archives.



Fig. 41: The Close-up (THE MUSKETEERS OF PIG ALLEY, D.W. Griffith, 1912).

Famous Facials: How We Got Ready for the Close-Up

Jan Holmberg

THE CLOSE-UP

The close-up is a cinematic shot of a detail, often related to a previous, wider shot (referred to as a “cut-in”). Although the term is used for shots of objects as well, it primarily refers to a part of the human anatomy in general, and the face in particular. Although used already in the very first films made, the device was seemingly less favored during the early years of cinema until it was “rediscovered” (allegedly by D.W. Griffith) in the latter part of the 1900s, after which it rapidly became a dominant stylistic cliché.

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THEORETICAL FRAMING

This chapter provides a historical analysis of the debate on closer framings as it appeared in the international film trade press between 1908 and 1912. From a vast source of reading materials, the chapter identifies four key aspects of the close-up in the discourse—distance, size, fragmentation, and the human face—and notes how reactions to the device rapidly shifted from a suspicious reception to a uniform embrace.

FAMOUS FACIALS: HOW WE GOT READY FOR THE CLOSE-UP

As an undergraduate film student of the early 1990s (which I keep believing is not too long ago), I learned from my film history textbook that the cinematic device of the close-up was invented, in a particularly inspired moment, by the father of film art, D.W. Griffith.¹ This film-historical myth among myths was probably created by Mr. Griffith himself by way of his infamous ad in *The New York Dramatic Mirror* in 1913. He had just left the Biograph company and was now looking for new investors. Under a none-too-modest rubric, the article comprised a *curriculum vitae* of more than a hundred films, along with a number of alleged innovations such as the “switch-back” (now known as parallel editing), the fade-out, and “large or close-up figures.”² The myth was further consolidated by a passage in the biography of Griffith’s wife, Linda Arvidson, which claims that *AFTER MANY YEARS* (1908) was “the first picture to have a *dramatic* close-up,”³ as well as by Terry Ramsey’s early and influential survey *A Million and One Nights: A History of the Motion Picture*.⁴ Since my undergraduate years, it has become a favorite sport among revisionist film historians to demonstrate how all the devices to which Griffith claimed authorship had in fact been used before him.⁵

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The “fetishization of ‘the first time’” is less common now than in the early 1970s when Jean-Louis Comolli coined the phrase,⁶ but even if aporetic questions of origin seem out of date, traditional film histories (Lewis Jacobs, Jean Mitry, Georges Sadoul et al.) were still on to something. Dismissing Griffith altogether as the inventor of the close-up would be almost as oversimplified as to take his claim unequivocally. Although closer framings were common in the very first decade of cinema (as attractions in their own right, as emblematic shots, as shots of objects in actualities, etc.), they were distinctively more rare from c. 1904 until the alleged “first time” around 1908. Closer framings were controversial during Griffith’s early years at Biograph, and as a key figure

in the industry, he was instrumental in bringing about a change in the way the device was viewed—from overall skepticism (even disgust) to general acceptance (even praise).

In the following, I will trace the debate on closer framings as it appeared in the (notably American) trade press, a discussion with a remarkably clear-cut beginning (1908) and end (1912). The earliest remark on closer framings I have been able to find—fetishization of the first time again!—is in fact fairly positive (and as such is an exception to the rule; most comments of the period, as one shall see, were not). In an article comparing film and theater, the author claims that cinema has a specific advantage, thanks to a specific device:

The motion picture may present figures greater than life size without loss of illusion, and if an emotional climax is well worked up, the power of good pictures to convey these phases of emotion by the facial expression of the actors is greater than that of the actual stage.⁷

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This was 1908, the year the Vitagraph company started using the so-called “nine foot line” as the shortest distance between the camera and the actors. The earlier tableau framing had rendered the actors in full, with considerable space both below the feet and above the head. The nine foot line—using the standard lens of 50 mm and the standard studio aperture between *f*/5.6 and *f*/8—was to yield sharp focus, and a human figure would be framed from the knees up.⁸ The following year, Biograph would increasingly implement this “nine foot line,” but the new distance was still idiosyncratic enough in 1911 that a notice in *Moving Picture World*, in answer to a question on the normal distance between the camera and the actors, irritably declared:

It varies greatly, depending of course, upon the focal length of the lens and the field of view desired in this picture. In studio work, from ten to fifteen feet is customary, although eight feet and even less seems to be the rule with those who amputate the lower limbs to show us facial expression.⁹

A few issues earlier, John M. Bradlet reported an anecdote on how he was asked by a theater proprietor for the price of a new movie screen. The measurements in question were, according to Bradlet, “ridiculous,” since the exhibitor obviously had in mind a distance between projector and screen that would “show the figures one-third over their natural sizes.”¹⁰ Bradlet recounts:

I asked him why he wanted such a large picture [...]. His answer was the same old story: “The public demands a large picture.” No, Mr. Exhibi-

tor, the public does not ask for a large picture, as the films have already enough defects without having to magnify them with a large picture.¹¹

Bradlet concludes by blaming the filmmakers for their insistence in using absurdly enlarged faces, sacrificing all “art and beauty” on the altar of “what they call facial expression.”¹² No less impressed than the reporters of the *Moving Picture World* were those of the *Nickelodeon*:

Aggravating and emphasizing the deficiencies of the actors [...] is the style of “close-up” photography which now prevails. This practice of stationing the camera almost within reaching distance of the performers is like putting everything under the magnifying glass. All the crass details obtrude with hard angularity. We see the make-up of the actors, the lip paint and darkened eye-brows and the falsity of their wigs. Owing to the absence of retouching, wrinkles are augmented and the flesh takes on a pock-marked appearance which is vastly unbecoming. Every detail of the *tout ensemble* suffers in like manner. Wherever there is anything false or flimsy we spot it at once, because things are viewed at such close range. It is like watching a dramatic performance from a stage box. Under the circumstances there is no chance for illusion. Nowhere does the adage, “Distance leads enchantment to the view,” apply with such force as to dramatic performances. Distance is an absolute requisite to any kind of idealistic illusion.¹³

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This remark is an example of the rather common notion during the early 1910s associating closer framings with realism—that is, closer framings were perceived as being *too* realistic. But the relation between close-up and realism was problematic: on the one hand the audience saw too much, which would break the illusion; on the other hand, realism was desired at a time when the film industry wanted to “go legit” (and for which emulating the realism of, say, Charles Dickens seemed a shortcut). Two aspects of realism seem to be at work here: there is the illusionism of *trompe l'oeil*, and at the same time there is the pseudo-scientific sense of seeing more, revealing new aspects of reality. A possible example of the latter is a seemingly strange formulation in the catalog text pertaining to *THE GREAT TRAIN ROBBERY* (1902), where the emblematic shot of the bandit firing a handgun at the audience is described as “realism.” Charles Musser comments:

Since this shot is abstracted from the narrative and the “realistic” exteriors of earlier scenes, the title that the Edison catalog assigned to this shot—“Realism”—might at first appear singularly appropriate. Yet the

heightening of realism in twentieth-century cinema has been associated not only with a move toward greater naturalism but with a process of identification and emotional involvement with the drama. It is this second aspect of realism that the close-up intensifies.¹⁴

In fact, the idea of realism was crucial for the close-up to become generally accepted, which, as I mentioned, happened in 1912. Putting such an exact date on its acceptance may seem bold, but it is nevertheless substantiated by the evidence of the trade press discourse. Although critical comments still occurred in 1912, they became less frequent (even if they would sometimes express a more distressed view than ever before), and by 1913 they became virtually non-existent. And, conversely, although positive reactions were rare during the years between 1908 and 1911, they began to increase significantly in frequency from 1912 onwards. An example of both the pivotal year of 1912 and how closer framings could be seen to work in favor of realism is the following quote in the September 15, 1912 edition of *New York Dramatic Mirror*:

The close-view, also, is of great benefit in bringing out a climax, in that a spectator may read more clearly through expression alone the passing thought of the characters, when the voice would naturally be the only means of expression, and previous events have led up to this very point. It is eminently natural, as in life one does not see the entire form of a person with whom he is in close relation.¹⁵

Although the anonymous writer admits that the close-up is sometimes “misused,” the conclusion is that the blame does not lie with the framing per se: “The fault is not with the method but with its application.”¹⁶

My quotes so far have mainly emphasized the *distance* aspect of the close-up, regardless of whether it was too close for comfort or not. In fact, *distance* is one of the keywords in this debate; another keyword, to which we now turn, is *size*. One of the earliest remarks on closer framings in *Moving Picture World* is an editorial from 1909 concerning a tendency to enlarge characters to a “mammoth scale,” giving the impression that the films are being enacted “by a race of giants or giantesses.”¹⁷ Particularly straining is how the camera changes the scale all the time, from “Lilleputian pigmies” and “agreeable” natural size to “Brobdiagnagian monstrosity.”¹⁸ The author refers to the theater, where “figures of human beings do not expand or contract irrationally or eccentrically; they remain the same size.”¹⁹

When the characters during the transitional period²⁰ were becoming increasingly psychologically plausible, i.e., “like ourselves,” they were also

expected to resemble us proportionally. As many historians have shown,²¹ the “legitimate theater” was the norm in what was considered a “correct,” anthropomorphic scale, as suggested by the often-repeated concept of “life-size” in the debate. The German theater critic Felix Salten sums it up nicely:

At one moment people appear larger than life size, at the next diminutively small. In one way or the other they are rendered grotesque, more or less like clowns. In the same narrow frame of the projection screen we see now an individual actor, overwhelming, all too close, all too magnified, a second later we see him shrunk down walking along a street, a dwarf among other dwarfs, and it becomes inconceivable that we could observe his acting, have it affect us seriously or comically.²²

There are two more keywords that play a role in this debate, both of which are featured in what is possibly the most famous article on the subject of closer framings from the period: H.F. Hoffman’s *Moving Picture World* piece “Cutting Off the Feet.” Hoffman starts by recalling how the journal had earlier politely protested against the tendency of films to cut off the actors’ feet. After concluding that these objections had not been heeded, he goes on to remark that films were beginning to cut off actors at the *knees*, until it really got out of hand:

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Things kept getting worse, until now it is a common sight to witness a photoplay the greatest part of which is acted so close to the camera that the actors are seen only from the waist upwards. Facial expression—that seems to be the dominating influence that brings about this inartistic result.²³

The third and fourth keywords, then, can be termed *fragmentation of the body* and *facial expression*.²⁴ An article in the French *Ciné-Journal* repeats the basic argument only a month after Hoffman’s article when discussing the nine foot line of Vitagraph:

To produce the maximal effect, the actors of the Vitagraph troupe have had to work specifically with the play of physiognomy, and, for the facial expressions to be perfectly perceived by all the spectators in the salon, the director has had to place the actors as much in the foreground as possible. This method, which has yielded good results, has soon degenerated into an abusive method. [...] At the moment, we have entered what one could call *the period of dismemberment*. During a third-fourth of the time, the actors in the foreground are being cut at their knees, and from

an artistic point of view, the effect produced is infinitely disagreeable and shocking.²⁵

As the two latter examples demonstrate, facial expression was often regarded as the reason for closer framings, and it is quite possible that the desire of the producers to demonstrate the skill of the performers they had invested in contributed to moving the camera closer. This is Janet Staiger's hypothesis in one of the earliest articles on this much-discussed subject. Eileen Bowser presents a similar argument (though with some hesitation), while Tom Gunning and James Naremore reverse the causal process by arguing that closer framings made it possible for directors to move away from the "melodramatic" acting, rather than the other way around.²⁶ In her dissertation on the acting style in Griffith's Biograph films, Roberta Pearson wisely refrains from taking definite sides and points out that whether the new, more restrained acting style is a function of closer framings or vice versa remains an open question.²⁷ Why the new "naturalist" acting style gained popularity is beyond the scope of this chapter. Suffice it to say that the already mentioned strategy to legitimize cinema by recruiting representatives of the kind of acting privileged by the most respected branch of theater was one of them, as was the fact that films grew longer at this point in time, allowing characters to evolve psychologically. Other important factors to consider are the growth of the genre of realist everyday drama (calling for another kind of acting than the cinema of attractions had) as well as the drastically shorter shots in the advent of analytical editing that left less room for an acting style based on broad gestures.

Enter *facial expression*. Bowser and Pearson give a number of examples on how the trade press encouraged the new acting style but also condemned everything regarded as exaggerated or overacting. Within a few years, then, a significant and quite literal shift of focus occurred: having emphasized the body's full repertoire of movements and gestures, the camera moved forward and upward to the face as the privileged locus for the actors' play of emotions and the spectators' attention. But during this transition, there seemed to be a dilemma: on the one hand, facial expression was all the rage; on the other, the best manifestation of this—the close-up—remained controversial. Although it is doubtful that the famous statement attributed to Biograph producer Henry Marvin, "We pay for the *whole* actor, Mr. Griffith,"²⁸ is historically accurate,²⁹ it nevertheless captures the quandary. From being an anonymous piece in the machinery, the actor was now highly valued and deserved more than to be cut in half. At the same time, the closer framing—and with it the amputation—was a requisite for the actor to showcase his or her talent.

Finally (or rather, quite hastily), the battle was "won" by a mode of film-

making in which the close-up was a linchpin, and the negative responses turned into songs of praise. A particularly telling example of how rapid and brutally effective this change of opinion was can be found in a December 1912 issue of *Moving Picture World*. The very same journal that only months before had been a stubborn opponent of closer framings was now full of admiration:

In his beautiful photographs [i.e., Griffith's/Bitzer's, the text is a review of BRUTALITY] his characters appear as through fine opera glasses. Every change of expression is more clearly pictured than if they were truly before us, and one isn't embarrassed drinking the effect in. Is it not truly soul-music? Can such impressions be created in any other way than on the screen?³⁰

Apart from a few exceptions from early enthusiasts, the reception of the close-up effectively went from uniform scorn to equally uniform praise, and all this within the course of a few years. Later, the overwhelming feelings the close-up evoked turned into odes to the device as cinema's "soul" or its "hallmark," as sung by Béla Balázs, Jean Epstein, or Ingmar Bergman.³¹ And this is only fitting: every "evolution" demands a certain forgetfulness as to how things were before.

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As an early attempt to theorize the moving image, the importance of Hugo Münsterberg's *The Photoplay: A Psychological Study* (1916) cannot possibly be overstated. Although the book discusses many devices of the medium, one seems particularly important, and is summarized as follows:

We see at first a man in his normal size and then by a close-up an excessive enlargement of his head. Yet we do not feel it as if the person himself were enlarged. By a characteristic psychical substitution we feel rather that we have come nearer to him and that the size of the visual image was increased by the decreasing of the distance.³²

At the very least, the notion that "we"—by psychological *necessity*—understand the cut-in to a closer framing as coming closer is problematic. As has been shown, the close-up evidently engendered entirely different experiences, some of which were associated with giants, others with mutilation. Moreover, the closeness itself could also be perceived by some as rather discomforting.

Münsterberg's brilliant contribution to early film theory notwithstanding, this reasoning demonstrates a certain forgetfulness *vis-à-vis* earlier views, and is ample evidence of how the close-up by 1916 was no longer considered a problem. Only a few years after it was dismissed as violating aesthetic norms

(or worse), the Harvard psychology professor could safely emphasize how the “close-up has objectified in our world of perception our mental act of attention and by it has furnished art with a means which far transcends the power of any theater stage.”³³ Few processes of canonization are so easily pinpointed as that of the cinematic close-up, which, within a few years in the early 1910s, went from atrocity to art.



Fig. 42: Digital Cinema Package (DCP). Photo by Anna Hoetjes.

Digital Cinema or What Happens to the *Dispositif*?

Frank Kessler and Sabine Lenk

THE DIGITAL CINEMA PACKAGE

Created in 2005 by the Digital Cinema Initiatives—a group of Hollywood majors that formed a joint venture in 2002,—the Digital Cinema Package (DCP) is a wrapper containing images, sound, subtitles, and metadata. Six studios got together to agree on internationally valid norms (“DCI specifications”) to ensure that their movies would be screened in 2K / 4K and compressed in JPEG 2000. The initiative also strove to protect movies against copyright infringement and to assert total control over the movies’ distribution via a decryption code, the key delivery message (KDM), without which the encrypted content could not be accessed. The KDM is a rental license that allows projection under specific conditions.

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THEORETICAL FRAMING

In this chapter, Frank Kessler and Sabine Lenk discuss the debate on the digitization of film and what the digital roll-out means for cinema and for the audience. With a particular focus on the transformations and continuities in what film theory commonly addresses as the traditional cinematic *dispositif*, Kessler and Lenk explore the positions taken by various authors participating in the debate and ask the question: To what extent is the cinematic *dispositif* actually affected by the shift from celluloid to digital?

DIGITAL CINEMA OR WHAT HAPPENS TO THE *DISPOSITIF*?

Compared with the traditional reel of 35mm film, the Digital Cinema Package (DCP), which is delivered on a hard disk, has the appearance of a “black box.” Not only does it look like one, it also completely hides what it contains. On a celluloid print, one can always look at the frames even when it is in a format for which one does not have a projector nor a viewing table. This allows one to identify the film or at least get a rough idea about its content. Nothing of the sort is possible with a DCP. Access to the content of the black box is rigorously controlled: you are allowed to watch the film over a given period in one particular theater—which has to be equipped with an authorized beamer—and in a specific language version for a limited number of screenings, provided one has the correct Key Delivery Message (KDM) and the software that is able to read it.

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As far as commercial screenings are concerned, the celluloid era will soon definitively belong to the past. Most of the films that one can watch in a movie theater today are no longer delivered as prints but as a huge amount of pixels that are projected digitally. In this chapter, we look at the consequences of these developments. A number of authors have recently argued that this process will result in “the end of cinema,” at least as we knew it. Indeed, strictly speaking, there is no “film” anymore, but the consequences of this technological shift are seen to reach much further. We will try to disentangle the different aspects of this debate, concentrating on what the digital roll-out means for cinema and for the audience. We will discuss the positions taken by various authors participating in the debate, focusing on the transformations and continuities in what film theory commonly addresses as the traditional cinematic *dispositif*—that is, the viewing position of a spectator seated in a movie theater in the dark and immersed in a film. The question we ask ourselves is to what extent is the cinematic *dispositif* actually affected by the shift from celluloid to digital?¹

THE DIGITAL ROLL-OUT

Country	2010	2011	2012
Luxemburg	73.0 %	100.0 %	100.0 %
Germany	33.1 %	49.0 %	no information
France	25.4 %	47.6 %	81.0 %
Netherlands	c. 26.8 %	c. 65 %	100.0 %
UK	37.8 %	72.0 %	92.0 %

Table 1: Digitization of movie houses in 2K between 2010 and 2012 in selected European countries.

304 | In 2010, 568 out of 1,714 cinemas (33.1%) in Germany were equipped with 2K digital projectors; 521 out of 2,050 (25.4%) in France; and in the Netherlands 201 out of 751 screens were digital.² In 2011, 966 (47.6%) French movie theaters owned at least one beamer, while in Germany, 49% of all cinemas projected digitally. In the Netherlands, 540 out of more than 750 screens had become digital.³ By 2012, the Netherlands had become 100% digital, as Norway had the year before.⁴

The Digital Cinema Initiatives, having introduced new screening standards in July 2005, has progressively divided the world of movie theaters into those showing pixels and those still screening grains. The former has become the majority in North America (85% by the end of 2012), Africa and the Middle East (80%), Europe (67%), and in the Asian-Pacific area (64%). Thus “[...] the world’s cinemas are now over 75% converted [...]”,⁵ and it is evident, given the increasing speed of the development, that within the next ten years the rest will follow.

Additionally, a whole professional branch is slowly disappearing, because projectionists (who were gradually being replaced by underpaid students and other non-professionals ever since the 1990s) are no longer needed. Their knowledge of lenses, gauges, and all the electrical and mechanical aspects of film projection has become obsolete. Today, films are transferred from disk to server and electronically programmed and timed for a whole week by one technician. They could in theory be “launched” from the ticket booth by simply switching on the system.⁶

DOES CINEMA HAVE A FUTURE? THE DEBATE

With the end of celluloid in cinemas nearing, some theorists believe there cannot really be “films” anymore, at least in the material sense of the term. According to David Rodowick, “film disappears into digital movies,”⁷ or, to quote André Gaudreault and Philippe Marion, we have now moved past the point when “cinema was reduced to a mere material base or technology, limited to a mere combinatory formal logic joining a given technology with certain signs, certain expectations, certain kinds of representation, certain consumer practices.”⁸ The initially gradual and more recently dramatically accelerated replacement of prints by DCPs thus has provoked a wave of reflections on the future of cinema, which for many clearly is something that will be quite different from what has come to be known as “cinema” since the beginning of the 20th century—if there is a future at all.⁹

In this debate, several issues are closely intertwined, and it may be useful to separate them here:

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- The loss of what has been seen by many theorists—from Boleslas Matuszewski in 1898 to André Bazin and Stanley Cavell—as the defining quality of the cinematographic image: its “indexicality,” referring to the image being a trace of something that took place in front of the camera lens.¹⁰ This is a discussion we will not go into, as it has already been amply debated.¹¹
- Movie theaters are no longer spaces devoted exclusively to the screening of films made specifically for that purpose, as they are increasingly resorting to showing so-called “alternative content.”
- The traditional *dispositif* of a film being projected in a movie theater can no longer be considered the default option, as spectators today watch films on all sorts of screens (tablets, laptops, home cinema sets, TV screens, mobile phones, portable DVD players, etc.) and on all sorts of carriers.

Thus it is not simply the technology of the medium but also the institution itself that is deeply affected by the digital, according to Gaudreault and Marion, among others. The parameters are changing, and maybe even the paradigm as well. This, in turn, raises the question of whether we have finally come to the end of cinema.

The answers to this question vary, of course, from nostalgic and pessimistic views to enthusiastic ones that embrace the expansion of cinema across a variety of new platforms. Those who are located somewhere in the middle of this debate with their more pragmatic positions—scholars such

as Francesco Casetti but also Jacques Aumont—argue that in spite of the changes brought about by the digital, spectators continue to watch films and still go to movie theaters, and even more so over the past years. Looking at these issues from a more distant and in particular historical point of view, things indeed appear to be less dramatic than some have portrayed. Let us first consider briefly the fact that movie theaters today have started to offer other kinds of shows, such as live transmissions of operas, ballets, theater plays—often from prestigious companies such as the New York Metropolitan Opera, the Opéra de Paris, or the Royal National Theatre London—more or less on a regular basis. (Sports events could be the next step.) Digital technology makes it possible to transmit such stage events live to cinemas all over the world, which sometimes means that spectators will have to adapt their theatergoing routines and come to see a Paris soirée in the afternoon at their local moving picture house somewhere across the Atlantic.¹² Such shows, it seems, are lucrative and generate extra income, because of the higher prizes for the tickets and maybe also because audiences can be served champagne and shrimp during the intermission rather than soft drinks and popcorn.¹³ Yet offering alternative content as a business strategy for movie theaters is in itself not a novelty, because already in the 1940s and 1950s there were telecasts of sports events and even operas in US movie theaters, even if this failed to become commercially viable at the time.¹⁴ Alternative content, in other words, is a commercial opportunity a number of multiplexes have turned to, but it remains to be seen whether it will be a viable one in the long run.

The remaining issue is indeed an important one, but again not really one that has been prompted by digital technology. It is obvious that for a majority of viewers the consumption of moving images, and even the consumption of fictional feature-length films, frequently takes place outside of movie theaters. But this does not necessarily imply a doom scenario. In 1992, Douglas Gomery wrote:

At the beginning of the 1980s some industry observers predicted that there would be no need for movie theatres by 1990. Everybody could stay home and view films on the coming new television technologies. Instead, during the 1980s more new movie theatres were built, creating more theatrical screens in the United States than at any time in history.¹⁵

Similarly, in spite of the increasing availability of feature films on DVD, Blu-ray, or the internet, cinemas in Europe overall did rather well. In Germany, for example, ticket sales actually peaked in 2012.¹⁶

Nevertheless, the fact that theatrical screenings are no longer the default

option for watching a movie—a situation, we might add, that dates back several decades by now—undoubtedly does have an effect not only on cinema as a cultural institution but also on the way in which one experiences films. Francesco Casetti has discussed this development in terms of a “relocation” of cinema towards other platforms and of a shift in the way one experiences film from “attendance” (of a film in a cinema) to “performance” (of a viewing act using a specific, generally digital device).¹⁷ Casetti argues that it is not simply the availability of new digital devices that has caused this relocation but that the new viewing habits are also the result of cultural changes.¹⁸

Thus the DCP is not the only carrier on which a film can be distributed, contrary to the reels of a film (at least in the pre-television and pre-video era). There exists a wide range of other viewing devices, and indeed, it is the studios themselves that are pushing for this subsequent distribution of a film on DVD, Blu-ray, pay-television, video-on-demand, etc., as this “secondary market” is an integral part of their business model. Today, possible viewing situations (e.g., to pass the time while waiting somewhere, while travelling on a train, or simply while relaxing at home) have multiplied. Together with the technological shift from celluloid to digital files, the experience of moviegoing as such has changed fundamentally, giving rise to the question “What, under these circumstances, is the meaning of ‘cinema’?”

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Among the reactions to this issue, two stances can be distinguished. There are those who, without necessarily defending an essentialist view of the medium, link “cinema” to one or more features that for them are not negotiable, as it were: one may speak of cinema when, and only when, conditions A, B, or C are fulfilled. There is also a more pragmatic, maybe even relativistic view that argues that ever since the 1890s there has never been a unified phenomenon called “cinema” and that both synchronically and diachronically there has always been a diversity of *dispositifs* through which moving pictures could be experienced. Obviously, one can always find a conception of “what is cinema” that can be considered dominant, but this still will necessarily be one that is historically and culturally specific.

THE CINEMATIC *DISPOSITIF*: TRANSFORMATIONS AND CONTINUITIES

Traditional film history has tried to distinguish cinematography from all other moving image devices that preceded it, defining them as “pre-cinema.” According to this perspective, there are seven aspects that have to be taken into account in the definition of cinema: we talk of “cinema” when we have a moving image that is taken by a camera (1) on a photographic carrier, which generally has the form of a ribbon (2) that constitutes a series of still images

(3) representing a movement (4) that is projected by means of a light beam onto a screen (5) for an audience (6) that has paid to see it (7). On the face of it, one might conclude that for those subscribing to this concept, probably too many parameters of the *dispositif* have changed because of digitization. From their point of view, “cinema is dead,” a new era has started, and the “digital revolution” has brought new standards, which constitute a rupture with the past. Facing this inevitable fact, there are some authors who try to hold on to at least some characteristics to explain why there still is a certain type of experience one can refer to as “cinema.” For Raymond Bellour, “the lived, more or less collective experience of a film projected in a cinema, in the dark, according to an unalterably precise screening procedure remains the condition for a special memory experience, one from which every other viewing situation more or less departs.”¹⁹ For Jacques Aumont, it is the criterion *ex negativo* of a presentation allowing the spectator “to freely interrupt or modulate this experience,” which cannot count as “cinema.”²⁰

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For both authors, however, the changes that occurred at the level of the screening technology have by no means led to a digital revolution that has completely reversed the situation. A *revolution* is commonly defined as “a far-reaching and drastic change, esp. in ideas, methods, etc.”²¹ Therefore, the shift from analog to digital in terms of projection hardly justifies the word. A look at certain aspects of *dispositif* and some practical constraints helps to clarify what has changed for screenings in movie theaters and multiplexes.²²

Consequently, for the cinema audience, the impact of digitization is hardly noticeable, whereas the changes on the economic level are indeed dramatic. This concerns not only the financial parameters (costs for staff, transportation, and distribution of the carrier) but more importantly also the control of access to what now has become “content,” which has changed the balance of power between producers, distributors, and exhibitors, giving a pivotal role to the firms providing the Key Delivery Message. It is in this respect that the term “revolution” is indeed justified.

So is there a way to theoretically frame this process of digitization and to come to grips with the multiplication of viewing situations that it has made possible? We believe Roger Odin’s concept of “communication space” can help provide an answer: “A communication space is a space within which a bundle of constraints pushes the actants (S) [Sender] and (R) [Receiver] to produce meaning along the *same axis of pertinence*.”²³ For the screening of a fiction film in a movie theater, for instance, this would mean that within the communication space that is constructed there, both (S) and (R) produce meaning along the axis of what Odin calls a “fictionalising reading,” that is, a reception mode resulting in the spectator being immersed in the fictional events presented on the screen.²⁴ In this respect, in other words, the

Aspect	Analog	Digital
carrier of image / sound	Print	hard disk
screening apparatus	projector with light beam on a white screen	digital projector with light beam on a white screen
image / sound experience during screening	wide range, from pristine to defects such as dots, scratches, etc., degrading progressively	pristine image and sound
image / sound format variety	8mm to 70mm, 1.33:1 to 2.55:1, magnetic, optical and digital sound, 2D and 3D	1.85:1 (flat), 2.35:1 (scope), 2K or 4K, digital sound, 2D (digressive) and 3D (progressive – for the moment)
position of apparatus	projection booth	projection booth
organization of screenings	one projectionist starting one flatbed projector per booth per show	one technician programming all projectors once a week and starting the projector once a day
flexibility in screening	total flexibility in theory (only restricted by constraints imposed by the distributor)	no flexibility (pre-determined number of screenings at a given location)
distribution of new films	depending on availability of prints	depending on availability of “slots”

Table 2: Analog vs. Digital Projection in Cinemas.

shift from analog to digital projection does not affect the functioning of a film theater as a communication space—or, one could add, as the experiential space that this reading mode implies. When trying to define “cinema,” authors such as Bellour and Aumont attempt to outline criteria that allow them to define such a specific communicational and experiential space—criteria, in other words, that do not apply to other viewing practices. In this context they discuss viewing modes, such as film viewing in a “home cinema” environment or on a mobile device, which sometimes differ only gradually but in other cases quite radically from the ones Bellour or Aumont refer to as “cinema.”²⁵

The *dispositif* of the film theater showing fiction films thus is hardly affected by digitization when considered in terms of a communicational and experiential space. The DCP replacing a print does not cause a fundamental shift. What is happening, though, is the emergence of a whole range of mobile devices that, among other things, make it possible to view moving pictures in

a variety of contexts and situations, which does have an impact on the kinds of experience that one can have when watching a movie. But for these new *dispositifs*, it is not really digitization as such that constitutes the most relevant technological change but rather the advances made in the area of energy sources, and in particular the batteries that allow laptops, tablets, or smartphones to have enough autonomy to allow users to view huge moving image files wherever they are. This, however, is a different story.



Fig. 43: 3D Glasses. Photo by Miklós Kiss.

3D Imaging Technology's Narrative Appropriation in Cinema

Miklós Kiss

3D IMAGING TECHNOLOGY

The origin of the cinematic use of 3D imaging technology lies in the optical and neural disposition of human stereoscopic vision. Stereoscopic vision, or stereopsis, is possible due to the horizontal spatial separation of the human eyes. When seeing a solid object, this binocular vision causes a difference called binocular disparity, which is converted into depth perception in the brain. Uniting the images of two horizontally separated camera lenses, 3D imaging technologies mimic human stereopsis and “trick” the brain to perceive three-dimensional depth on a two-dimensional screening surface. The stereoscopic image needs to be decoded by special eyewear (anaglyph or polarized glasses), or projected onto a specially constructed screen (autostereoscopy). The first stereoscopic viewing device, Charles Wheatcroft's “stereoscope,” dates back to 1838, and the first stereoscopic film screenings were already held at the end of the 19th century.

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THEORETICAL FRAMING

This chapter traces the cinematic history of stereoscopy by focusing on the contemporary dispute about the values of 3D technology, which are seen as either mere visual attraction or as a technique that perfects the cinematic illusion through increasing perceptual immersion. By taking a neutral stance, the author proposes a shift in how we approach 3D. He argues that we should amend the general concern from “Will the 3D revolution happen?” to “Will the 3D revolution happen if 3D remains a visual-aesthetic attraction?” In this regard, the issue of the technology's narratively motivated utilization, through which 3D could stabilize its position in the film business, is considered.

3D IMAGING TECHNOLOGY'S NARRATIVE APPROPRIATION IN CINEMA

In any consideration of new dimensions for motion pictures, the fact still remains that the most important dimension is that of the story.

—Samuel Goldwyn, 1953.¹

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3D imaging technology, from early stereoscopic cards to the latest generations of digital 3D exhibition, is commonly used for enhancing immersion, refining the illusion of reality, or improving representational fidelity. In its relation to cinema, it is praised as well as despised to similar extents, but it is consistently judged as having the sole function of a mere—visual—attraction.² Departing from the teachings of film history, my paper contemplates a possible necessary transition from 3D's visual celebration to its narrative appropriation, where 3D's visual potential may be carried over into the domain of dramaturgy. This transformation seems to be “necessary,” as narrative motivation is one of the strongest guarantees in accordance with film history for the survival of cinematic technique.

3D'S RECURRING REVOLUTION

In the title of his paper, film historian Ian Christie raises the ultimate question: “Will the 3D revolution happen?”³ The text provides an overview of the history of stereoscopy, which dates back as early as 1838 (including technical, medical, entertainment, and leisure inventions and their philosophical, narrative, and perceptual-cognitive arguments over the decades), and gives insight into the technology's pivotal moments in film history (influencing film format changes and exhibition methods). But Christie's main contribu-

tion manifests itself in the enlightening exposure of the historical recurrence of arguments and debates surrounding 3D's revolutionary role. For him, "3D is perhaps best understood as something like a comet, returning at periodic intervals."⁴ Today, the clamor of film scholars and filmmakers' vehement disputes over 3D's value in the cinematic experience basically eclipses the fact that "[m]any of the complaints against 3D that have surfaced since 2010 were first heard between 1946 and 1954."⁵ This recurring debate raises a haunting question: Does 3D add anything to the experience? Although one's answer could be laconically concise ("visually it certainly does"), the nature and quality of the addition, around which the debate is revolving, invokes further questions such as "What does 3D add to the experience?" or, from a more practical point of view, "Do we want or need 3D display at all?" and ultimately back to Christie's fundamental question: "Will the 3D revolution happen?" As early as 1956, André Bazin responded to this question with his article "The 3D Revolution Did Not Take Place."⁶ Much as he shared enthusiasm some years earlier,⁷ in 1956 Bazin admitted that stereoscopy gave way to another, much cheaper hype, Cinemascope's widescreen, which sparked a "revolution" that was set against the mounting pressure of television's "home theaters." But what about 3D technology's recent revival? Will the 3D revolution happen this time?

In order to answer such a question, we must look to the technology's previous miscarriages to draw lessons. One could, for example, examine the cinematic dispositif of the period between 1952 and 1954, and see what circumstances and conditions of those years could reveal about the present perspectives of 3D. The format's uncertain economic profitability and the era's relatively slow technological innovability led to 3D's inglorious fate. As Christie observed, 3D lost the battle of formats when it could not compete against the "cheap and dirty" compromise of exhibitors, who put their faith (and money) into extending the size, instead of the depth, of their screens.⁸ Early 1950s 3D cinema—experimenting with modestly budgeted B-genre flicks like *BWANA DEVIL* (1952), *HOUSE OF WAX* (1953), *IT CAME FROM OUTER SPACE* (1953), *THE MAZE* (1953), or *ROBOT MONSTER* (1953)—failed to deliver a box-office success that could have changed the game. The so-called golden age of stereoscopy was suddenly over; 3D's comet faded away to return decades later in 2009. Learning the historical lesson, the 3D lobby scheduled the format's revival at a precise moment: piggybacking on another revolution—the digital revolution—3D tackled the technological bottleneck by allowing cheaper theater conversion to stereoscopic exhibition. The tremendous success of James Cameron's 2009 film *AVATAR*, at least in financial terms, rehabilitated the format, convincing exhibitors to upgrade their projection rooms and eventually rekindling the 3D debate in one blow. Although it seemed that the perfect constellation of technological improvement, financial affordability, heavy

marketing, and early commercial success would finally lead to that wished-for revolution, some industrial experts envision another decline, pointing to the downturn in box-office numbers.⁹

Beyond the economic, technical, cognitive, and even ideological motivations that provide us with pros and cons reasoning for or against cinematic stereoscopy, there is a simple psychological aspect that generally receives less attention.¹⁰ One could argue that the simplest and also biggest threat for cinematic 3D is that, with time, its (visual) *novelty* wears off. This idea, according to which the initial attraction of 3D imagery will inevitably fade away, implicitly suggests a very important point: if the stereoscopic look is considered as visual *attraction* instead of having the ecological potential of bringing cinematic perception closer to natural vision, then its technique remains one which *adds to* that attraction rather than one that *inherently perfects* the cinematic illusion. AVATAR could get away with the novelty of its use of 3D, which compensated for the lack of another depth, that of its story, but—in my view—its planned sequel will not be able to repeat the success without further perfecting or motivating the stereoscopic illusion. It seems that there are two possibilities for 3D's consolidation, if not its survival. Without seeming to be speculative, one could argue whether (1) technical perfection or (2) the technology's narratively motivated utilization represents those prospects, through which 3D could stabilize its position in the film business. After briefly addressing the former, I will elaborate in more detail on the latter of these possibilities.

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(1) 3D'S TECHNOLOGICAL IMPROVEMENT FOR INCREASED IMMERSION

I discuss 3D's technological context only briefly here for the following three reasons. First, I would like to avoid being speculative about the future prospects of technological innovation. Second, 3D's technological developments, as the situation looks today, seem to be leading the experience away from the traditional definition we share of cinematic representation. My third reason is the simplest. Although I restrain myself from speculating over technology, I am disposed to indulge in another hypothesis on the possibility of 3D's narrative appropriation, which is the primary focus of this paper.

Today, the theoretical discourse as well as the practical innovation of the 3D experience revolves exclusively around questions concerning the technology's visual perfection. Enhancing visual attractivity through technical upgrading may lead to an improvement in the perceptual experience, but chasing the ideal of a "true" 3D visual immersion may steer film away from its essential meaning. As David Rodowick concludes, new technological devices are

“decentering [...] the theatrical film experience” through their “displacement of [the] ‘medium.’”¹¹ State-of-the-art devices, like the Oculus Rift and other virtual reality glasses, could connect video game players through offering shared diegetic playgrounds but could at the same time isolate the film viewer, revoking the social aspect from the cinematic experience.¹² The Oculus Rift, in its film player mode, picks and exaggerates some of the qualities of the cinematic experience, such as *immersion* or *stereoscopic illusion* and perhaps *apparent realism*, while it suppresses others, including *social inclusion* and *emotional contagion*.¹³ By virtue of their future potential, virtual reality glasses may turn into the ultimate home cinema devices and the nightmare of every film exhibitor.¹⁴

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Considering immersion and stereoscopic illusion, Christie points out that 3D “reasserts the bodily kinesthetic dimension of the cinematic illusion.”¹⁵ Furthermore, he quotes Thomas Elsaesser, who, in his tellingly titled book *The “Return” of 3-D*, appreciates 3D imagery as something that “is changing our sense of temporal and spatial orientation and our embodied relation to data-rich simulated environments.”¹⁶ While Jesko Jockenhövel claims that in 3D film the “tactile and kinetic sensation” is not just for intensifying the spectacle but also for supporting the viewer’s level of immersion,¹⁷ Ryan Pierson, talking about a “widespread assumption that the stereoscopic image demands a more embodied response by the spectator,” announces a *new haptic cinema*.¹⁸ Even if it is absolutely true that an improved 3D technology will upgrade embodied immersion from a theoretical-metaphorical meaning to a very visceral bodily absorption, it is still doubtful whether this evolution will happen in the cinema or, in comparison with its inevitable potential for the gaming industry, whether it will serve the film business at all. As for the question of perceptual realism within the context of the traditional cinematic experience, 3D is not as attractive as film exhibitors (are tempted to) imagine. This is supported in comparative empirical studies (e.g., Brendan Rooney, Ciarán Benson, and Eilis Hennessy).¹⁹ Furthermore, Rooney and Hennessy have found no significant difference between 2D and 3D viewers’ overall satisfaction, and concluded that this finding “might challenge the value of increased ticket prices for 3D film.”²⁰ However, even though “3D film was reported to be more perceptually realistic than the 2D film, [...] [further] results suggest that the role of emotional arousal is more important in satisfaction than apparent realism.”²¹

(2) 3D'S NARRATIVE APPROPRIATION

We're never going to be totally immersive as long as we're looking at a square, whether it's a movie screen or whether it's a computer screen. We've got to get rid of that and put the player inside the experience, where no matter where you look you're surrounded by a three-dimensional experience. That's the future.²²

Quoted from a 2013 *New York Times* article, Steven Spielberg's words here are quite remarkable in that Spielberg interchangeably uses the words "viewer" and "player" and because he opposes film's traditional window metaphor in favor of some immersive 3D surround experience. By extracting the largest disappointment of the traditional 3D experience—that of the frame of reality around the screen and the frame of 3D glasses at the margin of one's field of vision—virtual reality glasses like Oculus Rift may represent a step in the direction of Spielberg's immersive future. As for traditional film screening, even though an IMAX screen size can compensate for the frame-disturbance, or an improved version of autostereoscopic screening could make us forget those awkward 3D glasses, there are other means of reaching an enhanced level of immersion beyond perfecting the experience's visual value. But again, looking at Rooney and Hennessy's empirical findings, the question remains: what if stereoscopy is not exclusively about visual immersion? Eventually, at least with respect to narrative cinema, visual quality is only a vehicle to enhance one's story-related immersion. To address this concern, in the following paragraphs I would like to contemplate the idea of 3D's narrative appropriation and its direction, which ultimately may lead us to a revolution, or at least to some kind of solidification of the technique.

All things considered, it seems that the film studios' determination in perfecting visual attraction does not paint an optimistic future for stereoscopy, at least not for traditional cinematic exhibition. In order to imagine an alternative prospect, in this last section of my chapter I propose a radical shift in how to approach 3D, according to which our initial concern—Will the 3D revolution happen?—should be amended to: Will the 3D revolution happen if 3D remains a visual-aesthetic attraction?

As we have seen happen earlier in film history, following the period of the "cinema of attraction,"²³ narrative justification solidified the position of novel techniques such as sound and color. Evidently, with the advent of early cinema's narrative experimentation (during the period between 1903 and 1906), the cinema of attraction did not cease to exist; Tom Gunning talks about a "synthesis of attractions and narrative."²⁴ Why has such narrative appropriation, let alone synthesis, not happened with 3D? As 3D is fundamentally a

visual gimmick, perhaps its aesthetic-visual elaboration is too self-evident and tempting to further experiment with. At least the above arguments underline this. On the one hand, the research and marketing hype around 3D concentrate almost exclusively on enhanced visual-aesthetic domains such as realism, fidelity, and visually enhanced immersion. On the other hand, as Wendy Mitchell sums up in her report about the second 3D Storytelling Conference at London's Ravensbourne College: "3D's days as a novelty are up. [...] [T]he story must be paramount and 3D must further the story, not distract from it."²⁵

Nonetheless, the idea did not gain significant terrain, although there are some cinematic examples of 3D's narrative utilization. Up to now, Martin Scorsese's 2011 *HUGO* or Alfonso Cuarón's 2013 *GRAVITY* represent those few cases where 3D imagery plays an extended, story-related role beyond being a mere visual spectacle. While in *HUGO* the layer-like visual experience of 3D corresponds to the film's story—that is, to Méliès' layered cardboard cutout fantastic settings—in *GRAVITY*, the "uncanny valley"²⁶ effect of digital stereoscopy is associated with the slightly weird experience of the anti-gravity environment. In the case of Cuarón's film, one can argue that Sandra Bullock's hovering teardrop is just another example of showing off the technique, but it is also true that the floating sensation that the stereoscopic image creates is reminiscent of the "memories" that viewers have from their previous mediated encounters with outer space anti-gravity. As Chris Parks, *GRAVITY*'s stereo supervisor, puts it: "[w]e were able to make narrative use of 3D because Alfonso [Cuarón] had integrated 3D with cinematography, visual effects and every other craft department from the outset."²⁷

Historically, there may also be examples that have attempted to convey 3D's visual possibilities to the service of an actual narrative. I am specifically thinking about Hitchcock's 1954 *DIAL M FOR MURDER*. Although most of the film actuates stereoscopy as decorative framing (most of the time, 3D is motivated only aesthetically), in some of the movie's central scenes the technique receives narrative value. Realizing 3D's superior capacity in distinguishing between different fields of depth and achieving extra stress on certain sections of the screen, Hitchcock highlights an important prop, and with that presents and accentuates a narrative clue with the help of his stereoscopic image. In this particularly vital scene, he brings a latchkey, crucial to the story, to the viewer's attention by complementing 2D cinema's traditional practices (close-ups, zoom ins, and other framing techniques) with 3D's eye-catching potential. Next to its narrative function, Hitchcock's 3D *mise-en-scène* also opts for emotional efficacy. His *DIAL M FOR MURDER* is a prime example of a meticulously orchestrated interplay between its characters' acting style, the film's chosen compositions, and the point of view of the stereoscopic camera. During the film's famous murder scene, Grace Kelly, positioned perpendicu-

lar to the viewer, theatrically reaches out to the camera, and by extension to the audience (especially in 3D) for help. Thanks to Hitchcock's creative understanding of 3D's dramaturgical and emotional potential, the difference in viewers' narrative and emotional affection between the 2D and 3D versions of the same film becomes immense.

Even though Hitchcock was able to provide a truly cinematic argument for 3D's furtherance, by 1954 the hype was already over. As David Bordwell noted, "[i]n April, a month before *Dial M* opened, *Variety* ran a story headlined '3-D Looks Dead In United States.'"²⁸ By then, no 3D system had been standardized, and studios had opted for the cheaper visual gimmick of Cinemascope, which—back to Bazin's metaphor—does not provide "a genuine artistic revolution."²⁹

NARRATIVE APPROPRIATION AS 3D'S CINEMATIC SOLIDIFICATION?

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Hitchcock's film, by exposing the technology's hidden potential, could be considered a precursor for 3D's recent revolution. As the above examples showed, his brilliance, through which he revealed the technique's narrative and emotional possibilities, seems to glimmer anew in the work of some of the geniuses of contemporary cinema. Remarkably, the most appreciated and discussed 3D films are not the ones that go for pure photographic attraction. Scorsese, Cuarón, and for that matter also Werner Herzog, Wim Wenders, or Michel Gondry³⁰ are not content with the technology's mere visual exploitation. In Adam May's words (head of production at Vision 3 where the stereo effects of *GRAVITY* were made), they are "hoping that seeing what is possible with 3D—in terms of driving story—will start to resonate with audiences and the perception will shift from 3D just being utilised for tentpole blockbusters."³¹ May's wish meshes with this chapter's consideration of the prospect of 3D's utilization and with my estimations of stereoscopic cinema's solidification through its narrative appropriation. 3D, it seems, possesses yet untapped possibilities in terms of "driving story."

Revolutions are like breaking news. They are bombastic but superficial, leaving much to speculation about their lasting effect on the current state of affairs. By the time of the recent advent of new 3D technologies, the revolution may have already happened in the film business; however, its effect on the future of cinema is still disputed. The present chapter is a modest plea for reconsidering the view of 3D's technical innovation and academic discussion. What the format requires is not another revolution but a creative and original exploitation of stereoscopy's inherent potentials.



Fig. 44: EYE Panorama. Photo by Hans Boddeke.

Extending the Archival Life of Film: Presenting Film History with EYE Filmmuseum's Panorama

Caylin Smith

THE EYE PANORAMA

Located in the basement exhibition area at EYE Filmmuseum in Amsterdam, the Panorama is a 360-degree installation that delivers clips of digitized archival films from EYE's collection directly to visitors. The clips are displayed on one of seven thematic touchscreen monitors, acting as a portal to themes drawn from EYE's collection. The seven themes include: Color, Conflict, Exploration, Film Stars, the Netherlands, Slapstick, and Magic. The short film clips were digitized from EYE's collection through the Images for the Future project, and are played back through an onsite server via Mac mini computers installed in the ceiling.

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THEORETICAL FRAMING

Based on my first-hand experience working directly with the EYE Panorama, I will analyze how this setting exemplifies how EYE is exploring new ways of exhibiting its collection while conceptualizing the evolving representations of the historical institution of cinema. The multi-channel digital video installation that was part of Gustav Deutsch's FILM IST. project serves as a point of comparison for how digitized archival film footage is being exhibited in novel ways. This analysis also draws upon Jean-Louis Baudry's apparatus theory and particularly the term *dispositif*, as well as the work of scholars who have re-conceptualized this term to analyze new methods of exhibiting analog and digital films.

EXTENDING THE ARCHIVAL LIFE OF FILM: PRESENTING FILM HISTORY WITH EYE FILMMUSEUM'S PANORAMA

Film now pursues us outside of the concrete housing of the cinema, offering us a new sense of walls that open up and doors that will not close.

—Janet Harbord.¹

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Advancements in digital technology have undeniably affected not only how films are produced but also how they are preserved and exhibited. It is these two latter pursuits that are especially pertinent to EYE Filmmuseum—the country's official film museum and archive—as the organization continues to expand its role in the preservation and curation of film history. It is also these specific pursuits that inform the present analysis of the Panorama,² a 360-degree, multimedia installation that invites viewers to navigate significant contributions to film history, all pulled from EYE's collection of over seven thousand born-digital and digitized films that span the history of film, from its inception to the present. The rich content of the Panorama is delivered through seven thematically organized touchscreen consoles, each of which contain twelve thirty-second clips and synopses, all waiting to be projected at the touch of a finger. The Wall, a floor-to-ceiling projection of sixteen film strips, encircles the room frame by frame and completes the Panorama's continuous digital canvas.

Even before EYE's new building in Amsterdam North had been completed, the Panorama enthralled visitors. During a trial run of the installation at the new building, some younger participants delighted in walking in front of the projections, inviting the films to be cast upon their bodies. These visitors literally brought the films to life, and even when the projectors were paused, the images would still convey a sense of movement with the assistance of these

living screens. Adult participants enjoyed using interactive touchscreen consoles to select thematic clips. The seven touchscreen consoles provide access to a dozen 30-second clips all representing a discrete theme, including: Color, Conflict, Exploration, Film Stars, the Netherlands, Slapstick, and Magic.³ The clips chosen for each theme span cinematic history, genres, and technologies, and represent various countries. On the Magic console, for example, visitors can view *HARRY POTTER AND THE PHILOSOPHER'S STONE* alongside Segundo de Chomón's *LE VOYAGE SUR JUPITER*, a silent French trick film from 1909.

The Panorama shares similarities with another installation that showcases an assembly of archival film footage, Gustav Deutsch's *FILM IST.* (1995-2009). Between 1995 and 2009, Deutsch, a master of found-footage cinema, thematically compiled filmic material from various film archives in Europe and America.⁴ He conceived of this project during the celebration of the 100th Anniversary of Cinema in 1995 when he noticed many putting forth varying definitions of the genre in newspapers and elsewhere. In his project, Deutsch aimed to refute these definitions and any attempt to strictly define cinema: "There is only one possible thing that you can say, and that is that film exists. Film is. Full Stop."⁵ *FILM IST.* was made and shown on 16mm—and later 35mm—film within museum cinemas and galleries. Sections of this project were also exhibited in these spaces as a multi-channel, 360-degree digital video installation. This latter version is a product of both analog and digital media whose technologies were employed to suit another mode of exhibition. The inspiration and the technology behind the *FILM IST.* project are particularly relevant to the current investigation of the *EYE Panorama*; both projects manifest themselves as installations that use digitized archival film footage to interrogate, revive, and exhibit film history in a manner "that uses the means of the medium to describe what it is about."⁶

According to Deutsch, the first six sections of *FILM IST.* aim to serve as a "tableau on the phenomenology of the medium film [...] dedicated to the scientific laboratory as the first birth place of cinematography."⁷ Deutsch's alignment of his project with a laboratory echoes the title of this anthology, *The Film Archive as a Research Laboratory*, and similarly seeks to investigate film as a medium with which artists, filmmakers, archivists, and other moving image specialists continually experiment, using analog and digital technology, formal and narrative structure, and audiovisual source material. Although Deutsch intended the term laboratory to evoke a scientific lab, the word also conveys a sense of the experimentation and investigation that is crucial to the ongoing work involving analog and digital film that takes place in a variety of settings. Both *FILM IST.* and the *EYE Panorama* required archival professionals' knowledge of film preservation, history, and curation to realize their creation.

Curator Michael Loebenstein has suggested that when archivists engage with artists like Deutsch, they aid in the creation of artworks that enable films from the past to find contemporary spectatorship.⁸ It is in this observation that Loebenstein emphasizes the role that archivists play in not only preserving and providing access to collections but also in assisting artists to realize their creative vision in manners that explore film history through practice. This collaboration is seen with the EYE Panorama and FILM IST., especially the installation, as digitization efforts and digital technologies continue to enable cultural heritage professionals and artists to explore approaches to curating film collections that provoke interest beyond a singular film or group of films chosen for display. These joint projects create opportunities for contemporary audiences to explore how technology influences the ongoing conceptualization of cinema.

One method of exploring how technology continually influences film is to consider analog and digital, as well as their presentation possibilities, as two distinct mediums. In the 1970s, Jean-Louis Baudry applied the terms *appareil de base* and *dispositif* to distinguish between the equipment used to produce and project films and the factors that constitute a viewer's experience of seeing a film, including the film itself, the theater, audience protocol, distribution practices, and advertising methods. Clarifying Baudry, Erika Balsom reiterates that the *dispositif* consisted of a "heterogeneous ensemble of material and discursive practices whose configuration is historically specific."⁹ Scholars have since revised this term, proposing that how a film is projected—from the room size to the sound system to the makeup of the audience—is significant but not sufficient to understanding its *dispositif*. How a projection is experienced and understood by the audience—including outside social influences, cultural meaning, audience reaction, and individual audience members themselves—is also key to what forms this abstract arrangement. As technology evolves, it is natural that the manner in which we consume media evolves as well; the term *dispositif* is continuously in flux, as it has been since its inception and continues to be in the digital age, and no longer applies solely to cinema. Adrian Martin has aptly articulated this transition: "each medium (cinema, novel, theatre, art gallery/museum) has its broad dispositif—arising from a mixture of aesthetic properties and social-historical conditions—and each particular work can create its own rules of the game, its own dispositif."¹⁰

Digitization both preserves films and enables presentation in settings like the Panorama. Of course, even digital preservation copies should not replace films on celluloid, but instead act as an extension of analog technology's contributions to cinema. EYE's Chief Curator Giovanna Fossati echoes this idea by suggesting that the process of film restoration should take into account and emphasize the differing temporal periods and presentation experiences

at play:

[A] film made and projected in another era has not only been presented through a different technological apparatus, but has also been experienced by an audience with a very different relation to the medium. In other words, the whole film *dispositif* changes with time and any (re) presentation of archival films is by necessity a re-interpretation, even in the case of a historical re-enactment.¹¹

This observation is especially crucial for the EYE Panorama, since many of its young viewers may have never seen films from early cinema, either in analog or digital format. If we ignore the suggestion that a viewer's relation to a film, as well as the film itself, evolves over time, we deny the potential for contemporary approaches to presentation to find value in earlier cinematic contributions.

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Analog film and the theater were the dominant methods of capturing and presenting the cinematic world for over one hundred years, and the EYE Panorama exemplifies how we can use digital technology and media to continue learning and teaching about the medium of film and the history of cinema. The EYE Panorama also questions what happens after archival filmic content becomes increasingly accessible and what actions could be taken after digitization occurs. The *dispositif* of the Panorama encourages this approach by situating films within a new presentation setting while still acknowledging that digitization has enabled such screening possibilities: viewing an analog film and viewing the same film digitally can be considered two different visual and sensory experiences. The EYE Panorama serves as a crucial example of the changing iterations of the cinema and the evolution of spectatorship, as film moves away from the movie theater and into new exhibition environments. Among these new settings, the museum has increasingly become a crucial site for display as museums globally become increasingly interested in collecting films and exhibiting the cinematic medium within their galleries.¹²

EYE's decision to display only short clips of longer films within the Panorama further represents a change in *dispositif* in regard to both the setting of the display and the specific content that is curated for viewers. Since these thirty-second clips provide only a short diegetic window into each film, mimicking the familiar cinematic preview, visitors can then decide to extend their experience by viewing a film in one of the Institutes' Pods—a viewing area in the basement where visitors can watch films from EYE's collection in their entirety. Additional opportunities to engage with EYE's collection have taken place online through websites such as Celluloid Remix, which invited visitors to produce their own work from Bits & Pieces material. This collection began in the late 1980s and consists of unidentified fragments that are preserved

for their significant aesthetic, formal, or historical characteristics. The Scene Machine, an installation as well as an online platform, allows visitors to juxtapose clips from EYE's collection through the use of predetermined keywords. These two websites also invite users to share their creations on social media platforms, an option that further generated interest in EYE's entire collection.

An informational brochure for the Panorama suggests ways in which viewers can learn about cinema's history through viewing films while also emphasizing a didactic element of the Panorama. One task it suggests is that the viewer "looks around for examples of a black and white film, a hand-colored film, a film prepared in a color bath, and a real color film [made on color motion picture stock]."¹³ The brochure then provides examples of each type of coloring technique. The Panorama therefore not only showcases films with different narrative structures and content but also calls attention to how the technology available at a particular time contributed to their production.

The Panorama's overall structure and design serve to generate an interest in other production and presentation technologies. An analog equivalent of the Panorama would have been neither cost-effective nor practical, as it would have had to rely on equipment and technical skill that are becoming increasingly difficult to obtain. There is also great monetary expense involved in striking multiple prints for an installation that functions seven days a week during EYE's operating hours. To realize the digital structure of the Panorama, EYE instead worked in conjunction with digital specialists, including Amsterdam-based audiovisual companies BeamSystems and Submarine, as well as Rob Duyser, an independent programmer who designed the Panorama's content management system. NorthernLight, an Amsterdam-based exhibition-design company, constructed the physical casings for each console as well as the Panorama's interior. Whereas EYE's curators, its collection specialists, and the firm Submarine were responsible for creating the design, BeamSystems determined what audiovisual equipment was needed and how it should be installed.

From its first conceptualization, the use of the Panorama's walls as screens was an integral part of the design. LCD screens or manual wall models could not be included for a number of reasons: both types of screens would occupy space that could otherwise be occupied by visitors, and the use of these alternative screen types would also have contributed to the heat that is emitted by the Panorama's other technical devices. The building's temperature has already had to be adjusted to accommodate the rising temperatures caused by this installation.¹⁴ The decision to project directly onto the Panorama's 360-degree surface can also be situated within the ongoing trend of using unconventional or unique surfaces for projections.¹⁵ This practice is demonstrated throughout EYE's building, particularly within the open space Arena, situated near

the café, where the walls and ceiling serve as canvases onto which animated imagery or films are displayed during special events. The outside section of the building that faces the IJ River also serves as a screen for EYE's projected logo at these times.

In order to best exhibit the films within the Panorama, BeamSystems selected eleven short throw/wide angle Projection design F12 projectors that have a low power requirement, allowing for fewer image distortions: seven were allocated to each console, and the remaining four were used to create the Wall.¹⁶ BeamSystems' layering technique, which enables the display of some projections to be privileged over others, allows the content from the seven consoles and the Wall to coexist harmoniously without any noticeable overlapping: when a clip is activated, the Wall runs behind this projection and can be fully seen again once a visitor is no longer using the console. Without this seamless layering option, the Wall's films would have been visible on top of the console's projections. This layering also builds an immersive viewing experience: if a viewer's eyes were to wander away from a film, it would still be focused upon another aspect of the Panorama's overall visual experience. The seven consoles' projections and the Wall create one continuous stream of images as opposed to competing, individual entities.

Sound was another crucial consideration when constructing the Panorama. BeamSystems decided to use Panphonics audio tiles, which are a more sophisticated version of earlier parabolic sound shower speakers. Sound tiles are commonly used within high visitor traffic environments, including airports, museums, and shopping malls. These tiles were crucial to the success of the Panorama, enabling the environment to showcase multiple films, potentially screening simultaneously, while allowing the soundtrack of each film to be broadcast only to the immediate area around its designated console. These devices, while integral here, are not appropriate for a cinema where the diversity of the soundtrack includes a range of volumes and sounds that need to be audible within a larger space.¹⁷ BeamSystems also decided to install a carpeted platform within the Panorama, which helped isolate each film's soundtrack within a particular radius. A similar decision was made for the Pods, which are each outfitted with a thick padding lining the interior to absorb sound waves and therefore lessen the noise pollution within the basement. Without these strategic elements, the overlap of multiple soundtracks within the Panorama would have created a cacophony of noise for the viewer.

All of these technical elements within the Panorama's *dispositif* work together to encourage an active and engaged viewer. The Panorama's digital film clips, moreover, prompt visitors to question what other films may comprise cinematic history. Working with collections on a daily basis, film archivists continuously address this question, whether their work involves ensuring

the films' longevity through conservation efforts and preservation planning, assisting researchers, or collaborating with curators and artists to curate films and encourage access and (re)use. Fossati perhaps best expresses the possibilities that await films and their archives:

[O]nly by letting the films go is there is a chance that (some of) the users will decide to come back for more, maybe even to try out some of the historical dispositifs that only archives can offer. Archives choosing not to necessarily be the chaperone of their collection will still have the responsibility of preserving films and making them available for traditional projections as well as new, not yet imaginable, dispositifs.¹⁸

This idea is continually revisited, as film archivists remain engaged with the preservation and presentation of their collections and provide access to audiences. This is especially true within the context of the museum, which continues to exhibit traditional projections as well as eagerly awaits those “new, not yet imaginable, dispositifs.”

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Cinema's current and ongoing identity can be further extended to include the preservation of analog films, whose physical materiality is affected by use, storage, and environmental conditions over time. Installations like the EYE Panorama demonstrate how preservation and presentation have merged due to the possibilities that digital technology can provide for each of these pursuits: one cannot present if one does not first preserve. At the same time, the undeniably increased use of digital technology within film production, preservation, and presentation has incited some anxiety over the existence and use of its analog counterpart in the digital age. This analysis of the EYE Panorama is therefore not a paean to digital cinema but is rather situated within existing observations of how the development of digital technology has created new possibilities for educating viewers on the history of cinema, from its inception to the present, by providing new opportunities for accessing archival collections. Through our ongoing experimentation with contemporary digital media, we are still able to learn more about the analog technologies that have shaped our visual culture.



Fig. 45: Collection Eye (The EYE database). Photo by Gerdien Smit.

The Database of Technical Devices: Describing, Cataloging, and Using Technical Devices in the Museum's Collections

Rommy Albers and Soeluh van den Berg

COLLECTION EYE

Collection Eye is the name of the collection management software developed in-house by EYE. It is a web-based application, optimized for Mozilla Firefox, which currently can only be consulted on-site at all the different locations of EYE and online via the EYE website. Collection Eye runs on an PostgreSQL database that stores the data, and uses Apache SOLR, a powerful open source search engine. This is a flexible full-text indexing search engine, that searches across all collections (the Google approach). This environment is easy to adjust: you can add index paths, develop queries, and adjust the ranking of search results. The interface is developed with PHP and ExtJS (Javascript). Configuration Tools are developed in McAccess. The metadata model that EYE implemented in Collection Eye is centered around the concept of Filmwork (Filmwerk). All different item types are linked to the concept of Filmwork. Examples of item types are posters, photos, filmcopy information (analog and digital), and film equipment. This is EYE's translation of the Freebase entity-relationship model. The database model in the underlying PostgreSQL is structured around item types (entities) with their fields, item-type views (views configured on the item types), and index configuration (configuration of the search engine).

THE DATABASE OF TECHNICAL DEVICES: DESCRIBING, CATALOGING, AND USING TECHNICAL DEVICES IN THE MUSEUM'S COLLECTIONS

INTRODUCTION

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In the vaults of the EYE archives, numerous technical devices are stored, like the famous Debie Sept camera and the FP5 projector of Philips. Both objects are, like all other devices, described and cataloged in a database. This was initially done for matters of administration and management, but in the last decade—thanks to new digital tools—new possibilities have been made available, such as digital accessibility and presentation of the collection.

TECHNICAL DEVICES IN THE COLLECTION OF EYE

The specific character of the EYE collection of technical devices is its organic growth. Although there have always been preferences in the kinds of devices EYE and the former Filmmuseum have wanted to acquire, primarily it was collected because it was offered to the museum. When a big rehousing of the items was planned in 2004, the museum had yet to determine a clear description of what the collection actually should include.

Nearly a decade earlier, in 1995, only very general assumptions were formulated concerning the collection policies of the Filmmuseum. The collection had to consist of:

1. Unique or very special devices
2. Devices specific to the Dutch situation
3. Devices connected to the core collection of movies

These assumptions were reassessed in 2004 and were considered still relevant for the critical viewing of the existing collection. This initial reconsideration of the goals resulted in roughly two lines of action: 1) removing items from the collection that did not contribute to these general goals or that were in such a bad condition that they would have no function in the future regardless; and 2) reformulating in more detail what kinds of devices were lacking and should, if possible, be acquired. The latter was important when it came to “unique or very special devices” that were for the most part still missing from the Filmmuseum collection. As there was always an interest in the development of optical effects and precursors of cinema, this would involve so-called “pré-cinema” devices as well as equipment that has influenced the production and projection of film. Since 2004, despite a limited budget it was possible to acquire a state-of-the-art Magic Lantern, a Clamshell Mutoscope, two important 35mm cameras, and an early Diorama. There were several more rare or important devices EYE would have liked to add to the collection; however, these were often either too expensive or simply too hard to find.

Devices that meet the second criterion and are specific to the Dutch situation form a very broad variety, because any kind of film equipment used in the Netherlands could fit into this category. Obviously, as the Filmmuseum never intended to house an exhaustive collection, this would involve a sectional approach, as not all developments within a specific brand were to be collected, merely an attractive and representative variety of brands and shapes.

The third criterion pertaining to devices that are connected to the core of the movie collection implies a special interest in the early period of cinema, as EYE is famous for its films from the 1900s and 1910s. Thus apart from the aforementioned “pré-cinema” devices, early cameras and projectors are a main part of the collection.

In the years that followed the rehousing of 2004, the collection was further refined into five categories:

1. Non-cinema devices with an influence on the development of cinema
2. Film recording devices, comprising cameras but also cranes and the like
3. Film projection devices
4. Sound devices with a direct relation to film
5. Film production devices, limited to devices with a more direct relation to film production, such as editing, excluding laboratory equipment

From the early 1990s onward, the Filmmuseum described and cataloged the devices in a Freebase database. This was a stand-alone, separate cataloging tool written in MS-DOS and used solely for administrative purposes.

DESCRIBING A MUSEUM COLLECTION OF TECHNICAL DEVICES

In the late 1990s, EYE decided to develop a new database. EYE opted for a relational database in which the main sub-collections (movies, pictures, and posters) were recorded and a number of actions and processes (e.g., the workflows for archival loan and programming) were supported. In subsequent years, new applications for publicity materials, paper archives, and technical devices were developed. This brought an end to the practice in which the various sub-collections and workflows of the museum were described in separate—Freebase or Dbase—databases.

The main advantage of this relational database over the many separate (or stand-alone) databases is twofold. First, one can now describe all the materials of a movie, person, or corporation within one system and view and study their interdependence. In addition, an edited input ensures high integrity, as vital information is directly linked from redacted tables, authorized thesauri (the tables of authorized values), and fixed-term lists. Overview, coherence, and editorial quality are thus guaranteed.

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The new relational database (formerly DIVA, since mid-2014 converted to a web-based database named Collection Eye, or CE) as described above consists of a number of separate applications in which the various collections are described. Within these applications, the individual objects are accessible. This is achieved partly by descriptions in free text fields and partly by linked information from tables and fixed-term lists. Individuals, corporations, geographic names, genres, and keywords are presented in separate thesauri. These thesauri also function as a link between the separate items: all the materials with corresponding values are connected to each other by the linked information.

For example, the Dutch director Paul Verhoeven can be linked to the films he has directed, the pictures in which he is portrayed, or the archives of producers or items in which his name is mentioned. By opening the entry of Paul Verhoeven in the persons table, we can see at a glance all the materials from the collection that have a relationship with the person Paul Verhoeven. In addition, we can subsequently add information to this entry, such as Verhoeven's birth date and biography.

Initially, the original technical device database was not part of the new database DIVA, but soon the need emerged to develop a special application for devices. This need was strongly felt, especially since the old Freebase database contained insufficient data fields and an outdated record structure which was not reliable enough to be used adequately for an important process of selection: removing the equipment collection. Subsequently, by creating a new device application, the device collection could be connected to other parts of

the collection; it now offered authorized information and the new opportunity to link to the digitized image of the device or to the original manuals for appliances.

For the construction of the new device application, some changes in the data model of Diva were required. In the first version of DIVA, films, film-related sub-collections (such as photos and posters), and the workflows for distribution and programming took a central position. The title table, which contained all individual film titles, acted as the “backbone” of this first version of DIVA. However, for a device application this was problematic. Only very rarely could a device be linked to a specific film. It would have to be a proven fact that this device was used for this or that specific movie. Thus, the collection of technical devices needed to be made accessible by tables describing the appropriate determining characteristics of a device. The first characteristic entry was the brand and the second the type, because usually many different models had been marketed. This type could then be further specified by the type number.

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Because the equipment in the EYE collection is in most cases directly related to film, the (movie) format for which it is produced was an important identifying feature as well. These four types of information (brand, type, model, and format) are therefore the first fields that were included in the database structure. Dating (sometimes only possible in the form of an approach or by mentioning a timespan), serial number, and production country were added to complete the basic information. Today, the values of these fields are still used to individually describe and catalog each object in the collection.

Next, it was important to look at the collection in broader groupings. For that reason, two fixed-term lists were created. The first described the “group” to which the objects belonged. In this subdivision, devices were classified according to function, such as “projection,” “laboratory,” or “montage devices.” This subdivision was created to make it easier to manage and analyze the collection of technical devices. The second fixed-term list described the “category” to which the object belonged, specifying the types of devices: projector, magic lanterns, camera, lenses, tripod, light, and so on. Over time, we have had to expand the list to distinguish the categories that are typical for film such as blimp, densitometer, movie splitter, splicer.

The fact that this is a museum collection database implies that only the devices physically present are described. The various innovations of a type of device can only be followed by means of references to literature. The design of the database, however, also offers a place for other useful information related to the object. This provides more in-depth information about the item as well as essential data for use in exhibitions or otherwise. For example, the measures of an object are displayed for the deposit (passive) situation and for

active use in, for instance, an exhibition. Notes on the completeness and the physical condition of the property provide further knowledge, while possible relationships with other (parts of) objects are also mentioned. Within the database, there is also room for images, which show the device in its entirety: images that show the device in detail or from different angles can be added as well.

DATABASES AS MUSEUM TOOL

From the late 1990s and early 2000s on, digitization processes have been an increasingly important part of the work in archives—both for making collections and sources available and accessible, and for digital restoration and archiving. With regard to accessibility, videos and microfiche/microfilm were replaced by digitized copies of the original sources. Films, photographs, and posters were presented in mpeg and tiff formats (and later offered in higher-quality digital formats), and print sources such as magazines and manuals were offered as digital files. Furthermore, OCR (optical character recognition) scanning increased the searchability of files. The researcher is no longer dependent on a good index but can now freely search the entire set of digital files.

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In recent years, the digital restoration of films from the collection has taken a big leap forward. More films from the archive are now available as a digital file. In addition, more movies are now digitally produced and screened, which offers the archives an increasing amount of born-digital copies. Currently, publicity material is often distributed digitally, and most magazines these days have at least a digital version available on the web. It is just a matter of time until the first private and institutional archives are offered in digital form.

All these digital files are stored in large repositories and can be added/linked to databases and web applications, making them instantly retrievable and usable for viewing and research.

While the collection is largely digitized, the entire infrastructure of the museum is computerized. With the introduction of the relational database, all metadata were described within one system, which also supported the workflows for distribution and programming. And in the ensuing years, this computerization of the archive has even become more advanced. For describing and managing the preservation of films, a new application was developed that was directly linked to the central database so that information could be viewed. The publication of digitally stored information has boomed in recent years. To accommodate this demand, separate fields in the database were added for information on publicity and research. These texts can be combined with edited metadata sets and digital files for display in exhibitions or other presentations—like websites.

EYE uses a data interface (called “service bus”) for publishing on the web and other digital platforms like the Panorama and EYE-pods, the digital exhibition in the basement of the new EYE Filmmuseum.

This whole process of digitization and automatization has led to a structure of network appliances by means of which, for example, a programmer can view digital files of films from the archive, put together a film program, order the prints, describe the instructions for the operator, write promotional texts for the web, and select photos or posters for publicity.

TWO EXAMPLES

We now return to the two examples of devices mentioned in the introduction, the Debie Sept camera and the FP5 projector. Both are described in the database.

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The Debie Sept Camera

The Debie camera is made by *Établissement André Debie*, grouped under the entry *recording* and the type *Sept*. Model number is 7 and serial number is R 05610. The film format is 35mm. The camera is dated 1923 and is in reasonable condition. The description mentions a main defect: the engine is not running probably because the spring is wound too tightly. Three images of the device are added as well as a reference to an Internet source. It is a standard description—exemplary for almost all other entries in the technical device catalog.

In the EYE film collection, there are a number of films in which Dutch cameramen are portrayed behind their cameras, and some have been filmed during the exercise of their craft. For example, BITS & PIECES NO. 364 consists of three short recordings from the period around 1920 with Dutch film pioneer Willy Mullens behind the camera. Two of the three clips show him shooting during an air show and a royal visit. In both cases, he takes the time to look briefly away from his own camera to a camera that is filming him. He looks straight into the lens. The third image shows a frontal view of the camera behind which Mullens is barricaded: here we see him take a moment to greet the viewer. In all three shots, the camera is a Debie, similar to the 1923 Debie Sept camera EYE has in its collection. While the shots of Mullens are all from around 1920, the model in the short films is an earlier type of Debie camera. In this case, the link will be made through the thesaurus. The apparatus (the camera) and the film will have no direct cross-reference but will be coupled by means of a

Fig. 46: Dutch film pioneer Willy Mullens behind his Debrrie camera.



link to the thesaurus term “Debrrie.” It is up to the researcher to compare film and appliance and draw conclusions.

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The Philips FP5 Projector

The collection of EYE also contains the promotional film *HET HART VAN DE CABINE* (THE HEART OF THE CABIN). This film was produced in 1940 by the Dutch production company Multifilm. In twenty minutes, it paints a comprehensive picture of the new Philips Projector FP5. The FP series was developed by Philips in the late 1930s. The Eindhoven multinational has been involved in the development of sound from the late 1920s on but had initially limited its efforts to the Netherlands. They worked with the Hague-based distributor Loet C. Barnstijn on the Loetafoon, a sound system in which the sound is reproduced by a gramophone which is synchronized with the projector. Despite enjoying a brief period of popularity in the Netherlands, this system ultimately had to make way for a type of sound system where the sound was recorded on a separate track on the film roll. In the mid-1930s, Philips changed its strategy and focused its business activities on the international market. Plans were made to develop a new, inexpensive series of sound projectors—the FP series—the first of which were presented in 1937. The first FP5 projectors were manufactured in 1939.

HET HART VAN DE CABINE opens with a guest visiting a cinema cabin. Two FP5 projectors are arranged next to each other. An expert explains to the visitor how the new projector works and mentions the merits of the device. By showing how a film is inserted and projected, all components of the projector are shown and explained. These shots are intercut with shots of the Philips facto-



Fig. 47: The FP5 projector as illustrated in the EYE database.

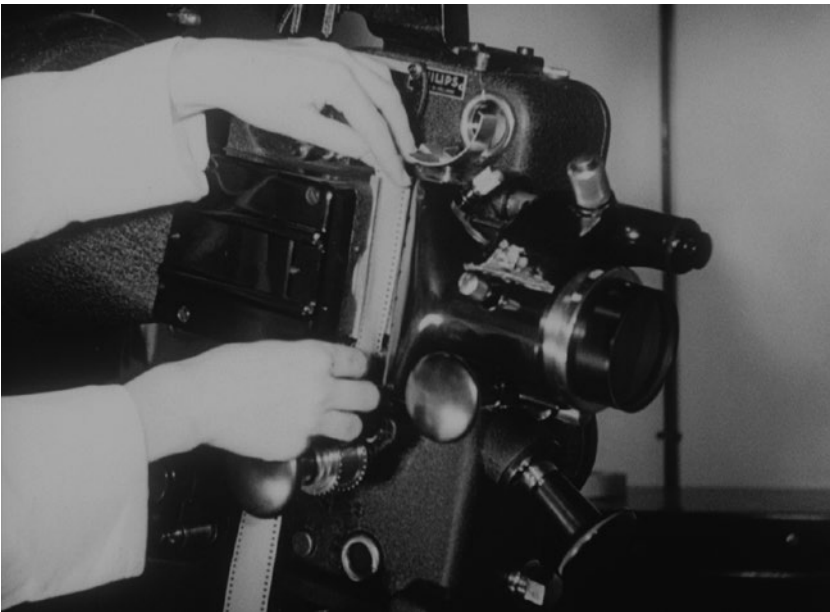


Fig. 48: Close-up of the FP5 projector.

ry floor, where factory workers show how different parts are produced—precision work that once again focuses on the craftsmanship and technological mastery of Philips. The most attention is given to the Maltese cross—known in the movie industry as the most important part of the projector. The operation and manufacture of this component is shown extensively. It is as if we are being led increasingly deeper into the mystery of the film screening: the cabin is the heart of the theater, the projector the heart of the cabin, and the Maltese cross eventually the heart of the projector. The viewer is allowed access to the magic of film production and film projection.

The promotional film ends with a brief overview of the history of Philips—a once-small light-bulb factory that turned into a multinational company with branches all over the world. An experienced researcher or collection specialist will in this case—depending on her/his expertise and insights—make a direct link between the equipment and the film. Subsequently, a database user can directly access the shots of the projector as well as a digitized manual of the projector, if available.

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This example shows that the integral coupling of a device database to an overall collection database has several benefits. Watching the promotional film teaches us more about the device itself—the operation is shown in detail—but it also reveals the value of the projector: the way Philips proudly presents the FP5 as the “heart” of the cabin, the ultimate movie projector of its time. But there is even more. Whereas the device application informs us about the projector and satisfies our demand for knowledge, the film draws us into a world of wonder and amazement. We are seduced by the beauty of the device. We not only see it as an object to gain knowledge about; we are mesmerized by it. The fascination with the object predominates, and the viewer will no longer feel like a researcher but rather an admirer.

The database, which used to be a system for management and administration, has become an ever-expanding amalgam of applications and data. Information can be read; texts and digital films and photographs can be published; and edited datasets can be studied and analyzed. The database has expanded and, combined with other applications and digital systems, has become a device that no longer only describes the collection but also supports the work in the museum as well as research on the collection. It has become an indispensable tool that occupies a central position within the entire digital infrastructure of EYE. But we also look further than the confines of the museum. In the future, the database can even be used as a tool for web publication. Images and technical data can be presented, accompanied with historical and explanatory texts and the digital version of the film the device is coupled to. Thus a wider audience can be reached, an audience for whom technical devices were perhaps always hidden in the cinemas, film laboratories, and, later, in the vaults of the archives.



Fig. 49: Audience at Invisible Cinema.

The Invisible Cinema

Julian Hanich

THE INVISIBLE CINEMA

The Invisible Cinema was an experimental movie theater designed by an experimental filmmaker. Devised by the Austrian avant-gardist Peter Kubelka, it served as the first place of exhibition for the Anthology Film Archives in New York. Apart from the screen (and some exit signs and aisle lights installed for safety reasons), the auditorium was kept completely in black. Its partitioned, high-winged seats had blinders at the sides and a small hood-like top. The rows were arranged stadium-like, and the viewers had to follow a number of strict behavioral rules. This unusual 90-seat auditorium only existed from 1970 to 1974, but its ideas had an afterlife in other venues such as the Austrian Film Museum.

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THEORETICAL FRAMING

Discussing the Invisible Cinema as a specific type of movie theater, this chapter has two goals. First, it describes what the cinema looked like, what the aims of its specific interior design were, and what rules of conduct existed for the audience. Second, it tries to reconstruct in a phenomenological reception study the viewing experience this specific cinema may have enabled for its historical audience. Described by Peter Kubelka as a “viewing machine,” the Invisible Cinema apparently caused sensations of floating, drowsiness, and strong absorption among its viewers, but it also gave an unexpected weight to the collectivity of the audience.

THE INVISIBLE CINEMA

INTRODUCTION

In this chapter I discuss the Invisible Cinema (IC), a specific historical type of cinema which was characterized by an unusual interior design and strict behavioral rules. The Austrian experimental filmmaker Peter Kubelka, known for his groundbreaking structural films *SCHWECHATER* (1958) and *ARNULF RAINER* (1958), devised it in 1970 for the Anthology Film Archives in New York, of which he was one of the co-founders together with Jonas Mekas, P. Adams Sitney, Ken Kelman, and James Broughton.¹ At the Public Theater on 425 Lafayette Street where the Anthology Film Archives was first located, the IC existed for only four years: from 1970 to 1974. When the Anthology Film Archives had to move to its new home in 80 Wooster Street in 1974 for budgetary reasons, the IC was not reconstructed.

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This short lifespan could raise doubts about why one should be interested in this movie theater in the first place, also considering that its 90-seat auditorium was fairly small. However, I contend that the IC can be seen as an exemplary media technology for at least two reasons. First, its designer had envisioned it precisely as such: “a viewing machine.”² Kubelka argued that his movie theater’s “revolutionary and controversial design was based upon the notion that like the other machines that a film depends on—cameras, developers, printers, editing machines, and projectors—the room in which one sees a film should also be a machine designed for film viewing.”³ Second, the IC can be regarded as a model media technology because it had an afterlife in other venues.⁴ At the Austrian Film Museum in Vienna, which Kubelka co-founded in 1964 and where he worked as one of the directors until 2001, he established the Invisible Cinema No. 2 in 1989. And Alexander Horwath, who had become Kubelka’s successor as director of the Austrian Film Museum, initiated a renovation and opened the Invisible Cinema No. 3 in 2003. Another version also existed in the Amerika-Gedenk-Bibliothek in Berlin until January 2014.⁵ Cur-

rently, the Whitney Museum in New York is considering reconstructing the original and is in negotiations with Peter Kubelka and Jonas Mekas.⁶

My chapter has two goals. First, I will describe what the IC looked like and what the aims of its specific interior design were but also its rules of conduct for the audience. Second, and more importantly, I want to explore from a phenomenological perspective the viewing experience it enabled. By interpreting quotes from historical sources as well as reminiscences of some of the protagonists of the Anthology Film Archives, I will attempt to provide—or at least *speculate* about—what one could call a phenomenological reception study. The aim is to lend evidence to our intuition that with different types of “viewing machines,” we make different types of viewing experiences. As we shall see, when viewers recall their IC experience, they describe sensations of floating, drowsiness, and absorption. Moreover, in contrast to other types of cinema—such as the Nickelodeon, the movie palace, the drive-in theater, the megaplex, to name but a few—the IC resulted in a highly concentrated film experience in which the collectivity of the audience played an unexpected role. In this second part I will therefore also put an emphasis on the audience effect, i.e., the effect that the co-presence of other, mostly anonymous viewers has on one’s cinematic experience.⁷

THE INVISIBLE CINEMA CONCEPTION

What is the Invisible Cinema and where does its name come from? Peter Kubelka called his cinema “invisible” because the architecture of the auditorium and its interior design were not supposed to distract. The screen was meant to be the only center of attention: “an ideal cinema should not at all be felt, should not lead its own life, it should practically not be there.”⁸ No curtain existed in front of the screen, the idea being that all associations with stage theater had to be removed. The lack of a curtain also signalled via the brightly illuminated screen even before the start of the film where viewers had to direct their attention. Kubelka wanted to “make the screen [the viewer’s] whole world, by eliminating all aural and visual impressions extraneous to film.”⁹ As Kubelka put it, the cinema’s function was to bring “the filmed message from the author to the beholder with a minimum of loss”; the film should “completely dictate the sensation of space.”¹⁰ As a consequence, the ceiling and the walls were covered with black velvet, as were the 90 cinema seats. Black carpeting covered the floor. And the doors were equally painted black. Apart from exit signs and aisle lights installed for safety reasons, everything was dark. Reflections from the auditorium were thus kept to a minimum.¹¹ As Tom Gunning has pointed out with reference to Siegfried Kracauer’s article on

“The Cult of Distraction,” the IC’s strong focus on the screen stands in stark opposition to the distractive potential of other types of cinema: one need only think of the extravagant interior designs of the movie palaces in the 1920s, which in all likeliness lured the audiences’ attention to the periphery.¹²

The most unusual feature of the IC was the design of the partitioned, high-winged seats with blinders at the sides and a small hood-like top. These seats with their “shell-like structure” were designed to shield the viewer’s upper body and to make it impossible to see one’s neighbors to the sides as well as in the front and in the back. This goal was further supported by the elevated, stadium-like construction of the rows. As Vincent Canby put it in a 1970 review of the cinema: “the rake of the auditorium is so steep that when you sit down, you cannot see the people in front of you.”¹³ But the purpose of these seats was not only to shield the viewers visually, it also served an acoustical function by blocking the sound from sources other than the screen. This implies that the original IC worked only with *monaural* sound: “The Invisible Cinema was meant for the classic one screen, one sound source cinema. By one sound source I mean one source of sound right behind the screen so that the sound comes from the same place as the image,” Kubelka writes.¹⁴ Since the seat partitions would block surround sound coming from speakers at the sides or in the back, the IC in the Austrian Film Museum does not contain partitioned seats.¹⁵

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Last but not least, the cinema implemented explicit and implicit behavioral rules. An *explicit* rule was that no one could enter the auditorium once the film had begun.¹⁶ Again, the goal of this attempt in disciplining the audience was to make another significant part of the cinematic experience—namely the co-viewers—invisible. However, the fact that other viewers were *invisible* did not mean that they were *absent* from one’s experience, a point I will return to. Among the *implicit* guidelines was a strong discouragement of talking and producing noises: silence was the rule. Kubelka preferred “a structure in which one is in a *community that is not disturbing to others*.”¹⁷ But was it indeed quiet during the screening of the film? In an early report, *The New York Times* cited some of the first attendees of the IC, who underlined the cinema’s quiet auditorium: “It’s a great little theater with all that quiet” and “To me the very silence was something like music itself.”¹⁸

THE INVISIBLE CINEMA EXPERIENCE

What possible experiences did the design and behavioral rules of the IC make possible for the viewer? Methodologically, we enter problematic territory here, because it is notoriously difficult to describe specific historical viewing experiences. Film historian Frank Kessler even speaks of “the unattainable

audience.”¹⁹ I will nevertheless try to provide—or at least hypothesize about—what one could call a phenomenological reception study: What specific viewing experience did the IC enable?

Three aspects recur in a number of audience descriptions in the press at the time but also in contemporaneous comments of the Anthology Film Archives’ protagonists. (Somewhat ironically, the very cinema that was supposed to remain “invisible” stimulated more comments and reminiscences than a prototypical cinema. Thus it was more conspicuous than intended by Kubelka.)²⁰ The first one is the “floating sensation”: some viewers remember that viewing films in the IC resulted in a detachment from the concrete space of the cinema and caused a sensation of drifting in darkness. Film critic Vincent Canby, for one, noted that “watching a couple of demonstration movies [...] was rather like floating in a vast, benign space, looking at a rectangular-shaped hallucination of almost drug-induced clarity. It is a trip, one of the best that money can buy [...].”²¹ A similar sensation comes across in Stan Brakhage’s comment: “generally, people really had a sense of drifting in a black space, a black box, and black ahead of you, nothing visible except the screen.”²² This floating sensation may have been amplified by particular films that were shown in the Anthology Film Archives—especially some of the experimental works by Stan Brakhage and Michael Snow or the flicker films by Tony Conrad and Paul Sharits.

But there might also have been a relation to another consequence of the interior design that I would like to call the “drowsing sensation.” P. Adams Sitney describes: “When one sat in the enclosed seats, one generated a great deal of heat. If you stood up the room felt like a refrigerator, but as long as you were sitting in that small box it was very hot. It was an extremely soporific problem, one became very drowsy.”²³ The sensations of floating and drowsiness could have reinforced each other, resulting in the drug-like experience Canby spoke about—especially *vis-à-vis* a hallucinatory flicker film like Paul Sharits’s *N:O:T:H:I:N:G* (1968).

Moreover, it seems a commonplace assumption—and this is the third recurring aspect in audience descriptions—that the primary goal of the IC was to provide an immersive viewing experience. A similar view is shared by several authorities in the field. Kristin Thompson and David Bordwell, for instance, indicate that the IC aimed to “enhance each individual’s absorption in the film experience”; Giuliana Bruno points out that the IC ensured a “total perceptual fusion” with the screen; while David A. Cook claims the IC helped “facilitate the viewer’s total concentration in complete darkness and isolation.”²⁴ Given the cinema’s interior design and rules of conduct as well as Kubelka’s expressed intentions, the conclusion that there was an “experience of absorption” seems fair enough.

However, in a next interpretive step, this absorptive experience supposedly results in the viewer's distance to his or her co-viewers and thus leads to an *individualizing* effect. Consequently, Peter Decherney argues: "[Kubelka] designed his 'machine for viewing' to minimize distractions and thus create the most individualized experience possible within the presence of an audience."²⁵ In her well-known book *Atlas of Emotion*, Giuliana Bruno sheds a rather critical light on this effect. She calls the IC "a modernist sanctuary" that "encapsulated the spectator in his or her view": "Here, one was basically alone in the act of filmic viewing, insulated aurally as well as haptically."²⁶ No less critical, J. Hoberman and Jonathan Rosenbaum describe the presentation of films in the IC as "fetishistic": it had only the "solitary film spectator in mind" and was "ostensibly constructed to screen out most social distractions and minimize communal responses."²⁷ Similarly, Barbara Rose wrote in an early review: "Anthology's purist position [...] presupposes that film is as much an individualistic one-to-one communication from artist to viewer as the high arts of painting and sculpture."²⁸ But are these claims about an individualizing effect truly convincing?

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I believe that we are dealing with a misguided reconstruction of the actual viewing experience here. In contrast, I argue that the IC can be considered the ideal type of the specific *collective* viewing experience that elsewhere I call the "quiet, attentive audience," which enables collective intentions, joint attention, and even joint actions among its members of the audience precisely because it is quiet and attentive.²⁹ In other words, even in the extreme case of quiet attentive absorption we are dealing with a collective experience—albeit a different type of collectivity. This claim may not be easily accepted. Peter Decherney, for one, finds nothing communal about the IC: "The manifesto's justification—that 'the communal spirit is strongest and most effective in the absence of disturbance of one's neighbor'—is unconvincing if not oxymoronic."³⁰ So where, then, do I find evidence for my claim that the IC enabled a type of collectivity?

First, the viewers were not as isolated from each other as many commentators would have it. While visual and aural contact was strongly reduced, viewers were able to touch each other. In an Austrian television report from October 13, 1970, Kubelka emphasized that the seats were constructed with openings at the sides to precisely allow people to feel and touch each other: "The sense of touch maintains community, as in earlier times."³¹ Thus, Giuliana Bruno's claim that viewers were insulated not only visually but also haptically is not correct. Second, as can be seen in figure 49, the viewers were sitting very close to each other in the "compact, comfortable auditorium," as *The New York Times* author Howard Thompson described it.³² Even though the spectators did not see each other, the co-presence could be felt due to physical close-

ness in a comparatively small cinema. Kubelka himself remembered: “You knew that there were many people in the room, *you could feel their presence*, and you also would hear them a little bit, but in a very subdued way, so they would not disturb your contact with the film.”³³ Third, it is quite likely that the viewers not only had a phenomenal sense of co-presence but also carried with them the (possibly tacit) knowledge that they belonged to a specific kind of audience—resulting in a (however vague) in-group feeling of being part of an avant-garde viewership. Thus, precisely because it was such a high-art, purist, modernist sanctuary, its viewers could feel sociologically bound together. This would run counter to a supposed *individualizing* effect.

Last but not least, the “aspect of community” also played an outspoken role in Kubelka’s concept. While the sole focus of attention was supposed to be the screen, Kubelka did not conceive of the viewing situation as a *solitary* confrontation with the film. In fact, he had planned the theater with the *collective* aspect in mind. In 1974, shortly after the IC was closed, he described its collective dimension:

A sympathetic community was created, a community in which people liked each other. In the average cinema where the heads of other people are in the screen, where I hear them crunching their popcorn, where the latecomers force themselves through the rows and where I have to hear their talk, which takes me out of the cinematic reality which I have come to participate in, I start to dislike the others.³⁴

As Kubelka emphasizes, silence does not necessarily imply a negative absence of communication; it can also involve a valuable auditory situation.³⁵ In the IC, this absence of verbal communication and expressive non-verbal comments—but also the lack of motor activity of latecomers and scattered foci of attention—were the prerequisites for the *presence* of silence, stillness, and a shared intentional object. I would argue that the audience’s silence functioned as a precondition for a synchronized collective experience because it allowed for the tacit sense that the others not only *acted* as oneself but also *experienced* similarly.³⁶ This is the case because a *collective* aesthetic experience often relies on silence as an important precondition, since expressive reactions—and verbal comments in particular—often bring experiential *differences* to the fore. Even if in actuality we often do *not* think and feel the same, the viewer tacitly takes it for granted as long as this is not contradicted. Hence in aesthetic contexts we often subconsciously “project” our individual experience onto others and thus make it unintentionally and pre-reflectively a temporary norm: cinematic joint action and experience appear in the likeness of our own experience, as long as no one disproves it by doing and feeling some-

thing else. Put the other way round, in collective aesthetic experiences, individual viewers do *not* presuppose that everyone feels *differently* all the time: the likeness of the experience is tacitly taken as a default. The quiet attentive audience in venues like the IC is particularly helpful for this type of collective experience.³⁷

Of course, the collectivity of the quiet attentive audience has to be distinguished from the collectivity based on expressive responses and audience interaction. This implies that not all films play equally well in the IC. Sing-alongs of, say, *THE SOUND OF MUSIC* (1965) would hardly work due to the separation of the seats. Also, midnight movie screenings of cult films like *THE ROCKY HORROR PICTURE SHOW* (1975) or *EL TOPO* (1970) would be out of place, which explains Hoberman and Rosenbaum's aversion.³⁸ And even though the Essential Cinema canon of the Anthology Film Archives—the repertoire of films to be repeated regularly in the IC—included comedies by Chaplin, Keaton, Laurel and Hardy, and Karl Valentin, one may assume that a collective laughing experience did not come about to the same degree as in other types of cinema.³⁹ This does not imply, however, that the viewers of the Invisible Cinema were engaged in individual actions that ran parallel to each other. Instead, watching the film with others in quiet attention implied a shared activity based on a collective intention in which the viewers jointly attended to the moving images on the screen.

As I have tried to show in this chapter, the IC can serve to flesh out the intuition that different types of “viewing machines” enable different types of viewing experiences. Taking into consideration interior design and behavioral rules as well as relying on documented viewer comments, my brief phenomenological reception study paid special attention to the bodily and social experiences enabled by this highly experimental historical type of cinema.



Fig. 50: Cronovizor. Image courtesy of Colorbitor.

A Tale of Two Times: Augmented Reality as Archival Laboratory

Nanna Verhoeff

AUGMENTED REALITY

Augmented reality (AR) is a digital, visual technology that allows for an enhanced view of the “real” world—captured by camera and presented simultaneously on a (mobile) screen (or wind shield or glasses, etc.)—by layering the camera feed with superimposed, digital information (text, video, or still image). The technology makes use of different affordances of hybrid, mobile devices (i.e., smartphone or tablet), such as camera, (touch)screen, Internet connectivity, and location and orientation sensors. While different applications of augmented reality are being developed for indoor use as well, so-called AR browsers for outdoor navigation (developed since 2009) are central in this chapter. “Browsing” in these cases entails holding up the mobile device and scanning the direct environment with the camera/screen. Making use of GPS technology and the location awareness of the device and connectivity to (online) databases, location-specific information about the direct vicinity is retrieved and displayed on screen. Besides commercial applications by companies and creative uses by artists, some archives and museums make use of this location-based technology to provide access to their (digitized) objects “on location,” for ambulant publics in urban space.

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THEORETICAL FRAMING

In this chapter, interfaces of augmented reality for mobile screens are understood as mobile archival laboratories: temporary project-by-project platforms for experimentation for cultural archives to make their collections accessible on location for mobile, interactive, and physically engaged participants. In a discussion of recent augmented-reality applications developed for moving images, the intersection of cartographic and archeological tropes will be proposed as a perspective on these experimental laboratories. These mobile archival laboratories are characterized by a performative working together of the affordances of GPS technologies for spatiotemporal “emplacement” of the digital archival object, and the design principles for interactive engagement of the participant.

A TALE OF TWO TIMES: AUGMENTED REALITY AS ARCHIVAL LABORATORY

The “device” in this image is both visible and invisible. The effect is striking, yet as an apparatus it is difficult to define in material terms. Strictly speaking, it is an application for augmented reality on tablets or smartphones that allows for the screening of moving images in specific geographical locations. One may wonder whether the device is the moving image on the micro screen, the algorithms behind it, the screen-based interface, or perhaps the whole arrangement or *dispositif* of mobile screen, software application, GPS connectivity, online moving-image database, geographic coordinates, and the ambulant user who operates the screen. Yet, as I will argue here, the name of the application—Cronovizor—invites us to consider it as a machine: an optical device for time travel.

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Archives and museums are experimenting with augmented reality. They use the mobile screens of smartphones and tablets to explore and experiment with the affordances of location-aware technologies. By experimenting with technologies, they aim to develop new and specific ways to present archival material *on site* and *in time*. This intersection of time and space in the use of locative media for archival dissemination is the subject of my inquiry here. These applications are called “projects,” “tours,” or “virtual museums.” As applications for mobile devices, they are designed as technological objects for use, for techno-practices. Their status as interfaces is fundamentally situated in between a variety of qualities. This is their fundamental in-betweenness. Let us consider this in-betweenness of augmented reality interfaces as a way to frame our understanding of the Cronovizor as an archival laboratory.

The conception of interface as between object and use resonates with the concept of boundary objects, as defined by sociologists Susan Leigh Star and James R. Griesemer¹ in a slightly different context, or the object/practice synthesis in Bruno Latour’s notion of “quasi-objects” that are inscribed

with action.² In a somewhat different vein, Alexander Galloway speaks of the “interface effect,” approaching the interface primarily as practice.³ The in-betweenness, I argue, exists between technology and practice. A perception (and promotion) of the interface of application for mobile screens is underscored by naming them as *things*, from temporary objects (“project”) or monumental institutions (“museums”), and exhibition formats (“tours”) to, as we will see, machinic devices (“time machine”). Indeed, they are material—located in things—as well as performative in their activity, which gives them agency. They are historical and hence situated in time, and temporary, fugitive.

Furthermore, they are something between device and application, between laboratory and exhibition. This status makes them archival laboratories *par excellence*: techno-cultural sites of experimentation—laboratories—designed for the re-contextualization of things stored in archives, the archival object. The reader will notice that the terminology here resonates with Bruno Latour’s work, which has greatly influenced our thinking about these matters, in his work from *Laboratory Life* (1979) to *Reassembling the Social* (2005).⁴ Indeed, in the wake of Latour, my perspective on the intricacies of technologies and practices seeks to grasp the inherently cultural dimension of technology.

In this type of cultural laboratory, the analytical and the synthetical collaborate in working with the archival object. I consider this collaboration to be a form of layering. The in-betweenness, I argue here, produces a form of layering that we can consider as essentially creative, dynamic, and mutable. The seemingly contradictory term “archival laboratory”—contradictory because it integrates the old as in archive and the new as in experimentation—is, thus, particularly suitable to characterize these objects-in-use. To call such objects “archival” takes some getting used to, some rethinking of what we consider an archive. Against the idea of an archive as a dusty place of safekeeping only, these experimental objects keep the archive alive.

Let me frame these characteristics. In my 2012 book on the subject of comparable devices, I proposed performative cartography as a way to conceptualize the temporal and interactive aspects of spatial representation on our mobile screens.⁵ I considered the performativity of the navigational practices to be a form of space-making that occurs simultaneously with the instant reading of the space. Here, then, I wish to bring to the fore this navigational space-making and space-reading property of mobile screen practices in relation to the archeological project of excavation and recovering of the past—in other words, with the analysis of a temporal layering of space. This relationship specifically holds for the use of augmented reality applications as archival laboratories. I see the intersection of these two perspectives—the spatial one of cartography and the temporal one of archaeology—as converging in



Fig. 51: *Street Museum NL*. Image courtesy of Oneindig Noord-Holland and Noord-Hollands Archief.

augmented reality as a mobile archival laboratory. Due to the temporary status of these applications-in-use, this is a project-by-project experimentation for cultural archives. The app is a project; a design to make collections into data accessible in urban space, on location, for mobile, interactive, physically and haptically engaged participants.

TWO TAILS

Let us take a closer look at the central example here of such a project, with a name that sounds like a magical technological device, *the Cronovizor* (2013). Comparable to, yet different from, earlier AR applications such as *London Streetmuseum* or the Dutch version *Street Museum NL* that use the still images of archival photographs, this app shows moving images of archival found footage of, mostly, people walking or driving around in Bucharest city. Applications like these seem to be very suitable for this type of, mostly anonymous, fragmented, and silent images of actuality.⁶

The variety and liveliness of the images and the closeness we can feel to the people in them as we see them right in front of us is simply mesmerizing.

Romanian artist collective and media lab Colorbitor developed the Cronovizor as a proof of concept with the help of the Romanian National Archive. Incidentally, “proof of concept” has the same in-betweenness as the kind of objects the collective proposes. For the object is fugitive by definition, a design only, a proposal for something else to come about in the future. It is in a beta version at the moment of this writing.

In their digital portfolio, the collective describes it as follows:

Colorbitor launches the mobile Augmented Reality channel that adds a *layer* of archival footage on the same spots in the city were [sic] they were shot. Visitors in some of the historical Bucharest sites are able to open “time windows” on their internet-connected IOS and Android devices. They will discover real life moments from around 80 years ago integrated *seamlessly* into the camera view looking upon the present locations. We uploaded a *gallery* of short film documents and *embedded* them each in its place—marked on the map and printed on the pavement around town.⁷

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What interests me firstly in this description, indicated by the emphases I added, is the way the producers speak of the Cronovizor as a device. Strictly speaking, it is an application—a “layer,” even—but the somewhat archaic-futuristic sounding name suggests it is a viewing machine for looking into the past, for looking (-vizor) into, or even at, time (crono-). A view master for time travel that allows the user to open up “time windows.” The concept here is itself as relevant as the practicalities of the technology. Moreover, the metaphor of time windows is combined with the notion of the museum “gallery” as well as the tourist trope of visitors who walk around town. When we watch the video demo, these lively but clearly old on-screen images of archival footage inserted in—or stitched onto—the present-day street scenes surrounding the user of the “vizor,” a viewfinder of sorts, indeed suggest a historical co-presence. Elsewhere I have proposed the terms “plotting” and “stitching” for the specific form of in-frame montage that augmented reality makes. The result is the spatial distribution of images stitched as it were onto the real-time environment.⁸

The idea, or ideal, of a device rather than an application suggests that the aim is to develop a machine with which to experiment, as well as a machine for vision. Here this idea(l) is also combined with the metaphor of the museum. For the museum is the place that holds and exhibits the (archival) objects. Yet the choice of the found footage and the use for which the Cronovizor is designed emphatically brings this archival material from the museum out onto the streets. Everyday urban views we know so well so that we do not see them anymore are made visible anew when they are historically layered. On

the one hand, this is simply the result of technological practicalities, since GPS and 3D-tracking make augmented reality most suitable for outdoor (urban) locations. On the other hand, the outdoor locations make astonishingly fascinating spatio-temporal layering possible. When using moving images to work with, the jump between the inserted moving image and its real-time surroundings is highly visible. Here, however, a spatial continuity plays a crucial part. It is that continuity that provides the glue necessary for editing the moving images together. Much like the archival photographs of *Streetmuseums*, then, the Cronovizor plays with spatial continuity and temporal discontinuity. This establishes an integration of the two moments displayed at the same time—one in the app, the other in the reality surrounding the archival image. Yet it also makes a frame-within-a-frame embedded within the image, which thus creates a curious mix of time periods.

An amusing example of such mixing through embedding is the tail of the horse on the bronze monument of Carol I in the middle of Revolution Square (Piața Revoluției), Bucharest, where the archival footage was originally shot and is now re-plotted. In the archival material, the horse is there, which gives an anchor point by which we can match our frame. But curiously, in the

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Fig. 52: A horse with two tails. Image courtesy of Colorbitor.



archival embedded footage the tail hangs down, while in the contemporary embedded footage the tail is raised up. This disjunction gives the seam—for “seamless” it is not—the appearance of motion, animating the immobile monument, and thus creating a jump that resembles a stop motion effect.⁹ This jump of two tails, then, can be seen as a *mise-en-abyme* of both the limits as well as the potential uses of the technology. These are the two sides of *affordance* and *failure* that projects like these experiment with. The two tails become a trigger for reflection on the medium that made seeing them together possible in the first place. In the stagecoach drawn by one or two horses, the viewer’s thoughts go back to the past while wondering about the present.

APPS AND MAPS

362 | This example of augmented reality used for archival time travel demonstrates the merging of archival access, museum exhibition, and the mobile screen as grounds for experimentation. This makes it emphatically a laboratory, not an undisturbed storage space. Its primary material is archival; its visual material is a cross-temporal layering; its status as app-come-device makes it a technological layering. I now suggest that the mobility of the object makes for a disjunction—in-betweenness—between what we usually consider an archive and the interactivity of this device, which entails an extreme fugitivity. This fugitivity is the logical consequence of the use of these device programs. For it is the position of the user, who sees the archival images in relation to her own placement, that determines the content on the screen. This makes the images ephemeral, fugitive, and different each time they are being seen. This mode characteristically belongs to an “on-demand” culture. The participating audience is addressed and given the power; the viewer is the view master. But this mastery is deceptive, since the device is structured by design. This design determines the fugitivity itself as it resides in the viewer’s ongoing mobility.

This fugitivity seems particularly in tension with the idea of an archive that is normally considered a venerable, still, but rather inaccessible place. Moreover, the idea(l) of access and ubiquity, and hence a further-going democratization, is not new; it has, of old, been attached to the very notion of innovation. In the study mentioned above, I have argued extensively that each new development stands in a dialectic relationship with older ones. The resulting paradox is that innovation is fixated on something old. Indeed, the current interest in something as “old” as archives may seem innovative, but is also a return to something which is itself embedded in history. Renegotiating the definition of, and our relationship to, heritage has been part of the project of modernity from the beginning.¹⁰ The archive on location seems to give this



Fig. 53a/b: Manchester Time Machine: map and archive.

a new twist. We can discern a combination here of three cultural occupations or desires: the ubiquity of access, which means that there is data anywhere and all the time and accessible on demand; a cartographic impulse, which fulfills the wish to both be able to be anywhere and to know where one is; and a participatory ideal, which calls for access to agency for all. This is not unique to Cronovizor. I speculate that these three features that fulfill cultural desires are successful in doing what people, at the present time, crave most: having access to the inaccessible—in this case, the past. Experimenting with that possibility shakes the archive awake and makes the individuals using the device a tiny bit omnipotent. The developed apps perhaps work towards a ubiquity of access to heritage—treated as data, in the stream of everyday life.

In this respect, I would like to propose that the emphasis on time difference and disjunction in Cronovizor seems to under-illuminate the cartographic logic that underpins the understanding of space that is so important for my thoughts on navigation. Although that aspect emerges as the user walks around, the emphasis, in effect, is on the mixing of time. The on-location QR codes that the user can encounter in her or his navigation function as temporal portholes where s/he can find the windows to the images of the past. In this respect, a comparable device, the Manchester Time Machine designed by the North West Film Archive integrates cartographic representation in its

interface. Here, the emphasis is on the geographical spread of the layered locations, as the application provides the user with a map to find and access a temporal layer. Thus, this design integrates cartographic logic into the logic of the archive. And when we consider this hybridity, it makes us realize to what extent an archive, just like a museum, is also a space that requires a map to negotiate its niches, corners, corridors, and unseen residual space. The cartographic imagination becomes infused with temporal layering.

Together, then, Cronovizor and the Manchester Time Machine make us aware of the time and the place just around the corner; two inaccessible realities brought into our field of vision. By offering something futuristic and hitherto unheard of, they also alert us to the past, not only of Bucharest and Manchester respectively, but also of the longer history of modernity's visual devices and the desires they were made to fulfill.

364 | The research leading to these results has received funding from the European Research Council under the European Community's Seventh Framework Programme (FP7/2007-2013) / ERC Grant agreement n° 283464.

NOTES

INTRODUCTION

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- 1 Rudolf Arnheim, "The Coming and Going of Images" [Editorial], *Leonardo* 33, no. 3 (2000): 167-168.
- 2 See "Philosophy of Technology," *Stanford Encyclopedia of Philosophy*, last modified June 22, 2009, <http://plato.stanford.edu/entries/technology/>.
- 3 On "cinema" as a young practice and a young institution, see André Gaudreault, "From 'Primitive Cinema' to 'Kine-Attractography,'" in *The Cinema of Attractions Reloaded*, ed. Wanda Strauven (Amsterdam: Amsterdam University Press, 2006), 99.
- 4 For an overview, see Benoît Turquety, "Toward an Archaeology of the Cinema/Technology Relation: From Mechanization to 'Digital Cinema,'" in *Technē/Tech-nology: Researching Cinema and Media Technologies – Their Development, Use, and Impact*, ed. Annie van den Oever (Amsterdam: Amsterdam University Press, 2014), 50-64.
- 5 Erkki Huhtamo, "Towards a History of Peep Practice," in *A Companion to Early Cinema*, eds. André Gaudreault et al. (Chichester: Wiley, 2012), and Erkki Huhtamo and Jussi Parikka, eds. *Media Archaeology: Approaches, Applications, and Implications* (Berkeley, CA: University of California Press, 2011).
- 6 For a quick introduction to Cavell, see the concise overview presented in the conversation online already referred to here: "Conversations with History," Institute of International Studies, UC Berkeley, February 7, 2002, <http://globetrotter.berkeley.edu/people2/Cavell/cavell-cono.html>.
- 7 Jean-Louis Baudry, "Le dispositif: approches métapsychologiques de l'impression de la réalité," *Communications* 23, no 23 (1975): 56-72, http://www.persee.fr/web/revues/home/prescript/article/comm_0588-8018_1975_num_23_1_1348.

- 8 For recent discussions of the apparatus theory and its specific context and impact, see the review by Trond Lundemo of the conference, "The Impact of Technological Innovations on the Historiography and Theory of Cinema," held at La Cinémathèque québécoise, Montreal, November 1-6, 2011: Trond Lundemo, "Lost in Translation? On the Diverging Responses to the Question Concerning Technology," *NECSUS* (2011), <http://www.necsus-ejms.org/the-impact-of-technological-innovations-on-the-historiography-and-theory-of-cinema-la-cinematheque-quebecoise-montreal-1-6-november-2011>. See also the dialogue on Metz between Metz's biographer Martin Lefebvre and Annie van den Oever: "Revisiting Christian Metz's 'Apparatus Theory' – A Dialogue," in *Technē/Technology*, 240-257, and the "triologue" between Laura Mulvey, Anna Backman Rogers, and Annie van den Oever discussing the impact on feminist film studies: "Feminist Film Studies 40 Years After 'Visual Pleasure and Narrative Cinema,' a Triologue," *NECSUS* (June 10, 2015), <http://www.necsus-ejms.org/feminist-film-studies-40-years-after-visual-pleasure-and-narrative-cinema-a-trilogue/>. For an overall discussion of the dispositif, see Frank Kessler, "The Cinema of Attractions as *Dispositif*," in *The Cinema of Attractions Reloaded*, 57-69, available online in OAPEN: www.oapen.org/download?type=document&docid=340138.
- 9 Paul Valéry, "La conquête de l'ubiquité," published for the first time in *De la musique avant toute chose (textes de Paul Valéry, Henri Massis, Camille Bellaigue, etc.)* (Paris: Editions du Tambourinaire, 1928).
- 10 Walter Benjamin, "The Work of Art in the Age of Its Technical Reproducibility: Third Version," in *Selected Writings, Volume 4: 1938-1940*, eds. Howard Eiland and Michael W. Jennings (Cambridge, MA: Harvard University Press, 2003), 251-283.
- 11 Marshall McLuhan, *Understanding Media: The Extensions of Man* (Cambridge, MA: MIT Press, 1994).
- 12 For an introduction to the topic, see Geoffrey Winthrop-Young and Annie van den Oever, "Rethinking the Materiality of Technical Media: Friedrich Kittler, *Enfant Terrible* with a Rejuvenating Effect on Parental Discipline – A Dialogue," in *Technē/Technology*, 219-239.
- 13 Bernard Stiegler's, *Technics and Time 1: The Fault of Epimetheus*, trans. Stephen Barker (Stanford, CA: Stanford University Press, 1994), and *Technics and Time 2: Disorientation*, trans. Stephen Barker (Stanford, CA: Stanford University Press, 2008), and his "An Organology of Dreams," trans. Daniel Ross, *Screening the Past* 36 (2013): paragraph 18.
- 14 Paul Virilio, *War and Cinema: The Logistics of Perception* (London: Verso, 1989).
- 15 See Annie van den Oever, ed., *Technē/Technology: Researching Cinema and Media Technologies – Their Development, Use, and Impact. The Key Debates*, vol. 4 (Amsterdam: Amsterdam University Press, 2014).

- 16 This paper was presented at the conference “Methods, Machines, Dispositives: Perspectives for a New Technological History of the Cinema,” organized by Benoît Turquety and Selim Krichane at the University of Lausanne in November 2012. A reworked and extended version was published as a chapter in *Technē/Technology* in 2014 under the title “Toward an Archaeology of the Cinema/Technology Relation: From Mechanization to ‘Digital Cinema.’” See also: Benoît Turquety, *Inventer le Cinéma. Épistémologie: Problèmes, Machines* (Lausanne: Editions L’Âge d’Homme, 2014).
- 17 Turquety, “Toward an Archaeology of the Cinema,” 50.
- 18 *Ibid.*
- 19 *Ibid.*
- 20 *Ibid.*, 50-51.
- 21 *Ibid.* Cinema is the term used for the institution, including the “apparatus,” whereas film is used mostly in a more restricted way, referring to the technologies used in the cinema as a place and an institution. However, for reasons of variation, sometimes the terms are used simply as synonyms, here as well as in many other studies.
- 22 Turquety, “Toward an Archaeology of the Cinema,” 51.
- 23 See the 2009 Udine conference on this topic organized by Francesco Casetti, Jane Gaines, Valentina Re, and others, and the accompanying book: *Dall’inizio, alla fine. Teorie del cinema in prospettiva / In the Very Beginning, at the Very End. Film Theories in Perspective*, eds. Francesco Casetti, Jane Gaines, Valentina Re (Udine: Forum, 2009).
- 24 For a study on the transition from analog to digital, see also Giovanna Fossati, *From Grain to Pixel: The Archival Life of Film in Transition* (Amsterdam: Amsterdam University Press, 2009).
- 25 See the “death of the cinema” debate as discussed by André Gaudreault, who has long been working on a so-called New Film History. See André Gaudreault, “The Future History of a Vanishing Medium,” in *Technē/Technology*, 261-271. See also Paolo Cherchi Usai, *The Death of Cinema. History, Cultural Memory and the Digital Dark Age* (London: British Film Institute, 2001), and André Gaudreault and Philippe Marion, *The End of Cinema? A Medium in Crisis in the Digital Age*, trans. Timothy Barnard (New York, NY: Columbia University Press, 2015).
- 26 See the discussion of changing archiving policies in relation to the debate on film’s ontology with the shift to digital in Fossati, *From Grain to Pixel*, 16-22.
- 27 For a further reflection on the etymology of the word, see the chapter on Heidegger by Robert Sinnerbrink: “Technē and Poiēsis: On Heidegger and Film Theory,” in *Technē/Technology*, 65-80; see also the Stanford Encyclopedia of Philosophy online: <http://plato.stanford.edu/entries/technology/>; and in particular “Heidegger’s Aesthetics,” *Stanford Encyclopedia of Philosophy*, last modified May 10, 2011, <http://plato.stanford.edu/entries/heidegger-aesthetics>.

- 28 See Leo Marx, "Technology: The Emergence of a Hazardous Concept," *Technology and Culture* 51, no. 3 (July 2010): 562.
- 29 For a full overview, see Turquety, "Toward an Archaeology of the Cinema/Technology Relation, 52-53.
- 30 *Ibid.*
- 31 *Ibid.*
- 32 Rick Altman, "Toward a Theory of the History of Representational Technologies," *Iris* 2, no. 2 (1984): 115. Altman also points out that "technology often automatizes an accepted technique." The reflections on the procedures of use by engineers often invite new technologies.
- 33 Convincing examples from the field of TV are provided by the ADAPT project supervised by John Ellis: http://www.academia.edu/2408345/ADAPT_outline_research_project_on_technology_in_TV. Annie van den Oever, "From Technology to Medium," in *Dall'inizio, alla fine. Teorie del cinema in prospettiva / In the Very Beginning, at the Very End. Film Theories in Perspective*, eds. Francesco Casetti, Jane Gaines, Valentina Re (Udine: Forum, 2009).
- 34 See Altman, "Toward a Theory of the History of Representational Technologies."
- 35 See Annie van den Oever, "Introduction: Researching Cinema and Media Technologies," in *Technē/Technology*, 15-16.
- 36 N.N., "Het succes van de Kinematograaf," *Suriname: koloniaal nieuws- en advertentieblad*, February 25, 1898, <http://kranten.kb.nl/view/article/id/ddd%3A010340255%3Ampg21%3Ap003%3Aa0017>. Here we draw from Van den Oever, "Introduction: Researching Cinema and Media Technologies," 15-16.
- 37 As the journalist broadly refers to an anthology of terms published in the (German) journal *Laterna Magica*, it seems most likely that the list of terms cited is taken from this issue: *Laterna Magica* 21, no. 50 (April 1897): 25. See Van den Oever, *Technē/Technology*, 15-16.
- 38 On the notion of "format," see Jonathan Sterne, *MP3. The Meaning of a Format* (London: Duke University Press, 2012), 7. We agree with Jonathan Sterne that the concept of format is essential in understanding media: "Format denotes a whole range of decisions that affect the look, feel, experience, and workings of a medium. It also names a set of rules according to which a technology can operate" (p. 7). It seems to us that the move from mere technological device to formatted medium is made in often carefully recorded steps and, moreover, that technical amendments to facilitate medium use and discursive framing to direct the user's experience are pivotal steps in developing and supporting new user practices.
- 39 Obviously, unifying the terms in the book is not an option. For a clarification of how we deal with this topic in this book, see the introduction.
- 40 C.W. Ceram, *Archaeology of Cinema*, trans. Richard Winston (London: Thames & Hudson, 1965), 16.
- 41 *Ibid.*, 17.

- 42 Erkki Huhtamo, "From Kaleidoscomaniac to Cybernerd: Notes toward an Archaeology of the Media," *Leonardo* 30, no. 3 (1997): 221-224. Stable URL in Jstor: <http://www.jstor.org/stable/1576453> (January 2015).
- 43 See Huhtamo, "From Kaleidoscomaniac to Cybernerd," and his more recent book, *Media Archaeology Approaches, Applications, and Implications*. For an overview of the field of media archaeology, see Wanda Strauven in this book.
- 44 See Huhtamo's conclusion in "From Kaleidoscomaniac to Cybernerd."
- 45 Arnheim cited on *Leonardo On-Line*, see: "LEONARDO/ISAST CALL FOR PAPERS: Refresh! First International Conference on the Histories of Media Art, Science and Technology," *Leonardo On-Line* (December 1, 2004), accessed in the spring of 2015, http://www.leonardo.info/isast/journal/calls/arhistory_refreshcall2004.html [my italics].
- 46 Famous and often quoted are Maxim Gorky's words on the limitations of the new machine, eagerly and effectively exploited in the early film shows. See Maxim Gorky, "Last Night I Was in the Kingdom of Shadows," in *The Kingdom of Shadows*, eds. Colin Harding and Simon Popple (London: Cygnus Arts, 1996), 5-11.
- 47 These essays were in part published in his now classic, *Film als Kunst* [Film as Art], in 1932: Rudolf Arnheim, *Film as Art* (London: Faber, 1969).
- 48 See the 2001 interview with Arnheim on *Leonardo On-Line*: "My interest in film originated with an interest in the expressive capabilities of the visual. For this, film offered a wealth of new examples. I was occupied with the question of how one could represent the world through a moving image, which is, however, *limited by the screen*. This very limitation allowed me to conclude that film can never be a simple reproduction of reality. On the contrary, filmic images have the ability to shape reality and produce meaning. Film interprets the visible world through authentic phenomena from this world and *thus takes hold of experience*. Film is not a direct representation in contrast to the indirectness of art; rather, it is a form of artistic expression" [my italics].
- 49 Gorky, "Last Night I Was in the Kingdom of Shadows."
- 50 For an analysis of the artistic practices responding to the early film shows, see Yuri Tsivian, *Early Cinema in Russia and Its Cultural Reception*, trans. A. Bodger, ed. R. Taylor (London: Routledge, 1994); see also Annie van den Oever, "Ostranenie, 'The Montage of Attractions' and Early Cinema's 'Properly Irreducible Alien Quality,'" in *Ostrannenie. On "Strangeness" and the Moving Image. The History, Reception, and Relevance of a Concept. The Key Debates*, vol. 1 (Amsterdam: Amsterdam University Press, 2010), 33-58.
- 51 See Tom Gunning, "The Cinema of Attractions. Early Film, Its Spectator and the Avant-Garde," in *Early Cinema. Space, Frame, Narrative*, ed. Thomas Elsaesser (London: British Film Institute, 1990); and his "An Aesthetic of Astonishment: Early Film and the (In)credulous Spectator," in *Viewing Positions. Ways of Seeing Film*, ed. Linda Williams (New Brunswick, NJ: Rutgers University Press, 1994).

- 52 See Van den Oever, "Ostranenie, 'The Montage of Attractions.'"
- 53 See Julia Noordegraaf et al., eds. *Preserving and Exhibiting Media Art: Challenges and Perspectives* (Amsterdam: Amsterdam University Press, 2013).
- 54 Viktor Shklovsky, in "Art as Technique," provided the conceptual tools to describe and analyze the process of appropriation of new techniques in culture, and he brought to light the fact that the genealogies of art and technique are intertwined because they are inherently connected. "The notion of 'technique' creates a conceptual space to analyze the effects of both hardware and software, of technology and (artistic) techniques. This is exactly what makes the term productive and suitable for studies in the field of the arts and media, in which technology profoundly interferes with the creation and development of the arts..." Cited from Van den Oever, *Ostrannenie*, 56.
- 55 "The history of art is, at least in part, a history of the tools and materials with which art is made." See for more information the Daniel Langlois Foundation (Canada) and its online DOCAM research initiative, which explains having been concerned with the relationship between technological invention and artistic creation "from the beginning." See <http://www.docam.ca/en/technological-time-line.html>. Cited from *Ostrannenie*, 215.
- 56 Arnheim, *Leonardo On-Line*, 2000.
- 57 Paul Valéry, "La Conquête de l'ubiquité," in *Aesthetics*, trans. Ralph Manheim (New York, NY: Pantheon Books, Bollingen Series, 1964), 225.
- 58 *Ibid.* Also quoted in Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction" [1936], in *Illuminations*, ed. Hannah Arendt (London: Fontana, 1968), 217. See also, Paul Valéry, PIÈCES SUR L'ART, "La Conquête de l'ubiquité" (inaugural lecture at the *Collège de France* in Paris, France, 1945). For the complete text, see Paul Valéry, "La conquête de l'ubiquité" [1928], in *Oeuvres, Pièces sur l'art*, vol. 2 (Paris: Gallimard, Bibl. de la Pléiade, 1960), 1283-1287, http://classiques.uqac.ca/classiques/Valery_paul/conquete_ubiquite/valery_conquete_ubiquite.pdf. See also Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction" [1936], http://www.udel.edu/History/suisman/611_So5_webpage/benjamin-work-of-art.pdf, or <http://isites.harvard.edu/fs/docs/icb.topic235120.files/BenjaminWorkArt.pdf>. For a recent reflection on Benjamin and Technology, see Dominique Chateau, "The Philosophy of Technology in the Frame of Film Theory: Walter Benjamin's Contribution," in *Technē/Technology*, 29-49.
- 59 Tom Gunning, "Re-Newing Old Technologies: Astonishment, Second Nature, and the Uncanny in Technology from the Previous Turn-of-the-Century," in *Rethinking Media Change: The Aesthetics of Transition*, eds. David Thourburn and Henry Jenkins (Cambridge, MA: MIT Press, 2003), 39-60.
- 60 On the materiality of the medium, see Lisa Gitelman, *Always Already New. Media, History and the Data of Culture* (Cambridge, MA: MIT Press, 2008), discussed by Susan Aasman in this book.

- 61 See online The Film Archive as a Research Lab: <http://filmarchief.ub.rug.nl/root/Nieuws/Nieuwsarchief/Symposium/>.
- 62 See Andreas Fickers and Van den Oever, "Experimental Media Archaeology: A Plea for New Directions," in *Technē/Technology*, 272-278.
- 63 For an elaborate discussion of these objectives and such new practices, see Fossati, *From Grain to Pixel*.
- 64 See Jacques Derrida and Eric Prenowitz, "Archive Fever. Archive Fever: A Freudian Impression," *Diacritics* 25, no. 2 (Summer 1995): 9-63, <http://www.jstor.org/stable/465144>. See also the PDF online: http://newsgrist.typepad.com/files/derrida-archive_fever_a_freudian_impression.pdf.
- 65 William Uricchio, "Archives and Absences," *Film History* 7, no. 3 (Fall 1995): 256-263. In regard to the historical filtration of evidence, Uricchio writes that it is "[...] a process by which the archival selection criteria determined by a period's dominant social formations shape and de-limit our access to the past" (p. 260).
- 66 For an example of selection criteria in a science museum, see the Collecting Strategy Document (2011) of the earlier mentioned Science Museum in London, accessed July 8, 2015, http://www.sciencemuseum.org.uk/about_us/smg/corporate/~media/827CCBE7834744EB84CoFEE3780A7B60.pdf.
- 67 For a historical overview of collection policies and practices, see Sharon Macdonald, "Collecting Practices," in *A Companion to Museum Studies*, ed. Sharon Macdonald (Malden, MA and Oxford: Blackwell Publishing, 2011), 81-97.
- 68 An exception to the rule was certainly Barry Salt's *Film Style and Technology: History and Analysis* (London: Starword, 1983); and, more recently, Leo Enticknap's, 2005 book, with a special concern for film archival matters: *Moving Image Technology: From Zoetroop to Digital* (London: Wallflower, 2005). As a reference book, Ira Koningsberg's *The Complete Film Dictionary* (New York, NY: Penguin, 1997) is also worth mentioning.
- 69 Thomas Elsaesser, "The New Film History," *Sight & Sound* 55, no. 4 (Fall 1986): 246.
- 70 Regarding the effects of the Brighton Conference see, among others, Thomas Elsaesser, *Early Cinema. Space Frame Narrative* (London: British Film Institute, 1990) and his "The New Film History," 246-251; Frank Kessler, "Het geheugen van de cinema," in *Lang leve de film!*, ed. Dick Smits (Nijmegen: Vrienden van het Filmarchief, 1995), 25-30; William Uricchio, "Historicizing Media in Transition," in *Rethinking Media Change: The Aesthetics of Transition*, eds David Thorburn and Henry Jenkins (Cambridge, MA: MIT Press, 2003), 23-38; Charles Musser, "Historiographic Method and the Study of Early Cinema," *Cinema Journal* 1 (2004): 101-107.
- 71 For a recent discussion on the changes in film scholarship after the 1970s, see André Gaudreault, *Film and Attraction: From Kinematography to Cinema*, trans. Timothy Barnard (Urbana, IL: University of Illinois Press, 2011), 207. Orig-

inally published as *Cinéma et attraction: Pour une nouvelle histoire du cinématographe* (Paris: CNRS Editions, 2008); André Gaudreault, "From 'Primitive Cinema' to 'Kine-Attractography,'" in *The Cinema of Attractions Reloaded*, 99. See also Gaudreault's influential, older article, written with Tom Gunning: "Early Cinema as a Challenge to Film History" which is reprinted in the same 2006 book. The book is available online in OAPEN.

- 72 Joshua Yumibe's book review: "Film and Attraction: From Kinematography to Cinema," *Screen* 53, no. 4 (Winter 2012): 480-483.
- 73 There is a growing corpus of literature on film archival practice and theory. See, for instance, Paolo Cherchi Usai, ed., "Film da salvare: guida al restauro e alla conservazione," *Comunicazione di Massa* 3 (1985) and his *Silent Cinema. An Introduction* (London: British Film Institute, 2000); Michele Canosa, ed. "La tradizione del film. Testo, filologia, restauro," *Cinema & Cinema* 63 (1992): 21-47; Penelope Houston. *The Keepers of the Frame. The Film Archives* (London: British Film Institute, 1994); Gianluca Farinelli and Nicola Mazzanti, *Il cinema ritrovato. Teoria e metodologia del restauro cinematografico* (Bologna: Grafis Edizioni, 1994); Ray Edmondson, *A Philosophy of Audiovisual Archiving* (Paris: UNESCO, 1998), <http://unesdoc.unesco.org/images/0011/001131/113127eo.pdf>, and his *Audiovisual Archiving: Philosophy and Principles* (Paris: UNESCO, 2004), <http://unesdoc.unesco.org/images/0013/001364/136477e.pdf>; Paul Read and Mark-Paul Meyer, eds. *Restoration of Motion Picture Film* (Newton, MA: Butterworth-Heinemann, 2000); Karen F. Gracy, *Film Preservation: Competing Definitions of Value, Use, and Practice* (Chicago, IL: The Society of American Archivists, 2007); Fossati, *From Grain to Pixel*, 2009 and 2011; Giulio Bursi and Simone Venturini, eds., *Quel che brucia (non) ritorna – What Burns (Never) Returns: Lost and Found Films* (Udine: Campanotto Editore, 2011); Caroline Frick, *Saving Cinema: The Politics of Preservation* (New York, IL: Oxford University Press, 2011); Barbara Flueckinger, "Material Properties of Historical Film in the Digital Age," *NECSUS. European Journal of Media Studies* (Fall 2012), <http://www.necsus-ejms.org/material-properties-of-historical-film-in-the-digital-age/>; Leo Enticknap, *Film Restoration. The Culture and Science of Audiovisual Heritage* (New York, NY: Palgrave and Macmillian, 2013). The studies listed here focus indeed mainly on films. When these studies refer to film-related collections, it is typically as a source of contextual information for researching and understanding films.
- 74 Elisabeth Edwards and J. Hart, eds., "Introduction: Photographs as Object," in *Photographs, Objects, Histories: On the Materiality of Images* (London: Routledge, 2004), 3.
- 75 William T. Mitchell, *What Do Pictures Want? The Lives and Loves of Images* (Chicago, IL: University of Chicago Press, 2004), 149.
- 76 Erika Balsom, "Original Copies: How Film and Video Became Art Objects," *Cinema Journal* 53, no. 1 (Fall 2013): 109.

- 77 Fossati, *From Grain to Pixel*.
- 78 On Media Archaeology as a practice and/or discipline, see Wanda Strauven's overview, "The Observer's Dilemma: To Touch or Not to Touch," in *Media Archaeology: Approaches, Applications, and Implications*, 148-163, and her "Media Archaeology: Where Film Studies, Media Art and New Media (Can) Meet," in *Preserving and Exhibiting Media Art: Challenges and Perspectives*, eds. Julia Noordergraaf et al. (Amsterdam: Amsterdam University Press, 2013), 59-79.
- 79 See also the media archaeological approach in this book presented by Alexandra Schneider reflecting on the tripod. Founding father Friedrich Kittler's approach to the archaeology of media famously led to media archaeology research, hands-on, at Humboldt University from which it was disseminated to other universities in Germany, Austria, Switzerland, the USA, and the Netherlands. For a discussion of Kittler's impact on the field of film, see also: Winthrop-Young and Van den Oever, "Rethinking the Materiality of Technical Media."
- 80 The Film Archive obtained its collection through a donation of the "Stichting Vrienden van het Filmarchief van Nijmegen" (Foundation for Friends of the film archive at the University of Nijmegen). See <http://filmarchief.ub.rug.nl/root/Het-Filmarchief/>.
- 81 To consult the homepage of The Film Archive Groningen go to: <http://filmarchief.ub.rug.nl/root/HetFilmarchief/>.
- 82 See <http://filmarchief.ub.rug.nl/root/HetFilmarchief/exhibition>.
- 83 Soeluh van den Berg, "Filmgerelateerde Collecties: De nalatenschap van Jean Desmet" (forthcoming) and Jan de Vaal, *Richtlijnen voor de ontwikkeling van het Nederlands Filmmuseum* [Policy Document] (Amsterdam: EYE Archive, 1957).
- 84 See the contribution by Soeluh van den Berg and Rommy Albers in this book and the EYE blog, soon to be part of the EYEFILM.NL portal, <http://filmgerelateerde-collecties.blogspot.nl/p/apparaten.html>.
- 85 See the EYE Collection Policy 2014-2017, <https://www.eyefilm.nl/en/file/22260/download>.
- 86 The new Panorama exhibition has been curated by Ynte Alkema, Marente Bloemheuvel, and Irene Haan and realized by Studio Louter. The Panorama has been made possible thanks to the financial support of the BankGiroLoterij and the Jovaro Foundation. See <https://www.eyefilm.nl/en/visit/plan-your-visit/activities/panorama>.
- 87 See online: <http://filmarchief.ub.rug.nl/root/HetFilmarchief/symposium>.
- 88 See Sean Cubitt, "Anecdotal Evidence," *NECSUS* (Spring 2013), <http://www.necsus-ejms.org/anecdotal-evidence/> [my italics].
- 89 *Ibid.*
- 90 *Ibid.*
- 91 For a discussion of the challenges of *big data* approaches to film archival collections, see the special Issue, "Early Cinema and the Archives" of the journal *The*

Moving Image: Christian Olesen, Eef Masson, Jasmijn van Gorp, Giovanna Fossati and Julia Noordegraaf, "Data-Driven Research for Film History: Exploring the Jean Desmet Collection," *The Moving Image* 16, no. 1 (forthcoming Spring 2016).

CHAPTER 1

- 1 "Objet star de ciné," accessed September 29, 2014, <http://www.slate.fr/dossier/23785/objet-star-de-cin%C3%A9>.
- 2 Emmanuelle André and Dork Zabunyan, *L'attrait du téléphone* (Crisnée: Yellow Now, 2013), 8.
- 3 "Phones in Movies. The Best Site for Spotting Mobile Phones in Movies," powered by Blogger, © 2011-2012, accessed, September 29, 2014, www.phonesinmovie.com.
- 4 Maurizio Ferraris, *T'es où? Ontologie du téléphone mobile* (Paris: Albin Michel, 2006), 83. English edition: *Where Are You? An Ontology of the Cell Phone*, foreword by Umberto Eco, trans. Sarah De Sanctis (New York, NY: Fordham University Press, 2014), accessed August 21, 2014, http://www.mta.t-mobile.mpt.bme.hu/dok/9_Ferraris.pdf (original edition, Milan: Bompiani, 2005).
- 5 On the relationship between computers and cinematographic language, see Lev Manovitch, *Language of New Media* (Cambridge, MA: MIT Press, 2001). All that Manovitch says also applies to the cell phone, although he does not really discuss it, since he was writing before cameras appeared on cell phones.
- 6 Kira Kitsopanidou and Giusy Pisano, "L'émergence du hors-film sur grand écran ou la 'nouvelle' polyvalence des salles de cinéma," in *Les salles de cinéma. Enjeux, défis et perspectives* (Paris: A. Colin, 2013), 147-151.
- 7 Raymond Bellour, *La querelle des dispositifs. Cinéma - installations, expositions* (Paris: POL, 2012), 14.
- 8 Michel Serres, *Petite poucette* (Paris: Le Pommier, 2012).
- 9 The video recorder and remote control opened the way for such possibilities.
- 10 In "With Eyes, With Hands. The Relocation of Cinema into iPhone," Francesco Casetti and Sara Sampietro highlight the haptic engagement involved in watching a film on a cell phone. Published in *Moving Data: The iPhone and the Future of Media*, eds. Pelle Snickars and Patrick Vonderau (New York, NY: Columbia University Press, 2012), 19-32.
- 11 Henry Jenkins, *Fans, Bloggers, and Gamers: Exploring Participatory Culture* (New York, NY: New York University Press, 2006).
- 12 Laurent Jullier and Jean-Marc Leveratto, *Cinéphiles et cinéphilies* (Paris: Armand Colin, 2010), 175.
- 13 Kevin Maney, "Baby's Arrival Inspires Birth of Cellphone Camera – and Societal Evolution," *USA Today*, January 23, 2007, <http://bit.ly/7VMpDk> cited by Laurence Allard, in *Mythologie du portable* (Paris: Le Cavalier Bleu, 2009), 5-6.

- 14 In *Le Vingtième Siècle* (Paris: Georges Decaux, 1882), Albert Robida describes the *téléphonoscope* as a technology that can bring about the “eradication of absence.”
- 15 2005 was the year that Benoît Labourdette launched the Festival du Pocket Films at the Forum des Images (Paris), which gave real impetus to cell phone filmmaking. See Roger Odin, “Una conversazione con Benoît Labourdette,” in *Il cinema nell’epoca del vidofonino, Bianco e Nero*, fascicolo 568 (Rome: Centro Sperimentale di Cinematografia, 2010), 84-89.
- 16 Roger Odin, “Quand le téléphone portable rencontre le cinéma,” in *Téléphone mobile et création* (Paris: A. Colin, 2014), 37-54. For an analysis of production of this type in China, see Paola Voci, *China on Video, Smaller-Screen Realities* (London: Routledge, 2010).
- 17 Crowd Voice, accessed September 29, 2014, <https://crowdvoice.org>.
- 18 Iranian Stories, accessed September 29, 2014, <http://www.iranianstories.org>.
- 19 FRAGMENTS OF A REVOLUTION shows sequences shot by Iranians on their cell phones during the demonstrations of June 2009.
- 20 Several authors have noted that cinema opened the way to a new way of seeing the world. See, for example, Gilles Lipovetski and Jean Serroy, *L’écran global* (Paris: Seuil, 2007) and Jeffrey Geiger and Karin Littau, *Cinematicity in Media History* (Edinburgh: Edinburgh University Press, 2013). However, I am taking this a step further: cinema is now a language of communication in everyday life.
- 21 On the modifications introduced by cell phones in the use of cinematographic language, see Roger Odin, “E giunta l’era del linguaggio cinematografico,” in *Bianco e Nero*, fasc. 568 (Rome: Centro Sperimentale di Cinematografia, 2010), 7-17; and “Spectator, Film and the Mobile Phone,” in *Audiences: Defining and Researching Screen Entertainment Reception*, vol. 3, ed. Ian Christie (Amsterdam: Amsterdam University Press, 2012), 155-169.
- 22 Laurence Allard, “Express Yourself 3.0! Le mobile comme technologie pour soi et quelques autres entre double agir communicationnel et continuum disjonctif soma-technologique,” in *Téléphone mobile et création* (Paris: A. Colin, 2014), 140.
- 23 Gilbert Cohen-Séat, *Essai sur les principes d’une philosophie du cinéma* (Paris: PUF, 1958), 148.
- 24 Ferraris, *T’es où?*, 107.

CHAPTER 2

- 1 This chapter is an extension of a previous piece titled “Miniature Pleasures: On Watching Films on an iPhone,” and published in *Cinematicity*, eds. Jeffrey Geiger and Karin Littau (Edinburgh: Edinburgh University Press, 2014), 196-211.

- 2 UNTITLED can be watched on <http://celluloidremix.openbeelden.nl/media/125755/Untitled>, accessed October 18, 2014. My thanks to Anna Hoetjes for producing the stills.
- 3 Many thanks to Elif Rongen of the EYE Filmmuseum for providing information on both films.
- 4 For more information on the Mullens brothers, see the EYE Filmmuseum website, accessed October 18, 2014, <https://www.eyefilm.nl/collectie/filmgeschiedenis/persoon/willy-mullens>.
- 5 In particular: Jacques Aumont, "Que reste-t-il du cinéma?," *Trafic* 79 (September 2011): 95-107; Raymond Bellour, "La Querelle des Dispositifs," *Art Press* 262 (November 2000): 48-52; and *La Querelle des Dispositifs: Cinéma – expositions, installations* (Paris: P.O.L, 2012). See also Andrew Dudley, *What Cinema Is!* (Oxford: Wiley-Blackwell, 2010).
- 6 De Kuyper, "L'Autre Histoire du cinéma, ou la perte du spectacle: Qui gagne, qui perd?," in *In the Very Beginning, at the Very End: Film Theories in Perspective*, eds. Francesco Casetti, Jane Gaines, and Valentine Re (Udine: Forum, 2010), 144.
- 7 Gabriele Pedulla, *In Broad Daylight* (London: Verso, 2012), 79.
- 8 Eric de Kuyper, "L'Autre Histoire du cinéma," 145.
- 9 See, for instance, Philippe Dubois, *Yes, It's Cinema. Forms and Spaces of the Moving Images* (Pasian di Pratto: Campanetto Editore, 2009).
- 10 Jean-Luc Godard, quoted in "Cinéma zone," in *Immemory* [CD-ROM], Chris Marker (Paris: Yves Gevaert and Centre Georges Pompidou, 1997) [my translation].
- 11 De Kuyper, "L'Autre Histoire du cinéma," 144-145 [my translation and italics].
- 12 Through savvy combinations of images, and the use of split screens, Szöllösi makes the images seemingly respond to each other across screens. Similar experiments take place in gallery installations, as in Douglas Gordon's *THROUGH A LOOKING GLASS* (1999), where a double-screen arrangement makes it look as though the main character of Martin Scorsese's *TAXI DRIVER* (1976) is addressing himself as well as his mirror image.
- 13 Annette Michelson, "The Kinetic Icon in the Work of Mourning," *October* 52 (Spring 1990): 22-23, quoted in Laura Mulvey, *Death 24x a Second* (London: Reaktion Books, 2006), 193. My thanks to Annie Van den Oever for reminding me of this quote.
- 14 See Steve Jobs's introductory presentation of the iPhone: "Steve Jobs iPhone 2007 Presentation (Full HD)," *You Tube* video, 51:18, accessed October 18, 2014, <https://www.youtube.com/watch?v=vN4U5FqrOdQ>.
- 15 And therefore the effect of reduction operates even if UNTITLED is being shown on a large screen. Accessible on the EYE Filmmuseum website, UNTITLED would normally be viewed on a computer, using the full screen option so that the iPhones appear roughly in their custom size. Susan Stewart, *On Longing: Narratives of the Miniature, the Gigantic, the Souvenir, the Collection* (Durham, NC: Duke University Press, 1993), 46.

- 16 *Ibid.*, 46, 112.
- 17 Laura U. Marks, *The Skin of the Film: Intercultural Cinema, Embodiment, and the Senses* (Durham, NC: Duke University Press, 2000), 169.
- 18 Stewart, *On Longing*, 125. De Kuyper, “L’Autre Histoire du cinéma,” 145.
- 19 See Beugnet, “Miniature Pleasures.”
- 20 See Roger Odin, “Spectator, Film and the Mobile Phone,” in *Audiences*, ed. Ian Christie (Amsterdam: Amsterdam University Press, 2012), 155-170.
- 21 Thus reminding us of the evolution model proposed by Lev Manovich in the now classic *The Language of New Media*. Manovich establishes a “screen genealogy” that runs from Renaissance painting to the computer. In doing so, he points out the preservation of the terminology that applies to the frame: “a horizontal format,” Manovich remarks, is still referred to as “landscape mode,” while the vertical format is referred to as “portrait mode.” Manovich also outlines the continuation of similar frame dimensions (and thus does not envisage the popularity of the smaller screens that concerns this chapter). Lev Manovich, *The Language of New Media* (Cambridge, MA: MIT Press, 2001), 96.
- 22 Diana Scarisbrick, *Portrait Jewels: Opulence and Intimacy from the Medici to the Romanovs* (New York, NY: Thames & Hudson, 2011).
- 23 Jacques Aumont, *L’œil interminable* (Paris: Editions de la différence, 2007), 44.
- 24 Tom Gunning, “Re-Newing Old Technologies: Astonishment, Second Nature, and the Uncanny in Technology from the Previous Turn-of-the-Century,” in *Rethinking Media Change: The Aesthetics of Transition*, eds. David Thorburn and Henry Jenkins (Cambridge, MA: MIT Press, 2003), 39-59.
- 25 Mulvey, *Death 24x a Second*, 193.

CHAPTER 3

- 1 Jay David Bolter and Richard Grusin, *Remediation: Understanding New Media* (Cambridge, MA: MIT Press, 1999), 2-62.
- 2 See, for example, apparatus theory in P. Rosen, ed., *Narrative, Apparatus, Ideology* (New York, NY: Columbia University Press, 1986).
- 3 See, for example, David Bordwell and Kristin Thompson, *Film Art: An Introduction*, 9th ed. (New York, NY: McGraw-Hill, 2010), 9-13.
- 4 For early examples, see Collin N. Bennett et al., *The Handbook of Kinematography: The History, Theory and Practice of Motion Photography and Projection* (London: The Kinematograph Weekly, 1911), and David S. Hulfish, *Motion-Picture Work: A General Treatise on Picture Taking, Picture Making, Photo-Plays, and Theater Management and Operation* (Chicago, IL: American School of Correspondence, 1913). More recent examples include Jean VIVIÉ, *Projection des images animées et reproduction des enregistrements sonores* (Paris: Editions Dujarric, 1968), and Torkel

Sætervadet, *The Advanced Projection Manual: Presenting Classic Films in a Modern Projection Environment* (Oslo: Telluw Works, 2006).

- 5 Charles Musser and Carol Nelson, *High-Class Moving Pictures: Lyman H. Howe and the Forgotten Era of Travelling Exhibition, 1880-1920* (Princeton, NJ: Princeton University Press, 1991), 51-52.
- 6 Of course, damage to a film print is not caused solely during projection. The way in which a print is stored is another important factor determining the quality of a print. Damage due to storage lies beyond the scope of this article, however. For an overview of various types of damages and their possible causes—including storage—see Paul Read and Mark-Paul Meyer, eds., *Restoration of Motion Picture Film* (Oxford: Butterworth-Heinemann, 2000), 83-104.
- 7 Musser and Nelson, *High-Class Moving Pictures*, 65.
- 8 *Ibid.*, 173 and 333n85.
- 9 See also Hulfish, *Motion-Picture Work*, 128.
- 10 Tom Gunning, “Re-Newing Old technologies: Astonishment, Second Nature, and the Uncanny in Technology from the Previous Turn-of-the-Century,” in *Rethinking Media Change: The Aesthetics of Transition*, eds. David Thorburn and Henry Jenkins (Cambridge, MA: MIT Press, 2003), 45.

CHAPTER 4

- 1 *Olympia*, DVD, directed by Leni Riefenstahl (1938; Netherlands: Hot Town Music-Paradiso, 2008).
- 2 Cf. Wanda Strauven, “The Observer’s Dilemma: To Touch or Not to Touch,” in *Media Archaeology: Approaches, Applications, and Implications*, eds. Erkki Huhtamo and Jussi Parikka (Berkeley, CA: University of California Press, 2011), 148-163.
- 3 Cf. among others Yuri Tsvian, “Projection Technique as a Factor in Aesthetic perception,” in *Early Cinema in Russia and Its Cultural Perception* [1991] (London: Routledge, 1994), 46.
- 4 Cecil M. Hepworth, “Those Were the Days,” *Penguin Film Review* 6 (1948). Reprinted in *Film Makers on Film Making*, ed. Harry M. Geduld (Harmondsworth: Penguin, 1967), 43. Cf. also Tsvian, “Projection Technique,” and Timothy Barnard, “The ‘Machine Operator’: Deus Ex Machina of the Storefront Cinema,” *Framework* 43, no. 1 (2002): 56. Early female projectionists, exhibitors, and theater owners in the US are discussed in Kathryn Fuller-Seeley and Karen Ward Mahar, “Exhibiting Women: Gender, Showmanship, and the Professionalization of Film Exhibition in the United States, 1900-1930,” in *Women Film Pioneers Project*, eds. Jane Gaines, Radha Vatsal, and Monica Dall’Asta (New York, NY: Columbia University Libraries, 2013), accessed September 27, 2013, <https://wfpp.cdrrs.columbia.edu/essay/exhibiting-women-gender-showmanship->

and-the-professionalization-of-film-exhibition-in-the-unitd-states-1900-ndash-1930/.

- 5 Wanda Strauven, "From 'Primitive Cinema' to 'Marvelous,'" in *The Cinema of Attractions Reloaded*, ed. Wanda Strauven (Amsterdam: Amsterdam University Press, 2006), 105.
- 6 Carl Louis Gregory, *Motion Picture Photography*, ed. Herbert McKay (New York, NY: Falk Publishing, 1927), 356 [my italics]. Raimondo Mario gives a description of hand-cranked filming modalities in *Motion Picture Photography: A History, 1891-1960* (Jefferson, NC: McFarland, 2007).
- 7 Rick Altman, "Cue sheets," in *Encyclopedia of Early Cinema*, ed. Richard Able (Abingdon: Routledge, 2005), 229-230. Also James Card, "Silent Film Speed," *Image* (October 1955): 55-56.
- 8 Card, "Silent Film Speed," and Kevin Brownlow, "Silent Films: What Was the Right Speed?," *Sight and Sound* 49, no. 3 (1980): 164-167.
- 9 Barnard notes that the majority of projectionists in the US were immigrants and formed the first trade unions in the film industry. See Barnard, "The 'Machine Operator'; Steve Wurtzler, "Standardizing Professionalism and Showmanship: The Performance of Motion Picture Projectionists During the Early Sync-sound Era," in *Keyframes: Popular Cinema and Cultural Studies*, eds. Matthew Tinkcom, Amy Villarejo (London: Routledge, 2001), 359-376; and Tsivian, "Projection Technique."
- 10 Quoted from Wurtzler, "Standardizing Professionalism," 371.
- 11 Brownlow, "Silent Films: What Was the Right Speed?"; Card, "Silent Film Speed." Also cf. Richard Koszarski, *An Evening Entertainment: The Age of the Silent Feature Picture 1915-1928* (New York, NY: Scribner, 1990), chapter 2.
- 12 Barnard, "The 'Machine Operator.'"
- 13 E.g., "Speed Regulator for Motor Driven Machines," *Moving Picture World* (February 28, 1914): 1182.
- 14 In his fundamental publication on the topic, Rick Altman dispels many similar misconceptions. Rather than focusing on tactility, Altman explains the 1920s transition to synchronized sound with the desire to reproduce an orchestra, as opposed to earlier systems where the impetus was to reproduce human speech. Rick Altman, *Silent Film Sound* (New York, NY: Columbia University Press, 2004).
- 15 Carl Herbert, "The Truth about Talking Pictures," *Moving Picture World* (March 20, 1908): 327.
- 16 Wurtzler, "Standardizing Professionalism," 368-374.
- 17 Richard Rowland, "The Speed of Projection of Film," *Transactions of the SMPE* 10, no. 27 (1926): 77 [my italics].
- 18 Strauven, "The Observer's Dilemma," 152.
- 19 Wurtzler, "Standardizing Professionalism," 375.

- 20 David Bordwell, "My Name Is David and I'm a Frame-Counter," *Davidbordwell.net*, January 28, 2007, <http://www.davidbordwell.net/blog/2007/01/28/my-name-is-david-and-im-a-frame-counter/>.
- 21 Cf. Charles A. Poynton, "2-3 Pulldown," in *Digital Video and HDTV: Algorithms and Interfaces* (Amsterdam: Morgan Kaufmann, 2003), 429-435. Also Mark Schubín, "Getting Cranky," *SchubinCafe.com*, March 4, 2001, <http://www.schubincafe.com/2001/03/04/getting-cranky/>.
- 22 Poynton's research is still among the most authoritative elaborations of interactions between cameras, screens, and the human visual system. Cf. also Charles A. Poynton, "Motion Portrayal, Eye Tracking, and Emerging Display Technology," *Proceedings of the 30th SMPTE Advanced Motion Imaging Conference* (White Plains, NY: Society of Motion Picture & Television Engineers, 1996), 192-202.
- 23 Bordwell, "My Name Is David." Yuri Tsivian's website, *Cinematics*, <http://www.cinematics.lv>, is a similar quantitative approach to editing analysis expanded to the length of an entire film.
- 24 "First-Ever TCM Classic Film Festival to Feature Newly Restored Versions of A Star Is Born (1954) and Metropolis (1927)," TCM press release, November 18, 2009.
- 25 Passes for the four-day event cost between 499 and 1199 USD.
- 26 Marijke de Valck examines festivals as gatekeepers of cultural capital in "And the winner is...': What Happens Behind the Scenes of Film Festival Competitions," *International Journal of Cultural Studies* 13, no. 3 (2010).
- 27 METROPOLIS's innumerable cuts, running times and speeds have been documented extensively, particularly in Thomas Elsaesser, *Metropolis* (London: British Film Institute, 2000) and contributions by Enno Patalas, Thomas Elsaesser, Giorgio Bertellini, and Holger Bachmann in *Fritz Lang's Metropolis: Cinematic Visions of Technology and Fear*, eds. Michael Minden and Holger Bachmann (Rochester, NY: Camden House, 2000). Taylor Downing's *Olympia* [1992] (London: British Film Institute, 2012) discusses some of the differences between various preserved versions of OLYMPIA.
- 28 Martin Koerber, "Notes on the Proliferation of 'Metropolis' (1927)," *The Moving Image: The Journal of the Association of Moving Image Archivists* 2, no. 1 (2002): 75.
- 29 Brownlow, "Silent Films," 164.
- 30 E.g., Paul Read and Mark-Paul Meyer, *Restoration of Motion Picture Film* (Oxford: Butterworth-Heinemann, 2000), 24.
- 31 Cf. Wurtzler, "Standardizing Professionalism."
- 32 Card, "Silent Film Speed," 55.
- 33 These questions and the issue of "new originals" are addressed in detail in Giovanna Fossati, "Multiple Originals: The (Digital) Restoration and Exhibition of Early Films," in *A Companion to Early Cinema*, eds. André Gaudreault et al. (Malden, MA: Wiley-Blackwell, 2012), 550-567.

- 34 In 1998, Patrick Loughney briefly documented the issues in presenting Edison's DICKSON EXPERIMENTAL SOUND FILM for the first time, currently regarded as the earliest sync-sound film recording in existence. Among them were projectors that could not run the strip at its original high speed, then believed to be 46 fps ("Domitor Witnesses the First Complete Public Presentation of the 'Dickson Experimental Sound Film' in the 20th Century," *Film History* 11, no. 4 (1999): 400-403). Not even this speed is certain: Walter Murch who synchronized the footage for the Library of Congress later identified it to be 40 fps, as reported in the online discussion board of *Cinema Audio Society* on June 6, 2000 (a copy is currently available at FilmSound.org/murch/dickson.htm).
- 35 Paul Read, "Hollywood's Proposals for Digital Cinema: Digital Projection of Heritage Film Content at Original Frame Rates," *Journal of Film Preservation* 74-75 (2007).

CHAPTER 5

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- 1 Henry V. Hopwood, "Cinematography for All," *The Optician and Photographic Trades Review*, March 29, 1901, 66. This article was reprinted in Stephen Herbert's *A History of Early Film*, vol. 1 (London: Routledge, 2000), 48-52.
- 2 Alan D. Kattelle, "Once, There Was Film... Looking Back at Amateur Motion Picture Technologies," *Spectator. Rethinking the Amateur: Acts of Media Production in the Digital Age* 24, no. 1 (2004): 53-64.
- 3 The latter slogan was used not only in advertising but also on the box posted to the consumer and on the branding of the device itself, where it consisted of a delicate transfer, all too easily rubbed off during use. Indeed, the collectability of these cameras today is often measured in the state of preservation of the transfer rather than other factors such as functionality.
- 4 Contemporary advertisement, titled "And Now – HOME MOVIES FOR ALL" (unknown source).
- 5 Manufactured by Home Cine Cameras Ltd. in the mid-1930s. See Ariel Cinematographica Register, nos ACR 0072 and ACR 0073, acr.liste.com.
- 6 Deac Rossell, *Living Pictures: The Origins of the Movies* (New York: SUNY, 1998), 144. Perhaps the Vitascope Corporation was simply playing on the folk memory of the advent of living pictures and the rights to the name had lapsed or been sold on. The location of the corporation is also indistinct: A plate on the camera gives it as Providence, Rhode Island but other sources give addresses in New York—200 Fifth Avenue—and Middletown, Connecticut.
- 7 And sometimes for even less than \$10. In one recent online auction (January 2014), a boxed example was shown that bore a vintage Bloomingdale's department store price tag stating it was \$2.99.

- 8 Kattelle gives the 1932 cost including processing of 100 ft of 16mm as \$6 and of 50 ft of 8mm as \$2.50. See Alan D. Kattelle, "Amateur Motion Picture Equipment," *Journal of Film and Video* 38, no. 3-4 (1986): 47-57.
- 9 In order for the film to run smoothly through the mechanism of the camera and projector, a certain amount of film—usually termed "loop"—needs to be freely available between the sprockets that drive the film forward and the gate which holds the film steady. A malfunction in this mechanism or in the film material can cause this film to become taut, and so we say "the loop has been lost." The vertical movement of the film through the gate is no longer hidden by the shutter and allows the film to be exposed while it is also being advanced, meaning that the image of an object is cast on moving, not stationary, material.
- 10 These were the Cine-Kodak and Pathé Baby. In the 2004 Italian film *DOPO MEZZA-NOTTE*, set in the present day in the Museo Nazionale del Cinema in Turin, an 80-year-old Pathé Baby is used by the cinephilic chief protagonist to record brief moments of his life.
- 11 Kattelle, "Amateur Motion Picture Equipment," 50.
- 12 Guy Edmonds, "Aesthetics Filtered Through Technology – The Production and Preservation of Amateur Films and Home Movies" (paper presented at the 4th Collection Seminar Home Away from Home: The Displacement of Amateur Films, Amsterdam, EYE Film Institute Netherlands, October 14, 2010).
- 13 Guy Edmonds, "Why Old Film Looks Old. The Role of Technology in Forming Film Aesthetics" (paper presented at the Moving Image and Institution. Cinema and the Museum in the 21st Century Conference, Fitzwilliam College, Cambridge, July 6-8, 2011).
- 14 The Lomokino is a modern plastic camera that uses a hand-crank to expose a roll of 35mm still film with 144 sequential images that can be used to reproduce a motion effect. See <http://microsites.lomography.com/lomokino/>.
- 15 The work of Barry Salt is, of course, an exception to this general neglect. See Barry Salt, *Film Style and Technology: History and Analysis* (London: Starword, 2009).
- 16 See <http://microsites.lomography.com/lomokino/>.
- 17 My thanks to Dr. Ralf Forster of the Filmmuseum Potsdam, who helped me find this review. Konrad Wolter, "U.S. Rubbish," *Film Für Alle*, no. 9 (1931): 266-267. The Movie-Maker is also described and illustrated in an earlier issue of the same year, *Film Für Alle*, no. 5 (1931): 138.
- 18 "Und im Vertrauen auf solche unentwegten Panegyriker der US Konstruktionen und Neuheiten habe ich gutgläubig 15m guten deutschen 16er Film geopfert." In Wolter, "U.S. Rubbish," 266.
- 19 See Andreas Fickers and Annie van den Oever, "Experimental Media Archaeology: A Plea for New Directions," in *Téchne /Technology*, ed. Annie van den Oever (Amsterdam: Amsterdam University Press 2013), 272-278. As the authors say, "it

is not so much the ‘correctness’ of these re-enactments that is at stake, but their productivity.”

- 20 See, for example, Stephen Herbert’s series of early film recreations at the Museum of the Moving Image from 1992-1996, “Re-Creating the First Film Shows,” in *Cinema: The Beginnings and the Future*, ed. Christopher Williams (London: University of Westminster Press, 1996); or Patrick Loughney’s report “Domitor Witnesses the First Complete Public Presentation of the ‘Dickson Experimental Sound Film’ in the 20th Century,” *Film History* 11, no. 4 (1999): 400-403.

CHAPTER 6

- 1 Unless otherwise noted, all citations are from Sears, Roebuck & Co. Inc, *Consumers Guide*, no. 107 (Spring 1898). Significant citations will receive their own end-note.
- 2 Sears, Roebuck & Co. Inc, *Consumers Guide*, no. 107 (Spring 1898): 206-210, <https://archive.org/stream/consumersguidenooooosear#page/343/mode/1up>.
- 3 Don G. Malkames, “Early Projector Mechanisms,” in *A Technological History of Motion Pictures and Television: An Anthology from the Pages of the Journal of the Society of Motion Picture and Television Engineers*, ed. Raymond Fielding (Berkeley, CA: University of California Press, 1967), 101 [originally published in *Journal of the SMPTE* 66 (October 1957)].
- 4 Charles Musser, *The Emergence of Cinema: The American Screen to 1907* (Berkeley, CA: University of California Press, 1990), 292-293. In addition to Musser, several other researchers have taken up Sears’s media work, if only in passing. See Calvin Pryluck, “The Itinerant Movie Show and the Development of the Film Industry,” in *Hollywood in the Neighborhood: Historical Case Studies of Local Moviegoing*, ed. Kathryn Fuller-Seeley (Berkeley, CA: University of California Press, 2008), 41-42; André Gaudreault, ed., *American Cinema, 1890-1909: Themes and Variations* (New Brunswick, NJ: Rutgers University Press, 2009), 70; Rick Altman, *Silent Film Sound* (New York, NY: Columbia University Press, 2004); Stephen Bottomore, “The Panicking Audience?: Early Cinema and the ‘Train Effect,’” *Historical Journal of Film, Radio and Television* 19, no. 2 (1999): 180; Raymond Fielding includes two relevant *Journal of the SMPTE* reprints in his *A Technological History of Motion Pictures and Television: An Anthology from the Pages of the Journal of the Society of Motion Picture and Television Engineers* (Berkeley, CA: University of California Press, 1967); and Soterios Gardiakos provides an extensive collection of Optigraph photographs and advertisements in his *The Optigraph 35mm Movie Projector, 1898-1907* (Aurora, IL: Unigraphics, Inc., 2006).
- 5 This chapter is primarily based on Sears *Consumers Guides* no. 107, although no. 108, 109, 110, 111, and 112 (1898-1901), as well as Montgomery Ward’s *Catalogue*

of *Magic Lanterns, Stereopticons and Moving Picture Machines* (Chicago, IL: Montgomery Ward, 1898), were also consulted and shaped the argument.

- 6 Montgomery Ward's 1898 catalog, a specialized 40-page pamphlet, creates a more professional (if badly written) impression than the Sears (all-purpose) catalog. As its title suggests, it contains only visual entertainment systems; however, its explanation of the various illumination systems and its collection of slides and films are more extensive than its Sears counterpart. The pamphlet frames its offerings in business terms and lacks the domestic entertainment argument present in Sears's *Consumers Guide*. However, it is important to add that Sears's 1900 catalog (no. 110) notes the availability of a "free 128 page entertainment catalogue" that may well have one-upped Montgomery Ward's. While I have not been able to locate this Sears catalog, I have found an undated stand-alone Optigraph catalog from 1899 or early 1900: Sears, Roebuck & Co. Inc., *Special Catalogue of the Optigraph Motion Picture Machines, Calcium Light Outfits, Films for Moving Pictures* (Chicago, IL: Sears, Roebuck & Co. Inc, n.d.). Available at <https://www.flickr.com/photos/10216389@No8/sets/72157632317572986/>. Montgomery Ward's 1898 stand-alone media catalog can be found at <https://archive.org/stream/catalogue-of-magicoomont#page/40/mode/1up>.
- 7 Catalog costs varied between 1897 and 1902, depending on the year and catalog type (general or specialized), from \$0.50 to \$1.00 (customers were asked to pay an additional \$0.15 to help cover postage). I estimate nine million based on Sears's annual output of roughly six million and Montgomery Ward's three million catalogs.
- 8 In 1900, only 19 US cities had 200,000 or more inhabitants, and about 15.5 percent of the population lived in large urban settings. Boris Emmet and John E. Jeuck, *Catalogues and Counters: A History of Sears, Roebuck and Company* (Chicago, IL: University of Chicago Press, 1950), 10. By the end of the 19th century, around 90 percent of the population was literate and school attendance was mandatory.
- 9 Sandra Racine, "Changing (Inter) Faces: A Genre Analysis of Catalogues From Sears, Roebuck to Amazon.com" (unpublished PhD dissertation, University of Minnesota, 2002): 68. Racine cites *Mr. Sears Catalogue* (a 1989 episode of the *American Experience*, WGBH, directed by Edward Gray). Old Sears and Montgomery Ward catalogs apparently found a second use as toilet paper in outhouses across America.
- 10 By 1900, the US average for newspaper circulations was 15,000 copies, with the nation's largest papers enjoying circulations in the low hundreds of thousands. Paul Starr, *The Creation of the Media: Political Origins of Modern Communications* (New York, NY: Basic Books, 2004), 252.
- 11 Clifford Geertz, *The Interpretation of Cultures: Selected Essays* (New York, NY: Basic Books, 1973). Geertz, an anthropologist, used the term "thick description" to describe his method of deeply contextualizing human behaviors, in that way

- making them legible to an outsider. In the case of the motion picture, the *Sears Consumers Guide* offers multiple contexts for making sense of the new medium.
- 12 David Nye, *Electrifying America: Social Meanings of a New Technology, 1880-1940* (Cambridge, MA: MIT Press, 1991); Carolyn Marvin, *When Old Technologies Were New: Thinking About Electric Communication in the Late Nineteenth Century* (Oxford: Oxford University Press, 1988).
 - 13 William Uricchio, "Television's First Seventy-Five Years: The Interpretive Flexibility of a Medium in Transition," in *The Oxford Handbook of Film and Media Studies* (Oxford: Oxford University Press, 2008), 286-305.
 - 14 William Uricchio, "There's More to the Camera's Obscura Than Meets the Eye," in *Arrêt sur image et fragmentation du temps / Stop Motion, Fragmentation of Time*, eds. François Albera, Marta Braun, and André Gaudreault (Lausanne: Cinema Editions Payot, 2002), 103-120.
 - 15 *Consumers Guide*, no. 107 (Spring 1898): 195 [bold font in the original quote].
 - 16 The relationship among Sears, Roebuck & Co., Montgomery Ward & Company, and the Enterprise Optical Company—all Chicago based—deserves greater attention. Sears's Optigraph and Montgomery Ward's Optiscope not only look identical in catalog illustrations, but descriptions of their operations and their perceptions by audiences are strikingly similar as well.
 - 17 On these early 21st-century practices, see Henry Jenkins, *Convergence Culture: Where Old and New Media Collide* (New York, NY: New York University Press, 2006).
 - 18 Sears, Roebuck & Co. Inc, *Consumers Guide* no. 112 (1902), <https://archive.org/stream/catalogueno11200sear#page/271/mode/1up>.
 - 19 Montgomery Ward's special 1898 media catalog offered a slightly more elevated and gender-balanced argument, declaring "Every man or woman can make a Magic Lantern, a Stereopticon or a Moving Picture Machine the source of instruction, pleasure and profit."

CHAPTER 7

- 1 It is common to assume that the 1.33:1 aspect ratio already formed the standard in early cinema (as this was the format distributed by Thomas Edison and adopted by the Lumière brothers). However, in the United States, it was not until 1909 that the Motion Picture Patent Company officially standardized this ratio (later altering it to 1.375:1 to make room for an optical sound strip). Research still needs to be conducted on the uniform use of the 1.33:1 ratio in early film and on experimentations with other formats.
- 2 Stephen Huntley, "Sponable's CinemaScope: An Intimate Chronology of the Invention of the CinemaScope Optical System," *Film History* 5, no. 3 (September 1993): 302.

- 3 John Belton, *Widescreen Cinema* (Cambridge, MA: Harvard University Press, 1992), 59.
- 4 *Ibid.*, 49-51.
- 5 See, for instance, this early review of the Cinerama's first screening in New York, written by Bosley Crowther and published in *The New York Times* of October 1, 1952, <http://www.nytimes.com/movie/review?res=9E0DE6DF1E3CE23BBC4953D-FB6678389649EDE>.
- 6 Belton, *Widescreen Cinema*, 138.
- 7 *Ibid.*, 138-143.
- 8 James Morris, "1954: Decisive Year for Film Industry," *International Projectionist* 30, no. 1 (January 1955): 11.
- 9 *Ibid.*
- 10 "New Hilux Lens Series by Projection Optics," *International Projectionist* 30, no. 6 (June 1955): 23.
- 11 The term re-monstration of course brings to mind André Gaudreault's distinction between "narration" and "monstration" (i.e., telling and showing), in relation to which re-monstration can be seen as the moment that a habitualized narrative technique comes to regain a primarily monstrating (and possibly also "monstrous") quality, emphasizing the technique itself. See André Gaudreault, "Narration and Monstration in the Cinema," in *Journal of Film and Video* 39, no. 2 (Spring 1987): 29-36; and Annie van den Oever, "Monstration and the Monstrous. The Grotesque in the Very Beginning and at the Very End," in *Proceedings of the XVI International Film Studies Conference-Permanent Seminar on History of Film Theories. Dall'Inizio, alla fine. Teorie del cinema in prospettiva / In the Very Beginning, at the Very End. Film Theories in Perspective*, eds. F. Casetti, J. Gaines and V. Re (Udine: Forum, 2010), 229-242.
- 12 David Bordwell, ed., "CinemaScope: The Modern Miracle You See Without Glasses," in *Poetics of Cinema* (London: Routledge, 2007), 281-325.
- 13 The compositional implications of anamorphic widescreen's introduction in Hollywood are comprehensively demonstrated in David Bordwell's video lecture "CinemaScope: The Modern Miracle You See Without Glasses," *Vimeo* video, 52:57, 2013, <http://vimeo.com/64644113>.
- 14 Huntley, "Sponable's CinemaScope," 318.
- 15 Bordwell, "CinemaScope," 322.
- 16 Annie van den Oever, "The Aesthetics and Viewing Regimes of Cinema and Television, and Their Dialectics," in *Audiences: Defining and Researching Screen Entertainment Reception*, ed. Ian Christie (Amsterdam: Amsterdam University Press, 2012), 113-127.
- 17 For an overview of the historical discourse on the close-up, see Mary Ann Doane, "The Close-Up: Scale and Detail in the Cinema," *differences* 14 (2003): 89-111; or Annie van den Oever, *Sensitizing the Viewer: The Impact of New Techniques and the*

- Art Experience* (Groningen / Amsterdam: University of Groningen, Amsterdam University Press, and Stedelijk Museum Amsterdam, 2011), 16-20.
- 18 David Cook, *A History of Narrative Film* (New York, NY: W.W. Norton & Co Inc., 1996), 475.
 - 19 For a brief explanation, see Frederick Foster's article "Techniscope—What It Is and How It Works," *American Cinematographer*, <http://www.widescreenmuseum.com/widescreen/wings2.htm>.
 - 20 Christopher Frayling, *Sergio Leone: Something to Do with Death* (London: Faber and Faber, 2000), 132.
 - 21 For comparison, in Griffith's *BIRTH OF A NATION*, a film famous for its use of the close-up, Pierre Sorlin counted 26 close-ups out of a total of 1,600 shots. Sorlin found roughly the same ratio in classical Hollywood cinema. See Pierre Sorlin, "Television and the Close-Up," in *Cinema Futures: Cain, Abel or Cable? The Screen Arts in the Digital Age*, eds. Thomas Elsaesser and Kay Hoffmann (Amsterdam: Amsterdam University Press, 1998), 119-126.
 - 22 Frayling, *Sergio Leone*, 144.
 - 23 David Lusted, *The Western* (London: Longman, 2003), 189; Mike Wallington, "Italian Westerns—A Concordance," in *Cinema Cambridge* 6-7 (August 1970): 30; and Frayling, *Sergio Leone*, 132.
 - 24 One may also think here of Tom Gunning's influential notion on the "renewal of old technologies." Tom Gunning, "Re-Newing Old Technologies: Astonishment, Second Nature, and the Uncanny in Technology from the Previous Turn-of-the-Century," in *Rethinking Media Change: The Aesthetics of Transition*, eds. David Thourburn and Henry Jenkins (Cambridge, MA: MIT Press, 2003), 39-60.
 - 25 See, for instance, Jean Epstein, "Magnification," in *French Film Theory and Criticism: A History/Anthology 1907-1939*, ed. Richard Abel (Princeton, NJ: Princeton University Press, 1988), 235-240; Béla Balázs, "Visible Man, or the Culture of Film," *Screen* 48, no. 1 (2007): 91-108; Sergei Eisenstein, *Film Form: Essays in Film Theory*, ed. and trans. Jay Leyda (San Diego, CA: Harcourt, 1949).
 - 26 John Belton has discussed the problematic aspect of any simple, causal historical explanation of the success of widescreen: "As the story of CinemaScope reveals, the multi-faceted technological revolution that took place in Hollywood cinema in the 1950s belies any reductionist account of it that might explain it in terms of simple technological, economic or ideological determinism. These determinants, though clearly crucial to any explanation of this period of historical change, cannot be isolated from one another or viewed as monolithic in nature." John Belton, "CinemaScope and Historical Methodology," *Cinema Journal* 28, no. 1 (Fall 1988): 38.

CHAPTER 8

- 1 "Amateur Cinematography," *British Journal of Photography* (January 26, 1923): 45.
- 2 J.C. Mol, "Filmknipsel," *Lux. Geïllustreerd tijdschrift voor fotografie* 38, no. 14 (1927): 32.
- 3 "Ciné-Kodak Simplicity," *Amateur Movie Makers. Official Publication of the Amateur Cinema League* 2, no. 4 (1927): back cover.
- 4 "Ciné-Kodak for Motion Pictures," *Kodakery. A Magazine for Amateur Photographers* 10, no. 12 (August 1923): 9-11.
- 5 *Ibid.*, 9.
- 6 Alan D. Kattelle, "The Amateur Cinema League and Its Films," *Film History* 15, no. 2 (2003): 238-251; Leo Enticknap, *Moving Image Technology: From Zoetrope to Digital* (London: Wallflower Press, 2005), 55.
- 7 Patricia Zimmermann, *Reel families. A Social History of Amateur Film* (Bloomington, IN: Indiana University Press, 1995), 30.
- 8 Enticknap, *Moving Image Technology*, 55.
- 9 Lisa Gitelman, *Always Already New. Media, History and the Data of Culture* (Cambridge, MA: MIT Press, 2008), 7-8.
- 10 *Ibid.*
- 11 *Ibid.*, 7.
- 12 *Ibid.*
- 13 Risto Sarvas and David M. Frolich, *From Snapshots to Social Media – The Changing Picture of Domestic Photography* (London: Springer, 2011), 66.
- 14 *Ibid.*, 8.
- 15 Ben Singer, "Early Home Cinema and the Edison Home Projecting Kinetoscope," *Film History* 2, no. 1 (1988): 37-69.
- 16 In Germany in 1903, Heinrich Ernemann's Heimkino produced the Kino, a 17mm camera. Martina Roepke, "Tracing the 17.5mm Practices in Germany (1902-1908)," *Film History* 19 (2007): 344-352.
- 17 Moya Luckett, "Filming the family": Home Movie Systems and the Domestication of Spectatorship," *The Velvet Light Trap*, no. 26 (1986): 25-26.
- 18 For an interesting inventory and analysis of home cinema projects, see: Singer, "Early Home Cinema," 37-69.
- 19 Luckett, "Filming the Family," 22.
- 20 *Ibid.*, 21.
- 21 Anke Mebold and Charless Teppermann, "Resurrecting the Lost History of 28mm Film in North America," *Film History* 15, no. 2 (2003): 137-151.
- 22 Haiddee Wasson, "Electric Homes! Automatic Movies! Efficient Entertainment!: 16mm and Cinema's Domestication in the 1920s," *Cinema Journal* 48, no. 4 (Summer 2009): 1-21.
- 23 *Ibid.*, 7.

- 24 C.E.K. Mees, "Amateur Cinematography," *Journal of the Royal Society of Arts* (November 1923): 20.
- 25 C.E.K. Mees, "The Cine Kodak and Kodascope," *Transactions of the Society of Motion Picture Engineers* 7 (1923): 246-251.
- 26 Mees, "Amateur Cinematography."
- 27 A.H. Beardsley, "Amateur Kinematography," *Photo-Era Magazine. The American Journal of Photography* 51 (July 1923): 33.
- 28 Herbert McKay, *Handbook of Motion Picture Photography* (New York, NY: Falk Publishing Company, 1926), 101.
- 29 Dwight Swanson, "Inventing Amateur Film: Marion Norris Gleason, Eastman Kodak and the Rochester Scene, 1921-1932," *Film History* 15 (2003): 126-136.
- 30 For an extended debate on the definition of amateur film and leisure, see Bert Hogenkamp and Mieke Lauwers, "In Pursuit of Happiness? A search for the Definition of Amateur Film," in *Rencontres autour des inédits/ Essays on Amateur film. Jubilee Book*, ed. Nancy Kapstein (Charleroi: Association Européenne Inédits AEI, 1997), 107; or Ryan Shand, "Theorizing Amateur Cinema. Limitations and Possibilities," *The moving Image* 18, no. 2 (2008): 36-60. For a more general sociological perspective on categories of serious and casual leisure, see S. Elkington and R.A. Stebbins, *The Serious Leisure Perspective: An Introduction* (Abingdon: Routledge, 2014).
- 31 Swanson, "Inventing Amateur Film," 128.
- 32 Sarvas and Frolich, *From Snapshots to Social Media*, 79.
- 33 For an elaborate account on the different amateur film formats, see Alan D. Kattelle, "The Evolution of Amateur Motion Picture Equipment 1895-1965," *Journal of Film and Video* 38, no. 3-4 (1986): 47-56.
- 34 Jonathan Sterne, *MP3. The Meaning of a Format* (London: Duke University Press 2012), 7.
- 35 Hogenkamp and Lauwers, "In Pursuit of Happiness?," 112.
- 36 Singer, "Early Home Cinema," 48.
- 37 For a discussion on this topic in Dutch journals, see Tim van der Heijden and Susan Aasman, "'Hare Majesteit de Smalfilm': De making of de vroege amateur-film(er)," *Tijdschrift voor Mediageschiedenis* 17, no. 1 (2014): 7-26.
- 38 See, for instance, Martina Roepke, *Privat-vorstellung. Heimkino in Deutschland vor 1945* (Hildesheim: Georg Olms, 2006), 65.
- 39 Zimmermann, *Reel Families*, 30.
- 40 "Eastman Kodak Company," *Kodakery. A Magazine for Amateur Photographers* 11, no. 3 (November 1924): n.p.
- 41 Susan Aasman, "Home Movies: A New Technology, a New Duty, a New Cultural Practice," in *Private Eyes and the Public Gaze: The Manipulation and Valorization of Amateur Images*, eds. Sonja Kmec and Viviane Thill (Trier: Kliomedia, 2009), 45-51.

CHAPTER 9

- 1 Before licensing his invention to Bowens, Retel Helmrich produced and sold this prototype of the Orbit himself through his website on the Steady Wing. It has now been taken off the market, though the site is still online. The prototype was made out of Anodized aluminum, weighing 29 oz (825 g) and measuring 12.6 x 22.8 x 5.1 in (32 cm x 58 cm x 13 cm) when fully expanded, folding back to a width of 9 in (23 cm). See *SteadyWing*, accessed August 20, 2014, <http://www.steadywing.com/>.
- 2 One problem with research on new devices such as this one is that many sources are closely linked to and published by the producers/inventors of the device who use this (source) material as part of their marketing strategies or personal experience with it. The information that is currently available on the Orbit originates from descriptions by either Bowens Ltd. or Leonard Retel Helmrich. For this reason, only the technical information found in these descriptions that can be objectively verified has been used. See Leonard Retel Helmrich's website, *Single Shot Cinema: The Most Intuitive Way of Professional Film Making*, accessed February 16, 2014, <http://www.singleshotcinema.com/>; "The Comodo Orbit," *Comodo*, accessed August 20, 2014, <http://www.comodorigs.com/comodo-orbit/>; "Comodo Orbit," *Roberts*, accessed August 20, 2014, <http://robertscamera.com/cameras-lenses/camera-accessories/hd-dslr-accessories/orbit.html>; Justin Dise, "Comodo Orbit Handheld Camera Stabilization System," *B&H Photo, Video and Pro Audio*, accessed August 20, 2014, <http://www.bhphotovideo.com/explora/video/hands-review/comodo-orbit-handheld-camera-stabilization-system>; and "COMODO VB-1850 Product Page," *B&H Photo, Video and Pro Audio*, accessed August 20, 2014, http://www.bhphotovideo.com/c/product/1027599-REG/comodo_vb_1850_orbit_hand_held.html.
- 3 Some major awards Retel Helmrich received for *SHAPE OF THE MOON* (2004) are the Grand Joris Ivens Award of the IDFA (2004) and the Grand World Documentary Award of the Sundance Film Festival US (2005). For *POSITION AMONG THE STARS* (2010), Retel Helmrich was awarded the Grand VPRO/IDFA Award (2010) and the Sundance Special Jury Award (2011).
- 4 Step Vaessen in the Dutch television program "Zomergasten," *VPRO*, broadcasted August 7, 2012 [my transcription and translation].
- 5 André Bazin, *What Is Cinema?*, vol. II (Berkeley, CA: University of California Press, 2005), 16-40.
- 6 *Ibid.*
- 7 André Bazin, *What Is Cinema?*, vol. I (Berkeley, CA: University of California Press, 1967), 28.

- 8 See the Comodo Rigs website, <http://www.comodorigs.com/orbit/>.
- 9 *Stand van de maan*, DVD, 2004, directed by Leonard Retel Helmrich (Goirle: Scarabee Films, 2011).
- 10 See IDFA. "Masterclass Leonard Retel Helmrich," *IDFA* video, 1:56:12, November 19, 2010, <http://www.idfa.nl/nl/tags/event.aspx?id=DFCE959D-16CA-4328-A606-582C38509932>; and Leonard Retel Helmrich, "How to Shoot Single Shot Cinema with the Comodo Orbit," *YouTube* video, 3:03, December 9, 2013, <http://www.youtube.com/watch?v=yS4Et3HHNwg>.
- 11 André Bazin, "The Ontology of the Photographic Image," *Film Quarterly* 8 (1960): 4-9.
- 12 Michael Renov, "Introduction: The Truth about Non-Fiction," in *Theorizing Documentary*, ed. M. Renov (New York, NY: Routledge, 1993), 8. While Renov is one of the first vocal skeptics of direct cinema's claim to objectivity, other convincing early arguments can be found in Brian Winston, *Claiming the Real: The Documentary Film Revisited* (London: British Film Institute, 1995).
- 13 For some of the most recent publications related to this subject by outstanding documentary theorists—among them Stella Bruzzi, John Corner, John Dovey, Alisa Lebow, Bill Nichols, Carl Plantinga, Michael Renov, and Brian Winston—see Brian Winston, ed., *The Documentary Filmbook* (London: Palgrave and Macmillan, 2013).
- 14 For a lucid contemporary critique on what he calls "the Dogma of Direct Cinema," see Winston, *The Documentary Filmbook*, 1-29.
- 15 See Annelies van Noortwijk, "Heddy Honigmann's Contemplations on Ars Vitae and the Metamodern Turn," in *Cine-Ethics; Ethical Dimensions of Film Theory, Practice and Spectatorship*, eds. Jinhee Choi and Mattias Frey (New York, NY: Routledge, 2013), 111-123.
- 16 Barend van Heusden, "Semiotic Cognition and the Logic of Culture," *Pragmatics and Cognition* 17, no. 3 (2009): 611-627; and Barend van Heusden, "Theorizing and Historicizing Art" (lecture series, University of Groningen, Groningen, 2010-2011).
- 17 Van Noortwijk, "Heddy Honigmann's Contemplations."

CHAPTER 10

- 1 Unless specified, the term VCD mentioned throughout this chapter refers solely to the optical disc (software) and excludes the standalone player (hardware).
- 2 Cf. Peter Manuel, "Popular Music as Popular Expression in North India and the Bhojpuri Region, from Cassette Culture to VCD Culture," *South Asian Popular Culture* 10, no. 3 (July 18, 2012): 223-236, doi:10.1080/14746689.2012.706012; Thomas Barker, "VCD Pornography of Indonesia," in *Asia Reconstructed: Proceed-*

ings of the 16th Biennial Conference of the ASAA, 26th-29th June 2006, Wollongong, Australia, eds. Adrian Vickers and Margaret Hanlon (Canberra: The Asian Studies Association of Australia, 2006); Tilman Baumgärtel, "The Culture of Piracy in the Philippines," in *Cinema in/on Asia* (Gwanju: Asian Culture Forum, 2006), 373-398, <http://www.thing.de/tilman/piracy.pdf>.

- 3 Darrell William Davis and Emilie Yueh-yu Yeh, "VCD as Programmatic Technology," in *Feeling Asian Modernities: Transnational Consumption of Japanese TV Dramas*, ed. Koichi Iwabuchi (Hong Kong: Hong Kong University Press, 2004), 237.
- 4 In her PhD dissertation on VCD culture in East Asia, Kelly Hu designates the VCD as an "Asian technology" in the sense that it gained unanticipated ascendancy and prominence throughout the Asian region precipitated by the commercial interests of domestic audiovisual firms and media pirates. Hu also explains that in the West, for instance in North America, VCD was popular only within the Asian communities. Thus, one could find VCD movies sandwiched in between Chinese goods at a grocery shop in Toronto's Chinatown, for example. Kelly Hu, "Chinese Re-Makings of Pirated VCDs of Japanese TV Dramas," in *Feeling Asian Modernities: Transnational Consumption of Japanese TV Dramas*, ed. Koichi Iwabuchi (Hong Kong: Hong Kong University Press, 2004), 205.
- 5 Tilman Baumgärtel, "The Piracy Generation: Media Piracy and Independent Film in Southeast Asia," in *Glimpses of Freedom: Independent Cinema in Southeast Asia*, eds. May Adadol Ingawanij and Benjamin McKay (Ithaca, NY: Cornell Southeast Asia Program Publications, 2012), 197.
- 6 Baumgärtel, "The Culture of Piracy in the Philippines."
- 7 Baumgärtel, "The Piracy Generation," and Gaik Cheng Khoo, "Just-Do-It-(Yourself): Independent Filmmaking in Malaysia," *Inter-Asia Cultural Studies* 8, no. 2 (February 2007): 227-247.
- 8 Katinka van Heeren, "Indonesian Side-Stream Film," in *Asian Hot Shots: Indonesian Cinema*, eds. Yvonne Michalik and Laura Coppens (Marburg: Schüren Verlag GmbH, 2009), 71-97.
- 9 Cinema 21 has been the biggest movie theater chain in Indonesia since 1987. At the moment it serves 33 cities with 736 screens spread across the archipelago. See the Cinema 21 website, <http://www.21cinplex.com/21profile>, accessed August 25, 2014. See also, Katinka van Heeren, "Indonesian Side-Stream Film."
- 10 Benyamin Sueb (1939-1995) was a multitalented film actor, comedian, and director known for his absurd and anarchic comedies in the 1970s and 1980s. He won the Citra Award at the 1973 Indonesian Film Festival, the Indonesian equivalent of the Academy Award, for his role in *INTAN BERDURI* (Thorny Diamond, 1972).
- 11 Shujen Wang, "VCD Killed the VHS Star," in *Framing Piracy: Globalization and Film Distribution in Greater China* (Lanham, MD: Rowman & Littlefield, 2003), 49-58.
- 12 Van Heeren, "Indonesian Side-Stream Film," 86-97.

- 13 This is a rough approximation of currency rate conversion between US dollars and Indonesian Rupiah in the early 2000s when I actively purchased VCDs for my personal library.
- 14 Baumgärtel maintains that they are not willing to give out information about where these pirated VCDs and DVDs came from for fear of punitive measures taken against them whether by the piracy mafia or the government. See Baumgärtel, "The Piracy Generation."
- 15 *Ibid.*, 199.
- 16 In an interview with *Criticine*, a film magazine centering on Southeast Asian cinema, Amir Muhammad expresses his sentiment about the VCD culture: "I think we all grew up watching Malaysian cinema to various degrees, but we are also of the generation that was very much exposed to cinema made in other countries. [...] Because we came of age with the pirated VHS in the eighties and the VCD in the nineties, I think our range of influences is wider. If it were not for these pirated things then we would have been stuck with what was brought here, which is extremely limiting." Benjamin McKay, "A Conversation with Amir Muhammad," *Criticine: Elevating Discourse on Southeast Asian Cinema* (October 13, 2005), accessed January 14, 2014, http://www.criticine.com/interview_article.php?id=18. Cited in Baumgärtel, "The Piracy Generation," 205.
- 17 *Ibid.*, 202.
- 18 Lisabona Rahman and Paul Agusta, "Gie: History, Propaganda, and Perception: A Conversation on Gie," *Criticine: Elevating Discourse on Southeast Asian Cinema* (October 20, 2005), accessed January 14, 2014, http://www.criticine.com/review_article.php?id=9.
- 19 Filmography of Benyamin Sueb, Film Indonesia Website, accessed January 20, 2014, http://filmindonesia.or.id/movie/name/nmp4b9bad4ce6a36_benyamin-s/filmography#.Ut2JQYUo_LY. Film communities such as the Society for the Appreciation of Benyamin S Films (KPBS) and Kineforum still use VCD as one of their primary formats for screening Indonesian films. The primary data concerning their practices was obtained by conducting non-structured interviews with Iwan Wabe of KPBS and Amalia Sekarjati of Kineforum.
- 20 *Intan Berduri*, 1972, directed by Turino Junaidy (Jakarta: Sarinande Films, 2002), VCD.
- 21 Iwan Wabe, personal discussion with the author on August 17, 2014.
- 22 *Ibid.* Their collection of authorized Benyamin S VCDs can be viewed here: Website of the Society for the Appreciation of Benyamin Sueb, <http://komunitaspenint-abenyaminsuaeb.blogspot.nl/p/galery-vcd-original-film-film-benyamin.html>, accessed January 13, 2014.
- 23 Original Indonesian: "[...] karena kami yang tergabung di KPBS ini merasa dengan menikmati film yang original kami sudah ikut menghargai hasil jerih payah insan perfilman di dalam membuat sebuah dokumentasi dalam karya sebuah

film dari tokoh yang kita idolakan.” Iwan Wabe, personal discussion with the author on August 17, 2014.

- 24 Amalia Sekarjati, Kineforum publicity staff, discussion with the author, June 5, 2014.
- 25 For an earlier observation on VCD as a disruptive technology based on Christensen’s concept, see David Bordwell, “Pandora’s Digital Box: From the Periphery to the Center, or the One of Many Centers,” *Observations on Film Art*, accessed January 12, 2014, <http://www.davidbordwell.net/blog/2012/01/11/pandoras-digital-box-from-the-periphery-to-the-center-or-the-one-of-many-centers/>.
- 26 Clayton M. Christensen, *The Innovator’s Dilemma: When New Technologies Cause Great Firms to Fail* (Boston, MA: Harvard Business Press, 1997), xv.
- 27 *Ibid.*
- 28 Wang, “VCD Killed the VHS Star.”

CHAPTER 11

- 1 *Motion Control Cinematography, American Cinematographer Manual*, 8th ed. (Hollywood, CA: ASC Press, 2001), 116-117.
- 2 Dominique Noguez, *Une Renaissance du cinéma: Le cinéma “underground” américain* (Paris: Paris Expérimental, 2002).
- 3 See, for instance, David Curtis, *Experimental Cinema: A Fifty-Year Evolution* (New York, NY: Universe Books, 1971), 49; A.L. Rees, *A History of Experimental Film and Video* (London: British Film Institute and Palgrave MacMillan, 1999), 57-58.
- 4 One exception is Carlos Bustamante, “The Bolex Motion Picture Camera,” in *Moving Images: From Edison to the Webcam*, eds. John Fullerton and Astrid Söderbergh Widding (London: John Libbey Publishing, 2000), 59-65, which discusses Maya Deren’s work in particular. By contrast, critics of video art have, it seems, connected “medium” and “message” from the start, from Rosalind Krauss’s essay “Video: The Aesthetics of Narcissism,” *October* 1 (Spring 1976): 50-64 to the more recent Yvonne Spielmann’s *Video: The Reflexive Medium* (Cambridge, MA: MIT Press, 2008).
- 5 See, for instance, Jan-Christopher Horak, ed., *Lovers of Cinema: The First American Film Avant-Garde 1919-1945* (Madison, WI: University of Wisconsin Press, 1995) or Jeffrey K. Ruoff, “Home Movies of the Avant-Garde: Jonas Mekas and the New York Art World,” in *To Free the Cinema: Jonas Mekas and the New York Underground*, ed. David James (Princeton, NJ: Princeton University Press, 1992), 294-311.
- 6 Leo Enticknap, *Moving Image Technology* (London: Wallflower Press, 2005), 20-41.
- 7 Scott MacDonald, *Cinema 16: Documents Toward a History of the Film Society* (Philadelphia, PA: Temple University Press, 2002).

- 8 Patricia Zimmermann, *Reel Families: A Social History of Amateur Film* (Bloomington, IN: Indiana University Press, 1995), 56.
- 9 James Card, "Perspectives and Prospects of 16mm Film," *Film Culture* 4, no. 2 (February 1958): 14.
- 10 Several 1950s print advertisements involved such movie stars as Linda Darnell, Bing Crosby, or Kim Novak, as a way to associate Bolex with Hollywood films.
- 11 See Zimmermann, *Reel Families*, 115-116.
- 12 A 1964 ad for the Bolex S-1 announced: "This is a camera that will make you lose your amateur status." Another 1964 ad stated: "Bolex doesn't think home movies should look like 'home movies'. Do you agree?" It went on: "Most home movies are sad. Not the type of sad that makes you cry—the type that bore you to tears... The Bolex S-1... just won't let you make a mistake." Examples available at Bolex collector, <http://www.bolexcollector.com/>.
- 13 Jonas Mekas, "Notes on the New American Cinema" [1962], in *Film Culture Reader*, ed. P. Adams Sitney (New York, NY: Cooper Square Press, 2000), 87-107.
- 14 See Maya Deren, "Magic Is New" [1946], "Planning by Eye: Notes on 'individual' and 'industrial' Film" [1947], and "Amateur versus Professional" [1959], in *Essential Deren: Collected Writings of Maya Deren* (Klingston: Documentext, 2005), 197-206, 152-162, and 17-18; Stan Brakhage, "In Defense of Amateur," in *Essential Brakhage: Selected Writings on Filmmaking by Stan Brakhage* (New York, NY: Documentext, 2001), 142-150; and Mekas, "Notes on the New American Cinema," 87-107.
- 15 Theodore Roszak, *The Making of A Counter Culture: Reflections on the Technocratic Society and Its Youthful Opposition* (Garden City, NY: Doubleday, 1969); and Sally Banes, *Greenwich Village 1963: Avant-Garde Performance and the Effervescent Body* (Durham, NC: Duke University Press, 1993), 114-115.
- 16 Brakhage, "In Defense of Amateur," 142-150; and Jonas Mekas, "8 mm. Cinema as Folk Art," in *Movie Journal: The Rise of a New American Cinema, 1959-1971* (New York, NY: Collier Books, 1972), 88.
- 17 Deren, "Planning by Eye," 161-162: "In the beginning of this article, I said that the methods of production which characterized my films derived from a theory of what a film should be and that therefore the means and the end was organically related. But imperceptibly I ended by saying that if one tries to function honestly as a private individual, rather than make pathetic efforts to imitate the industry in the methods of production, one will arrive at a certain creative attitude towards the medium. Perhaps the fact that whichever one starts with, one ends with the other, is the best indication of how irrevocably the means and the ends are interrelated and how much the end is realized—and I use the word in its original sense, 'to be made real'—by the means."
- 18 Deren, "Planning by Eye," 152.

- 19 Thierry Kuntzel, "Le Défilement," in *Cinéma: Théorie, lectures*, ed. Dominique Noguez (Paris: Klincksieck, 1978), 97-110.
- 20 Deren, "Planning by Eye," 161.

CHAPTER 12

- 1 Parts of this chapter will be published in German under the title "Carole und Brenda. Das Paradox des Stativs oder eine Archäologie des Amateurfilms," in *Archäologie des Amateurfilms*, eds. Sigfried Mattl, Carina Lesky, Vrääth Öhner, and Ingo Zechner (Vienna: FilmmuseumSynemaPublikationen, 2015), 58-70.
- 2 On the history of amateur film, see Patricia Zimmermann, *Reel Families. A Social History of Amateur Film* (Bloomington, IN: Indiana University Press, 1995); Heather Norris Nicholson, *Amateur Film: Meaning and Practice, c. 1927-77* (Manchester: Manchester University Press, 2012).
- 3 Erkki Huhtamo and Jussi Parikka, eds. *Media Archaeology. Approaches, Applications, and Implications* (Berkeley, CA: University of California Press, 2011); Jussi Parikka, *What Is Media Archaeology?* (Cambridge: Polity, 2012); Wanda Strauven, "Media Archaeology: Where Film History, Media Art, and New Media (Can) Meet," in *Preserving and Exhibiting Media Art. Challenges and Perspectives*, eds. Julia Noordeggraaf et al. (Amsterdam: Amsterdam University Press, 2013), 59-79.
- 4 Wanda Strauven and Michael Wedel, "Media Archaeology" (Unpublished lecture series held at the University of Amsterdam, Amsterdam, still ongoing).
- 5 Jean-Louis Baudry, "The Apparatus: Metapsychological Approaches to the Impression of Reality in the Cinema," in *Narrative, Apparatus, Ideology*, ed. Philip Rosen (New York, NY: Columbia University Press, 1986), 317.
- 6 Ryan Shand, "Theorizing Amateur Cinema. Limitations and Possibilities," *Moving Image. The Journal of the Association of Moving Image Archivist*, no. 8 (2008): 45.
- 7 Zimmermann, *Reel Families*, 57.
- 8 An example is Patrick Newberry's "How to Make a Tripod for Iphone," *YouTube* video, 1:38, January 1, 2011, www.youtube.com/watch?v=GOcSauUiR4s.
- 9 An example is Alishaloveslols's "I Got a Tripod!!," *YouTube* video, 3:19, August 4, 2012, www.youtube.com/watch?v=-XuZpb92nII.
- 10 Alexandra Schneider, "Das Kamerastativ," in *Das Wörterbuch kinematografischer Objekte*, eds. Marius Böttcher et al. (Berlin: August Verlag, 2014), 73-74.
- 11 *Ames Daily Tribune*, August 20, 1941, 9, accessed January 21, 2014, <http://www.newspapers.com/newspage/1763341/>.
- 12 Tim Wu, *The Master Switch: The Rise and Fall of Information Empires* (New York, NY: Knopf, 2010).

CHAPTER 13

- 1 Phillip Lopate, "Aesthetics of the Portapak," *Radical Software* 2, no. 6 (1974): 18.
- 2 As Lopate underlined, it is important to realize that the video system is strictly speaking not *a* media technology but rather an ensemble of complementary, mutually dependent media technologies. Nonetheless, portapak has been conceived explicitly as *a* media technology with an overarching term not related to one specific manufacturer necessarily.
- 3 Art curator and writer Will Bradley argued that the arrival of portapak and the magazine *Radical Software* were pivotal forces in the emergence of the video art scene in North America. See Will Bradley, "Turn On, Tune In," *Frieze Magazine*, no. 101 (2006): 160-163.
- 4 Lopate, "Aesthetics of the Portapak," 18.
- 5 *Ibid.*
- 6 *Ibid.*
- 7 Susan Aasman, "New Media Technologies and the Desire to Broadcast Yourself," in *Retelling Journalism: Conveying Stories in the Digital Age*, eds. Marcel Broersma and Chris Peters (Leuven: Peeters, 2014), 49.
- 8 *Ibid.*
- 9 Other manufacturers eventually developed their own portapak systems, such as Sanyo, Panasonic, Ampex, Shibaden, etc.
- 10 For a reflection on this issue in relation to early consumer radios, see Andreas Fickers, "Visibly Audible: The Radio Dial as Mediating Interface," in *The Oxford Handbook of Sound Studies*, eds. Trevor Pinch and Karin Bijsterveld (Oxford: Oxford University Press, 2012), 416-417.
- 11 Andreas Fickers, "'Neither Good, Nor Bad; Nor Neutral': The Historical Disposition of Communication Technologies," in *Journalism and Technological Change: Historical Perspectives, Contemporary Trends*, eds. Martin Schreiber and Clemens Zimmermann (Frankfurt am Main: Campus, 2014), 30-52.
- 12 Silverstone and Haddon developed the notion of pre-domestication as an addition to the canonical publication on media domestication edited by Roger Silverstone and Eric Hirsch. See Roger Silverstone and Eric Hirsch, eds., *Consuming Technologies: Media and Information in Domestic Spaces* (London: Routledge, 1992); and Roger Silverstone and Leslie Haddon, "Design and the Domestication of ICTs: Technical Change and Everyday Life," in *Communication by Design: The Politics of Information and Communication Technologies*, eds. Roger Silverstone and Robin Mansell (Oxford: Oxford University Press, 1996), 44-74.
- 13 For a canonical example, see Steve Woolgar, "Configuring the User: The Case of Usability Trials," in *Sociology of Monsters: Essays on Power, Technology, and Domination*, ed. John Law (London: Routledge, 1991), 58-97.

- 14 Deidre Boyle, "From Portapak to Camcorder: A Brief History of Guerrilla Television," *Journal of Film and Video* 44, no. 1-2 (1992): 67-79.
- 15 James M. Moran, *There Is No Place like Home Video* (Minneapolis, MN: University of Minnesota Press, 2002), 73.
- 16 Philip Sewell's recent exploration of the discursive imagination of early television's possible use and users serves as an important source of inspiration. He derives his notion of imagination from Brian Winston's concept of "ideation," which is part of the phase of invention. Although Winston regards "ideation" as utterances made by technologists to transform science into technology, Sewell goes beyond the technologists by also including popular, economic, political, and legal discourse. See Philip W. Sewell, *Television in the Age of Radio: Modernity, Imagination, and the Making of a Medium* (New Brunswick: Rutgers University Press, 2014); Carolyn Marvin, *When Old Technologies Were New: Thinking about Electric Communication in the Late Nineteenth Century* (New York, NY: Oxford University Press, 1988); and Brian Winston, *Media Technology and Society: A History from the Telegraph to the Internet* (London: Routledge, 1998).
- 17 Andreas Fickers and Annie van den Oever differentiate between four heuristic conceptions of "users" which are predominantly studied in media history: the configured user, the expert user, the amateur user, and the remembered user. Although they propose a research agenda that goes beyond the historical analysis of media technologies in terms of these four typologies, I nonetheless maintain that the "imagined user" deserves attention in media historical research as well. See Andreas Fickers and Annie van den Oever, "Experimental Media Archaeology," in *Technē/Technology: Researching Cinema and Media Technologies – Their Development, Use, and Impact*, ed. Annie van den Oever (Amsterdam: Amsterdam University Press, 2014), 281-282.
- 18 Media historians François Albera and Maria Tortajada specifically relate the notion of "conditions of possibility" to the discursive existence of a medium's *dispositif*. See François Albera and Maria Tortajada, eds., "Introduction to an Epistemology of Viewing and Listening Dispositives," in *Cinema Beyond Film: Media Epistemology in the Modern Age* (Amsterdam: Amsterdam University Press, 2010), 13.
- 19 See Marshall McLuhan, *The Gutenberg Galaxy: The Making of Typographic Man* (Toronto: University of Toronto Press, 1962), and *Understanding Media: The Extensions of Man* [1964] (Cambridge, MA: MIT Press, 1994).
- 20 Herbert Marcuse, *One Dimensional Man* [1964] (London: Sphere Books, 1970), 20.
- 21 David E. Nye, *Technology Matters: Questions to Live With* (Cambridge, MA: MIT Press, 2007), 27-28.
- 22 Frank Gillette, "Random Notes on the Special Case or (Loop-De-Loop)," *Radical Software* 1, no. 1 (1970): 6.

- 23 Nam June Paik, "Expanded Education for the Paperless Society," *Radical Software* 1, no. 1 (1970): 7.
- 24 Many contributors conceptualize the relation between man, society, media technologies, and the environment that constitutes them as an organic and un-hierarchical whole, as a "media ecology." For examples in *Radical Software*, see Gillette, "Random Notes," 6; and Raymond Arlo, "Media Ecology," *Radical Software* 1, no. 3 (1971): 19. For a thorough contemporary conceptual exploration of media ecology, see Matthew Fuller, *Media Ecologies: Materialist Energies in Technoculture* [2005] (Cambridge, MA: MIT Press, 2007).
- 25 Moran, *There Is No Place like Home Video*, 7.
- 26 This paragraph is part of a paper presented at the 2013 ISIS conference *Intermediality in the Digital Age* in Cluj-Napoca, Romania.
- 27 Dudley Evenson, "Portable Video: The Natural Medium," *Radical Software* 5, no. 1 (1972): 55.
- 28 *Ibid.*
- 29 Depending on the brand and battery pack, ranging between approximately 7 to 15 kg.
- 30 Evenson, "Portable Video," 56.
- 31 *Ibid.*
- 32 *Ibid.*
- 33 *Ibid.*, 57.
- 34 Lopate, "The Aesthetics of Portapak," 18-19.
- 35 *Ibid.*, 21.
- 36 Boyle, "From Portapak to Camcorder," 78.

CHAPTER 14

- 1 See Ansje van Beusekom, *Film en amusement: Reacties op film als een nieuw medium in Nederland, 1895-1940* (Haarlem: Arcadia, 2001).
- 2 For a long time it was thought that Christiaan Slieker had bought his kine-matograph from Oskar Messter. It was Deac Rossell who rectified Foesterling as the original manufacturer of the device in his extensive article "A Chronology of Cinema, 1889-1896," *Film History* 7, no. 2 (Summer 1995): 115-236.
- 3 As cited in Harm Nijboer and Asing Walthaus, *George Christiaan Slieker, 1861-1945: De eerste bioscoopondernemer in Nederland* (Leeuwarden: Perio, 1995), 13 [our translation].
- 4 Tom Gunning, "An Aesthetic of Astonishment: Early Film and the (In)Credulous Spectator," in *Viewing Positions: Ways of Seeing Film*, ed. Linda Williams (New Brunswick, NJ: Rutgers University Press, 1994), 118.
- 5 *Ibid.*

- 6 As cited in Nijboer and Walthaus, *George Christiaan Slieker*, 15 [our translation].
- 7 “In den tuin van Tivoli,” *Utrechtsch Nieuwsblad*, December 9, 1896 [our translation].
- 8 The operational aesthetic was an important part of fairground attractions during the 19th century. As Neil Harris describes in his biography of the American showman P.T. Barnum, this is “a delight in observing process and examining for literal truth,” in *Humbug: The Art of P.T. Barnum* (Chicago, IL: University of Chicago Press, 1973), 79.
- 9 Nijboer and Walthaus, *George Christiaan Slieker*, 29.
- 10 “Hoe de beelden en tafereelen van den kinematograaf ontstaan,” *Rotterdamsch Nieuwsblad*, December 20, 1897.
- 11 Maurice Merleau-Ponty, *Phenomenology of Perception*, trans. Colin Smith (New York, NY: Routledge, 2007), 239.
- 12 Rachel Zuckert, “Herder contra Kant on the Sublime,” *The Journal of Aesthetics and Art Criticism* 61, no. 3 (Summer 2003): 218.
- 13 Johann Gottfried von Herder, *Kalligone* (Weimar: H. Böhlhaus, 1955), 877-878.
- 14 Herder, *Kalligone*, 904.
- 15 Zuckert, “Herder contra Kant,” 219.
- 16 Herder, *Kalligone*, 898.
- 17 Jochen Schulte-Sasse, “Herder’s Concept of the Sublime,” in *Herder Today: Contributions from the International Herder Conference, Nov 5-8, 1987*, ed. Kurt Muel-ler-Vollmer (Berlin: de Gruyter, 1990), 274.
- 18 “De kermis,” *Leeuwarder Courant*, July 17, 1896 [our translation].
- 19 See Stephen Bottomore, “‘Nine Days’ Wonder: Early Cinema and Its Sceptics,” in *Cinema: The Beginnings and the Future*, ed. Christopher Williams (London: University of Westminster Press, 1996), 135-149.
- 20 Local scenes recorded on the day of the screening became a prime attraction during the earliest years of cinema.
- 21 Advertisement Slieker, *Leeuwarder Courant*, July 10, 1896 [our translation].
- 22 See Jaimie Baron, *The Archive Effect: Found Footage and the Audiovisual Experience of History* (London: Routledge, 2014) and Vivian Sobchack, “Toward a Phenomenology of Nonfictional Film Experience,” in *Collecting Visible Evidence*, eds. Jane M. Gaines and Michael Renov (Minneapolis, MN: University of Minnesota Press, 1999), 241-254.
- 23 Andreas Fickers and Annie van den Oever, “Experimental Media Archaeology: A Plea for New Directions,” in *Technē/Technology. Researching Cinema and Media Technologies – Their Development, Use and Impact*, ed. Annie van den Oever (Amsterdam: Amsterdam University Press, 2014), 272-278.
- 24 For an overview of the historical turn in film studies, see the special section “In Focus: Film History or a Baedeker Guide to the Historical Turn,” *Cinema Journal* 44, no. 1 (Fall 2004).

CHAPTER 15

- 1 The picture reproduced here is a detail from an advert in *Mededelingen van de Stichting Nederlandse Onderwijs Film* 1 (1953): 16.
- 2 Research on this topic has been conducted primarily in the US. See, for instance, Larry Cuban, *Teachers and Machines: The Classroom Use of Technology since 1920* (New York, NY: Teachers College Press, 1986), and Paul Saettler, *The Evolution of American Educational Technology*, 2nd ed. (Greenwich, CT: Information Age Publishing, 1990).
- 3 In some cases, among others in the Netherlands, this led to monopolization of the classroom film business.
- 4 For more on the organization of classroom film production and distribution in the Netherlands during and after World War II, see Eef Masson, *Watch and Learn: Rhetorical Devices in Classroom Films after 1940* (Amsterdam: Amsterdam University Press, 2012), 66-95. For information on the institutionalization of classroom film production and distribution elsewhere in Europe, see for instance Malte Ewert, *Die Reichsanstalt für Film und Bild in Wissenschaft und Unterricht (1934-1945)* (Hamburg: Verlag Dr. Kovac, 1998) [Germany]; Anita Gertiser, "Schul- und Lehrfilme," in *Schaufenster Schweiz: Dokumentarische Gebrauchsfilme 1896-1964*, ed. Yvonne Zimmermann (Zürich: Limmat, 2011), 383-471 [Switzerland]; Eef Masson, "Of Pits and Vaults: The Historiographic Value of Educational Collections in Great Britain," *The Moving Image* 2, no. 1 (2002): 47-72 [UK]; selected articles in Béatrice de Pastre-Robert, Monique Dubost and Françoise Massit-Folléa, eds., *Cinéma pédagogique et scientifique: À la redécouverte des archives* (Paris: ENS Éditions, 2004) [France]. Mark that I am discussing here, very specifically, the phenomenon of screening ready-made films rather than the production of films in class, which required another apparatus (the camera). For more on the introduction of the latter practice in (Dutch) schools, see for instance Bert Hogenkamp "Om scherp te stellen: Veranderingen bij de Nederlandse Onderwijs Film, 1958-1963," *Lessen* 4, no. 2 (2009): 8, or Cor Ottenheim, *50 jaar NOF/NIAM: Van stomme film naar interactieve media* (The Hague: Nederlands Instituut voor Audio-Visuele Media, 1991), 34-35.
- 5 Evidence of this can be found in the mission statements of distributors who argue that the films they offer or recommend precisely *circumvent* those issues (which, by implication, they consider to be real). For the broader argument, see for instance "Keuze van films voor het onderwijs," n.d., Dutch National Archives, The Hague, archive of the "Stichting Nederlandse Onderwijs Film," access no. 2.19.042.55, inv. no. 6, 1-2. (In the time that has passed since I consulted this collection, its access numbers have changed; a conversion list is available from archive personnel.) For the more specific one (on the processing of images along with sound), see C. Schreuder, *Het paedagogisch en didactisch gebruik van de film*

bij het lager onderwijs: Leidraad voor kwekelingen, rev. ed. (The Hague: Stichting Nederlandse Onderwijs Film, 1948), 13-14.

- 6 School cinemas were municipal film theaters (sometimes part of institutions with an educational remit, such as school museums) where local pupils gathered during school hours to watch specially compiled programs. They were established in the interwar years in various European cities.
- 7 H.C. Verkruijsen, *De Cultureele beteekenis van het lichtbeeld* (Amsterdam: Elsevier, 1924), quoted in J.J. van der Meulen, *Film en lichtbeeld bij het onderwijs: Een praktisch-didactische handleiding* (Baarn: Bosch en Keuning, 1951), 7 [my translation].
- 8 Again, it is the soothing words of distributors and proponents that confirm the pervasiveness of those concerns. See for instance *ibid.*, 7, and Schreuder, *Het paedagogisch en didactisch gebruik van de film*, 7.
- 9 In the Netherlands, Protestant groups in particular took a stand against cinema-going. Catholic associations, although dismissive of much of what was shown in commercial theaters, did not oppose to film viewing as such, and even considered classroom films a weapon in the war against bad taste. Later, some Protestant organizations followed suit. See, for instance, Eef Masson, "Teaching (with) Film: Shifts in 1950s Discourse on the Role of Film in Compulsory Education," in *Can We Learn Cinema? Knowledge, Training, the Profession* (Udine: Forum, 2013), 241-249.
- 10 The text of the advertisement translates as follows: "Many hundreds in use in Dutch schools, robustly built, very easy to use, low-priced."
- 11 See, for instance, Cuban, *Teachers and Machines*.
- 12 Larry Cuban, *How Teachers Taught: Constancy and Change in American Classrooms, 1880-1990*, 2nd ed. (New York, NY: Teachers College Press, 1993), 260-263, 268.
- 13 J.J. van der Meulen, "Geen revolutie, wel restauratie," *Christelijk Schoolblad*, October 9, 1941, 2 [my translation]. "The New School" (*de nieuwe school*) is a phrase used to refer to a broad set of reformist practices based on insights from then-recent sciences such as child psychology and pedagogy.
- 14 Another factor that was associated with unpredictable behavior was the possibility that children inferred meanings that the teachers—oftentimes less familiar with the film medium than their juniors—could not surmise.
- 15 For more on the issue of intellectual ownership, see Masson, *Watch and Learn*, 106-109.
- 16 The NOF first began to distribute sound films in 1954 (six items). However, it continued to turn out mute titles long after this, and as late as the early 1960s it still produced some films in two versions (with and without sound).
- 17 The sources I consulted are articles and reviews in educational magazines and trade union journals and the occasional small-gauge magazine, but above all retrospective accounts, obtained through interviews, by first-hand witnesses (both teachers and pupils). For examples and references, see Masson, *Watch and Learn*, 109-114.

- 18 See, for instance, Van der Meulen, *Film en lichtbeeld bij het onderwijs*, 99.
- 19 The NOF, among others, distributed puppet films for this purpose. They were intended for use in the lower years of primary school.
- 20 Evidence suggests that some form of permit or certificate could be obtained as late as 1957 (J.N. Schoonderbeek, interview with Ed van Berkel, September 22, 2007).
- 21 For sample references, see Masson, *Watch and Learn*, specifically pages 292-293 (note 27).
- 22 Again, see Van der Meulen, *Film en lichtbeeld bij het onderwijs*, 99.
- 23 Overuse was considered inappropriate also, as it would once again undermine the classroom film's true purpose (compare Schreuder, *Het paedagogisch en didactisch gebruik van de film*, 15, with Van der Meulen, *Film en lichtbeeld bij het onderwijs*, 95).
- 24 For sources that attest to the former condition, see Masson, *Watch and Learn*, 291 (note 17).
- 25 The terms used here are Tom Gunning's, from "Before Documentary: Early Nonfiction Films and the 'View' Aesthetic," in *Uncharted Territory: Essays on Early Nonfiction Film*, eds. Daan Hertogs and Nico de Klerk (Amsterdam: Nederlands Filmmuseum, 1997), 15.
- 26 The latter is stated in the unpublished and undated instruction booklet by the same name that accompanied the film [*NOF instructieboekje*, no. 14 (The Hague: Stichting Nederlandse Onderwijs Film, n.d.)].

CHAPTER 16

- 1 Another version of this text appeared in *Revista de História da Arte*, no. 19 (2014).
- 2 *Marijke van Warmerdam – Close by in the distance*. Museum Boijmans Van Beuningen, Rotterdam, October 29, 2011 to January 22, 2012.
- 3 Jaap Guldemon and Mark-Paul Meyer, "Marijke van Warmerdam: 'I Should See It,'" in *The Artist Interview for Conservation and Presentation of Contemporary Art: Guidelines and Practices*, eds. Lydia Beerkens et al. (Heijningen: Jap Sam Books, 2012), 139.
- 4 *Ibid.*, 143.
- 5 Erika Balsom, *Exhibiting Cinema in Contemporary Art* (Amsterdam: Amsterdam University Press, 2013), 12.
- 6 See Matilde Nardelli, "Moving Pictures: Cinema and Its Obsolescence in Contemporary Art," *Journal of Visual Culture* 8, no. 3 (2009): 243-264.
- 7 See Julia Noordegraaf, "Digitization," in *Encyclopedia of Aesthetics*, ed. Michael Kelly (Oxford: Oxford University Press, 2014), 401-404. For this debate from a film archival perspective, see Paolo Cherchi Usai et al., eds., *Film Curatorship: Archives*,

Museums, and the Digital Marketplace (Vienna: Austrian Film Museum/Synema, 2008) and Giovanna Fossati, *From Grain to Pixel: The Archival Life of Film in Transition* (Amsterdam: Amsterdam University Press, 2009).

- 8 Balsom, *Exhibiting Cinema*, 17
- 9 See, in particular, Nardelli, "Moving Pictures," and Balsom, *Exhibiting Cinema*.
- 10 Marijke van Warmerdam, quoted in the press release for her solo exhibition "Marijke van Warmerdam: Enkel, dubbel, dwars" [single, double, crosswise], Van Abbemuseum, Eindhoven, February 23 to April 13, 1997, accessed February 25, 2014, <http://alexandria.tue.nl/vanabbe/public/publiciteit/persberichten/1997/PersberichtNEDWarmerdam.pdf> [my translation].
- 11 Guldemon and Meyer, "Marijke van Warmerdam," 139.
- 12 *Ibid.*, 141.
- 13 *Ibid.*
- 14 *Ibid.*, 143.
- 15 Simona Monizza, "Stretching the Borders: Preserving the Installations of Marijke van Warmerdam," in *Work[s] in Progress: Digital Film Restoration Within Archives*, eds. Kerstin Parth, Oliver Hanley, and Thomas Ballhausen (Vienna: Synema, 2013), 74. However, Molleman still supplies artists, museums, and galleries with the 16mm film loop projection equipment he developed through his company Studio 2M, assisted by Seab Deuling. See <http://www.16mmfilmlooper.com/>. I am grateful to Ruud Molleman for explaining the details of the projector and filmlooper system to me in a personal conversation in Amsterdam on March 3, 2014.
- 16 Monizza, "Stretching the Borders," 69-70 and 73.
- 17 *Ibid.*, 77. In this chapter, Simona Monizza, collection specialist for experimental film at EYE Filmmuseum and responsible for the digitization of Van Warmerdam's films, describes the digitization process in great technical detail.
- 18 Guldemon and Meyer, "Marijke van Warmerdam," 144. However, this does not imply that the artist neglects the presence of the projection equipment; projection, screen, and equipment are all taken into account and, regardless of their physical location, should look good in exhibition setups. Personal communication to the author, October 17, 2014.
- 19 Quoted in Nicholas Cullinan and Tacita Dean, eds., *Film: Tacita Dean (The Unilever series)* (London: Tate, 2011), 73.
- 20 Fossati, *From Grain to Pixel*, 38.
- 21 For example, by the fall of 2012, all Dutch cinema theaters had transitioned to digital projection. "Cinema Digitaal," *NVB: Nederlandse Vereniging Bioscoopexploitanten*, accessed February 25, 2014, <http://www.nvbinfo centrum.nl/?id=2118>. See also David Bordwell, *Pandora's Digital Box: Films, Files, and the Future of Movies* (Madison, WI: Irvington Way Institute Press, 2012).
- 22 Tacita Dean, "Save Celluloid, for Art's Sake," *The Guardian*, February 22, 2011,

accessed February 28, 2014, <http://www.guardian.co.uk/artanddesign/2011/feb/22/tacita-dean-16mm-film>.

- 23 Dai Vaughan, "Lost in Translation? What Might Happen if Film Is Gone," The Unilever Series: Tacita Dean: Film, accessed February 25, 2014, [Http://www2.tate.org.uk/tacitadean/mount-analogue/hotspot-4/item-3/](http://www2.tate.org.uk/tacitadean/mount-analogue/hotspot-4/item-3/).
- 24 Dai Vaughan, "From Today, Cinema Is Dead," in *For Documentary: Twelve Essays* (Berkeley, CA: University of California Press, 1999), 181-192.
- 25 Tom Gunning, "What's the Point of an Index? or, Faking Photographs," *Nordicom Review* 25, no. 1-2 (2004): 40.
- 26 Gunning, "What's the Point," 40.
- 27 *Ibid.*, 46.
- 28 *Ibid.*, 47. Gunning refers to André Bazin's famous essay "The Ontology of the Photographic Image," in *What Is Cinema?*, vol. 1 (Berkeley, CA: University of California Press, 1967), 9-16, and to Roland Barthes, *Camera Lucida: Reflections on Photography*, trans. Richard Howard (New York, NY: Hill & Wang, 1981).
- 29 See Stephan Oettermann, *The Panorama: History of a Mass Medium* (New York, NY: Zone Books, 1997).
- 30 Alex V. Cook, "Nam June Paik's *Zen for Film*," *Alex V. Cook*, March 10, 2008, accessed February 28, 2014, <http://alexvcook.blogspot.nl/2008/03/nam-june-paiks-zen-for-film.html>.
- 31 Michaela Unterdörfer, "Meaningful Nothings," in *Marijke van Warmerdam – Close by in the distance: A Catalogue Raisonné (1989-2011)*, ed. Marente Bloemheugel (Cologne: Walther König, 2011), 11.
- 32 As in Joost Zwagerman, "Beschouwing: De tentoonstelling Dichtbij in de verte van Marijke van Warmerdam," *De Volkskrant*, December 21, 2011, accessed March 3, 2014, <http://www.volkskrant.nl/vk/nl/2844/Archief/archief/article/detail/3085686/2011/12/21/Beschouwing-De-tentoonstelling-Dichtbij-in-de-verte-van-Marijke-van-Warmerdam.dhtml>.
- 33 Lynne Cooke, "B(e)aring Meaning," in *Marijke van Warmerdam: Single, Double, Crosswise*, ed. Marente Bloemheugel (Eindhoven: Van Abbemuseum, 1997), 8.

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CHAPTER 17

- 1 See in particular Luke McKernan, "'Something More Than a Mere Picture Show': Charles Urban and the Early Non Fiction Film in Great Britain and America, 1897-1925" (PhD diss., Birkbeck College, University of London, 2003); Eirik Frisvold Hanssen, *Early Discourses on Colour and Cinema: Origins, Functions, Meanings* (Stockholm: Acta Universitatis Stockholmiensis, Stockholm Cinema Studies, 2006). Also worth mentioning are D.B. Thomas's pamphlet, *The First Colour Motion Pictures* (London: Her majesty's Stationery Office, A Science Museum

Monograph, 1969); and Gorham Kindem's important study, "The Demise of Kinemacolor: Technological, Legal, Economic, and Aesthetic Problems in Early Color Cinema History," *Cinema Journal* 20, no. 2 (Spring 1981): 3-14.

- 2 See Nicola Mazzanti, "Raising the Colours (Restoring Kinemacolor)," in *This Film Is Dangerous: A Celebration of Nitrate Film*, ed. Roger Smither (Brussels: FIAF, 2002), 123-125; Victoria Jackson, "Reviving the Lost Experience of Kinemacolor: David Cleveland and Brian Pritchard," *Journal of British Cinema and Television* 7 (2010): 147-159.
- 3 George Albert Smith, Improvements in & relating to Kinematograph Apparatus for the Production of Coloured Pictures, British patent 26,671, filed November 24, 1906, and issued July 25, 1907. The patent was revoked by Order of the High Court on April 26, 1915.
- 4 Outside Great Britain, other companies produced Kinemacolor films. On international licenses and patents, see McKernan, "Something More," 161-170. On the Kinemacolor Company of America particularly, see also Kindem, "The Demise of Kinemacolor," 9-12, and Eileen Bowser, *The Transformation of Cinema 1907-1915: History of the American Cinema*, vol. 2 (New York, NY: Charles Scribner's Sons, 1990), 228-233.
- 5 On these aspects, see McKernan, "Something More," 133-135.
- 6 The Kinemacolor projector from the Cinémathèque Française collections belongs to this type. It is described in Laurent Mannoni, *Le Mouvement continué: Catalogue illustré de la collection des appareils de la Cinémathèque française* (Paris: Cinémathèque française-Mazzotta, 1996), 383-384.
- 7 Thomas, *The First Colour Motion Pictures*, 20. He adds: "For New York, where motor driven machines were apparently against regulations in 1910, a specially geared machine was produced which could be turned by hand without too much fatigue."
- 8 *The Glories of Nature Permanently Recorded by the Action of Light Only: Handbook of Cameras, Projectors and Appliances for Reproducing and Perpetuating the World's Events in Natural Colors* (London: The Natural Color Kinematograph Co, 1910), 35.
- 9 Smith, "Improvement," 1.
- 10 Thomas, *The First Colour Motion Pictures*, 4-11.
- 11 George Albert Smith, "Animated Photographs in Natural Colours," *Journal of the Royal Society of Arts* 57 (1908): 73.
- 12 Smith, "Improvement," 1.
- 13 Smith, "Animated Photographs," 73.
- 14 *The Glories of Nature*, 53.
- 15 Thomas, *The First Colour Motion Pictures*, 20.
- 16 McKernan, "Something More," 128.
- 17 *The Glories of Nature*, 38.

- 18 Gilbert Simondon, *Du mode d'existence des objets techniques* [1958] (Paris: Aubier, 1989), 12 [my translation].
- 19 This is the subject of my "Le naturel et le mécanique: le Kinémacolor à la conquête de Paris, ou Charles Urban vs. Charles Pathé," 1895. *Revue d'histoire du cinéma* 71 (2014): 81-105.
- 20 See, for instance, Colin N. Bennett et al., *The Handbook of Kinematography: The History, Theory, and Practice of Motion Photography and Projection* (London: The Kinematograph Weekly, 1913), 302; John B. Rathburn, *Motion Picture Making and Exhibiting* (Chicago, IL: Charles C. Thompson, 1914), 218.
- 21 Frederick A. Talbot, *Moving Pictures: How They Are Made and Worked* (London: William Heinemann, coll. Conquests of Science, 1912), 298.
- 22 Herbert T. Kalmus, "Technicolor Adventures in Cinemaland," *Journal of the Society of Motion Pictures Engineers* 31 (December 1938), also printed in Raymond Fielding, ed., *A Technological History of Motion Pictures and Television: An Anthology from the Pages of the Journal of the Society of Motion Picture and Television Engineers* (Berkeley, CA: University of California Press, 1967), 52-59.
- 23 Bennett, *The Handbook of Kinematography*, 303.
- 24 Bowser, *The Transformation of Cinema*, 228.
- 25 On the epistemological implications of the concept of problem, see my *Inventer le cinéma. Épistémologie: problèmes, machines* (Lausanne: L'Âge d'Homme, 2014)—on Kinémacolor in particular, 203-223.
- 26 "In *Shutter Interface*, Sharits wanted 'to create a metaphor of the basic intermittency mechanism of the cinema: the shutter.'" Chrissie Iles, *Into the Light: The Projected Image in American Art 1964-1977* (New York, NY: Whitney Museum of American Art, 2002), 144.

CHAPTER 18

- 1 On the intermedial history of the process in the early twentieth century, see Jeremy Aynsley, "Pochoir Prints: Publishing the Designed Interior," in *Moderne: Fashioning the French Interior*, ed. Sarah Schleuning (New York, NY: Princeton Architectural Press, 2008), 8-19.
- 2 On the emergence of cinematic color, see Joshua Yumibe, *Moving Color: Early Film, Mass Culture, Modernism* (New Brunswick, NJ: Rutgers University Press, 2012). Regarding stenciling, see also Jacques Marette, "Les procédés de coloriage mécanique des films," *Bulletin de l'association française des ingénieurs et techniciens du cinéma* 7 (1950): 3-8; and Marcel Ruot and Louis Didié, "The Pathé Kinematograph Colour Process," *The Photographic Journal* 65, no. 3 (March 1925): 121-126.
- 3 *Ibid.*, 48.

- 4 See Yumibe, *Moving Color*, 84.
- 5 See Ruot and Didiée, "The Pathé Kinematograph Colour Process," 124.
- 6 "Procès-verbal de la séance du conseil d'administration," preserved at the Fondation Jérôme Seydoux-Pathé, Paris; see entries March 26, 1903 and May 2, 1903. It is important to note that *pochoir* is not mentioned in these early 1903 entries, and the reference to mechanical coloring could possibly refer to other color processes concurrently under development. However, the term *pochoir* is rarely used in the minutes during the first decade of the 1900s, even in direct reference to the stenciling machines of Joseph Florimond and Jean Méry discussed below, and stenciling is instead almost always referred to at this time as "machine" or "mechanical" coloring.
- 7 See Ruot and Didiée, "The Pathé Kinematograph Colour Process," 122.
- 8 For an illustration, see Louis Didiée, "La méthode de coloris 'Pathécolor,'" *Bulletin de la Société Française de Photographie* 7 (July 1925): 150-159.
- 9 Yumibe, *Moving Color*, 85; "Procès-verbal," October 12, 1906, 289. Curiously enough, in France, the device was patented directly by Pathé (Compagnie Générale de Phonographes, Cinématographes et Appareils de Précision), and it was only on the Canadian patent (CA107858, filed May 20, 1907 and granted October 8, 1907) that Florimond's name appears, along with Pathé.
- 10 Yumibe, *Moving Color*, 85-86; "Procès-verbal," December 28, 1906, 301.
- 11 Yumibe, *Moving Color*, 125-130.
- 12 Lev Manovich, *The Language of New Media* (Cambridge, MA: MIT Press, 2001), 304.
- 13 See "Meet the Colourist," *FilmLight*, accessed February 3, 2014, <http://www.film-light.ltd.uk/customers/meet-the-colourist/meet-the-colourist.php>.

CHAPTER 19

- 1 Harald Jossé, *Die Entstehung des Tonfilms, Beitrag zu einer faktenorientierten Medien-geschichte* (Freiburg: Karl Alber Verlag, 1984), 101.
- 2 "The other German film producers did not stay idle in the meantime, but soon began to produce Tonbilder films and devices for the recording and playback of Tonbilder films, which were similar to the apparatuses made by Messter and Gaumont" [my translation]. Martin Koerber, "Filmfabrikant Oskar Messter. Stationen einer Karriere," in *100 Jahre Kino, Oskar Messter – Filmpionier der Kaiserzeit. Katalog zur Ausstellung*, ed. Martin Loiperdinger (Frankfurt am Main: Stroemfeld, Roter Stern, 1994), 52.
- 3 For an overview of early sound systems, see Rick Altman, *Silent Film Sound* (New York, NY: Columbia University Press, 2004), 157-178.
- 4 Jossé, *Die Entstehung des Tonfilms*, 101. Today, only a few Tonbilder films survive in film archives. Recently a preservation project supervised by Martin Koerber

- and Dirk Förstner at the Deutsche Kinemathek undertook the restoration of five Tonbilder films, which were presented at the film festival *Il Cinema Ritrovato* in Bologna in 2012. In 2014, the Deutsches Filminstitut preserved and presented 14 Tonbilder of its collection (see <http://deutsches-filminstitut.de/wp-content/uploads/2011/06/Tonbilder102014.pdf>, accessed October 2014).
- 5 The first patent is dated February 19, 1903 (Messter's Projektion GmbH. Einrückvorrichtung für synchron laufende Serienapparate und Tonwiedergeber. German Reich Patent 145,780, issued February 19, 1903). After a few changes, a second patent was issued (Messter's Projektion GmbH. Antriebsvorrichtung für Verbindungen von Phonographen und Kinematographen mit einem Kollektor und zwei in einem Stromkreis liegenden Elektromotoren für die Einzelapparate. German Reich Patent 154,372, issued April 9, 1903).
 - 6 The patent drawing is illustrated in Loiperdinger, ed., *100 Jahre Kino, Oskar Messter – Filmpionier der Kaiserzeit*, 117.
 - 7 See Christian Ilgner and Dietmar Linke, "Filmtechnik – Vom Maltesekreuz zum Panzerkino," in *100 Jahre Kino, Oskar Messter – Filmpionier der Kaiserzeit*, 117.
 - 8 As explained by Paul Read and Mark-Paul Meyer: "Sound film was standardized at 24 frames per second. [...] Twenty-four frames (equivalent to 456 mm/second) was the minimum length necessary for reproducing an optical sound track capable of recording and reproducing frequencies up to 5000 cycles per second, which was considered necessary to obtain realistic sound reproduction quality." Paul Read and Mark-Paul Meyer, *Restoration of Motion Picture Film* (Oxford: Butterworth-Heinemann, 2000), 26.
 - 9 For a discussion of the problem of the speed of early cinema, see Kevin Brownlow, "Silent Films: What Was the Right Speed?," *Sight and Sound* (Summer 1980): 164–167.
 - 10 Jossé, *Die Entstehung des Tonfilms*, 69–70.
 - 11 The clear distinction between performative arts and mass media—the former is based on the concept of liveness and the second on mediatized reproduction—is challenged in recent theories. Performance theorist Philip Auslander argues that there is a mediatized dimension in performing arts. See Philip Auslander, *Liveness. Performance in a Mediatized Culture* [1999], 2nd ed. (London: Routledge, 2008). Similarly, it is possible to recognize a performative dimension in reproducible media, such as cinema. In film theory, an interest in the concept of performance has recently emerged, thanks to the work of some film theorists and historians, such as Rick Altman and Vinzenz Hediger. See Rick Altman, ed., "General Introduction: Cinema as Event," in *Sound Theory/Sound Practice* (New York, NY: Routledge, 1992), 1–14; and Vinzenz Hediger, "Original, Work, Performance: Film Theory as Archive Theory," in *Quel che brucia (non) ritorna - What Burns (Never) Returns: Lost and Found Films*, eds. Giulio Bursi and Simone Venturini (Udine: Campanotto Editore, 2011), 44–56.

- 12 *Ibid.*
- 13 Messter's Projektion GmbH. Verfahren zur Aufnahme und Wiedergabe von sprechenden lebenden Bildern mittels eines Phonographen und eines Kinematographen. German Reich Patent 200,469, issued April 29, 1906.
- 14 See Jossé, *Die Entstehung des Tonfilms*, 76.
- 15 *Ibid.*, 69.
- 16 *Ibid.*, 70.
- 17 See Albert Narath, "Oskar Messter and His Work," in *A Technological History of Motion Pictures and Television: An Anthology from the Pages of the Journal of the Society of Motion Pictures and Television Engineers*, ed. Raymond Fielding (Berkeley, CA: University of California Press, 1967), 115. The theater was located at Unter den Linden, 21.
- 18 The use of the term "actor" is inspired by actor-network theory. See Bruno Latour, *Science in Action: How to Follow Scientists and Engineers Through Society* (Milton Keynes: Open University Press, 1987).
- 19 Frank Kessler, "Notes on *Dispositif*" (unpublished media research seminar paper, Utrecht, the Netherlands, November 2007), accessed May 2013, <http://www.let.uu.nl/~frank.e.kessler/personal/Dispositif%20Notes11-2007.pdf>.
- 20 Jean-Louis Baudry, "The Apparatus: Metapsychological Approaches to the Impression of Reality in the Cinema," in *Narrative, Apparatus, Ideology*, ed. Philip Rosen (New York, NY: Columbia University Press, 1986), 317.

CHAPTER 20

- 1 Richard Corliss, "A Conversation with George Lucas," *Time*, March 14, 2006, <http://content.time.com/time/arts/article/0,8599,1173216,00.html>.
- 2 For an outline of early digital developments in sound, see the 1997 BKSTS Bernard Happé Memorial lecture by Dion Hanson of Dolby Laboratories: "The History of Sound in the Cinema," *Cinema Technology* (July/August 1998), <http://www.cinematologymagazine.com/pdf/dion%20sound.pdf>.
- 3 The DCI group defined itself as "an entity created by seven motion picture studios: Disney, Fox, Metro-Goldwyn-Mayer, Paramount Pictures, Sony Pictures Entertainment, Universal Studios, and Warner Bros" to set a uniform standard for digital cinema. See *Digital Cinema Specification v.1.0* (Hollywood, CA: Digital Cinema Initiatives, LLC, 2005), 5, http://www.dcinovies.com/archives/spec_v1/DCI_Digital_Cinema_System_Spec_v1.pdf.
- 4 This is the resolution of the DCDM "container" or Digital Cinema Package (DCP), from which theaters project. The compression standard mandated was JPEG2000. See *Digital Cinema Specification*, 22.

- 5 Single digital projectors initially cost around €60,000, or four times the costs of 35mm projectors, with the likelihood that they would need much more frequent upgrading and replacement.
- 6 See Jeffrey Ressnar interview with Christopher Nolan, "The Traditionalist," *Directors Guild of America Quarterly* (Spring 2012), <http://www.dga.org/Craft/DGAQ/All-Articles/1202-Spring-2012/DGA-Interview-Christopher-Nolan.aspx>; also Quentin Tarantino's contribution to a roundtable discussion in *The Hollywood Reporter*, November 28, 2012, <http://www.hollywoodreporter.com/news/ben-af-fleck-quentin-tarantino-4-394576>.
- 7 The invited filmmakers included Ron Howard, Martin Scorsese, Oliver Stone, Robert Zemeckis, and Steven Spielberg, with James Cameron, Francis Coppola, and Robert Rodriguez showing extracts from their recent films. See the interview with George Lucas, "Exploring a New Universe," *American Cinematographer* (September 2002), accessed at <http://www.theasc.com/magazine/sep02/exploring/page3.html>.
- 8 Recognizing the high cost of conversion to digital, a consortium of the major distributors proposed to co-fund exhibitors' expenditure by contributing a "virtual print fee" for each digital booking, which is paid to a third-party "integrator." For an overview of the whole digital adoption process, see David Bordwell's blog post, "Pandora's Digital Box: In the multiplex," (2011-2013) at <http://www.davidbordwell.net/blog/2011/12/01/pandoras-digital-box-in-the-multiplex/>.
- 9 Around 6 percent of all viewings in the UK in 2011, according to the report *Opening Our Eyes: How Film Contributes to the Culture of the UK* (Great Britain: Northern Alliance with Ipsos MediaCT, 2011).
- 10 On exhibitors' rejection of 3D in the 1950s, see my chapter "Will the 3D Revolution Happen?," in *Technē/Technology*, ed. Annie van den Oever (Amsterdam: Amsterdam University Press, 2014), 115-135.
- 11 Filmmakers concerned about the long-term survival of their work insist on "separation masters" being created on film, which when correctly stored remain the only known quasi-permanent form of storage. This amounts to a reverse form of the Technicolor three-strip process. See Giovanna Fossati, *From Grain to Pixel: The Archival Life of Film in Transition* (Amsterdam: Amsterdam University Press, 2009), 286.
- 12 John Ellis's analysis of *A MATTER OF LIFE AND DEATH* in my *Powell, Pressburger and Others* (London: British Film Institute, 1978) is an exception, referring as it does to a particular copy of the film held by the UK National Film Archive. So, too, in Charles Barr's comparison of the sound and silent versions of Hitchcock's *BLACKMAIL*; see Charles Bar, "Blackmail: Silent and Sound," *Sight & Sound* 52, no. 2 (1983): 122. But even the exceptionally detailed analyses of Hitchcock's films by Raymond Bellour, collected in Constance Penley, ed. *The Analysis of Film* (Bloomington, IN: Indiana University Press, 2001) do not refer to any features of the particular copies studied.

- 13 Peter Wollen referred to this in his praise for Bellour's collection: "When so much writing about film is based on overall impressions or shadowy memories, on notes scribbled in the dark or published shot breakdowns that are often overgeneralized or even inaccurate, it is refreshing to be confronted with such scholarly work, characterized by a genuinely attentive eye and a punctilious observation of detail." Quoted at <http://www.amazon.com/The-Analysis-Film-Raymond-Bellour/dp/0253213649>.
- 14 Among many, two illustrate this phase: notably Rudolf Arnheim, "The Sad Future of Film" [1930], collected in his *Film Essays and Criticism* (Madison, WI: University of Wisconsin Press, 1997), 11-13; and Kenneth Macpherson, editor of *Close Up*, in various editorials c. 1929, quoted in James Donald, Anne Friedberg, and Laura Marcus, eds., *Close Up 1927-1933: Cinema and Modernism* (Princeton, NJ: Princeton University Press, 1998), 80.
- 15 E.g., Cinemascope films of the early 1960s; 70mm production of the late 1960s and 1970s.
- 16 A much quoted phrase from the preface to E.P. Thompson, *The Making of the English Working Class* (London: Victor Gollancz, 1963).
- 17 See interview with the Warner Home Video executive George Feltenstein about HOW THE WEST WAS WON: *Movieweb*, <http://www.movieweb.com/news/exclusive-george-feltenstein-talks-how-the-west-was-won>.
- 18 BRAZIL was first released by Criterion in 1996 as a five-disc laserdisc set, with three versions of the film, but is now available as a DVD and Blu-ray set, with 142 min and 94 min versions.
- 19 This reaction took place within the industry—see Ian Christie and Nico Simon, "Foreword," in *Europa Cinemas: Digital Guide* (Paris: Europa Cinemas, 2005). Among many academic discussions, see David Rodowick, *The Virtual Life of Film* (Cambridge, MA: Harvard University Press, 2007).
- 20 Walter Benjamin, "The Work of Art in the Age of Mechanical reproducibility," in *Selected Writings Vol. 4: 1938-1940* (Cambridge, MA: Harvard University Press, 2003).
- 21 See Harold Brown obituary, Luke McKernan, "Harold Brown RIP," *The Bioscope*, November 17, 2008, <http://thebioscope.net/2008/11/17/harold-brown-rip/>.
- 22 See Kemp R. Niver, *Early Motion Pictures: The Paper Print Collection in the Library of Congress* (Washington, DC: Library of Congress, 1986).
- 23 Paolo Cherchi Usai, *Silent Cinema: An Introduction* (London: British Film Institute, 2000), 21. On the Desmet collection, see Ivo Blom, *Jean Desmet and the Early Dutch Film Trade* (Amsterdam: Amsterdam University Press, 2003); and on the Mitchell and Kenyon collection, see Vanessa Toulmin, *Electric Edwardians: The Story of the Mitchell and Kenyon Collection* (London: British Film Institute, 2006).
- 24 The American avant-garde filmmaker and theorist Hollis Frampton characterized film as "the last machine" in his 1971 essay "For a Metahistory of Film," in *Circles*

of Confusion: Film, Photography, Video Texts 1968-1980 (Rochester, NY: Visual Studies Workshop Press, 1983), 113. I borrowed this as the title of my 1994 BBC television series and associated book on the origins of cinema.

- 25 THE SOLDIER'S COURTSHIP (1896) was restored by the Cineteca Nazionale on the basis of materials from the Portuguese Cinematheque and shown at the Porde-
none Giornate del Cinema Muto, 2012.

CHAPTER 21

- 1 More on the history of Geyer Werker can be found here: Martin Koerber, "Die Filmfabrik. Eine Firmengeschichte der Geyer-Werke," in *Nahaufnahme Neukölln*, eds. Frank Arnold et al. (Berlin: Argon, 1989), 112-153. Reprinted in Klaus M. Boese et al., *Zur Geschichte des Filmkopierwerks / A Short History of Cinema Film Post Production. Weltwunder der Kinematographie*, vol. 8 (Potsdam: Polzer Media, 2006), 133ff. A website about the early days of Geyer based on my research is accessible online at <http://www.fruehe-filmtechnik.221b.de/index1e35.html?id=39> (accessed December 2013).
- 2 "Karl Geyers Werk," *Film-Kurier*, July 15, 1936 [my translation]. Original quote: "dass die Verquickung von theatermäßigem Filmbetrieb mit seinem ausgesprochen künstlerischen oder auch nur bohemehaften Niveau dem streng industriellen und technischen Schaffen bei der Film-Fertigbearbeitung in höchstem Grade abträglich sei."
- 3 *25 Jahre Dienst am Deutschen Film* (Berlin: Geyer-Werke KG, 1936).
- 4 *Geyer-Werke AG, Chronik*, vol. 6 (1934-1935), unpublished chronicle stored at the Archive Deutsche Kinemathek [my translation]. The full quote about the machine reads: "Als technische Neuheit ist besonders die neue Doppelkopiermaschine REKORD zu nennen, eine Hochleistungs-Kopiermaschine, die seit geraumen Monaten in der Geyer Geyer Maschinen- und Apparatebau konstruiert, technisch entwickelt und fertiggestellt worden war. Sie sollte den doppelten Kopierprozeß des zweimaligen Bild- und Tonkopierens hintereinander vermeiden und bei einmaligem Durchlauf sowohl Bild als auch Ton auf den Rohfilm aufkopieren."
- 5 The museum of the Deutsche Kinemathek was opened in 2000 and has yet to show even one piece of postproduction equipment to this day.

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CHAPTER 22

- 1 This chapter refers in part to some passages of my book: *Histoire(s) du cinéma de Jean-Luc Godard: la force faible d'un art* (Paris: L'Harmattan, 2006).

- 2 André Habib, "Mémoire d'un achèvement. Approches de la fin dans les Histoire(s) du cinéma, de Jean-Luc Godard," *CiNéMAS* 13, no. 3 (Spring 2003): 9-31. Here Habib quotes Maurice Blanchot, *L'Amitié* (Paris: Gallimard, 1951), quoted in *Histoire(s) du cinéma*, chapter 4b à 34'26 (Japanese Editions: Imagica) [my translation].
- 3 Commissioned by the French National Audiovisual Institute (Institut National de l'Audiovisuel). The series was broadcast on the French TV channel FR3 from July 25 to August 29, 1976.
- 4 The French television channel Antenne 2 broadcasted the series well after its completion, in April 1980.
- 5 Jean-Luc Godard, *Cahiers du cinéma*, no. 336 (1982): 66.
- 6 Antoine de Baecque, *Godard* (Paris: Grasset, 2010), 605 [my translation].
- 7 Jean-Luc Godard and Youssef Ishagpour, *Cinema: The Archaeology of Film and the Memory of a Century*, trans. John Howe (Oxford and New York: Berg, 2005).
- 8 Chapter 3a, 23'37"-25'50".
- 9 Laura Mulvey, *Death 24x a Second – Stillness and the Moving Image* (London: Reaktion Books, 2006), 24.
- 10 Jacques Aumont, *Amnésies. Fictions du cinéma d'après Jean-Luc Godard* (Paris: P.O.L., 1999), 241-242.
- 11 Robert Bresson, *Notes on Cinematography*, trans. Jonathan Griffin (New York, NY: Urizen Books, 1977), 50.
- 12 Chapter 3a, 23'37"-25'50".
- 13 Godard and Ishagpour, *Cinema: The Archaeology of Film and the Memory of a Century*.
- 14 Bresson, *Notes on Cinematography*, 3.
- 15 Georges Bataille, "Sartre" [1947], in *Œuvres complètes XI: Articles I: 1944-1949* (Paris: Gallimard, 1988), 226. Cited by Georges Didi-Huberman, *Images in Spite of All: Four Photographs from Auschwitz*, trans. Shane B. Lillis (Chicago, IL: University of Chicago Press, 2008), 27-28.

CHAPTER 23

- 1 See David A. Cook, *A History of Narrative Film* (New York, NY: W.W. Norton & Company, 1990), 64.
- 2 "D.W. Griffith: Producer of All Great Biograph Successes, Revolutionizing Motion Picture Drama and Founding the Modern Technique of Art," *The New York Dramatic Mirror* 70, no. 1823 (26 November 1913): 26, and repeated in the following issue no. 1824 (3 December 1913): 36.
- 3 Linda Arvidson (Mrs. D.W. Griffith), *When the Movies Were Young* [1925] (New York, NY: Dover Publications, 1969), 66.

- 4 In which he claims, possibly following Arvidson, that Griffith was the first to use cut-ins to closer framings for dramatic effect. See Terry Ramsey, *A Million and One Nights: A History of the Motion Picture* [1926] (New York, NY: Simon and Schuster, 1964), 508-509.
- 5 See, among many others, Noël Burch, *La lucarne de l'infini: Naissance du langage cinématographique* (Paris: Nathan, 1991), 186ff; Tom Gunning, *D.W. Griffith and the Origins of American Narrative Film* (Chicago, IL: University of Illinois Press, 1994); and several of the contributions in Thomas Elsaesser and Adam Barker, eds., *Early Cinema: Space, Frame, Narrative* (London: British Film Institute, 1990).
- 6 Jean-Louis Comolli, "Profondeur de champ: la double scène," *Cahiers du cinéma* 21, no. 231 (August-September 1971): 49.
- 7 Rollin Summers, "The Moving Picture Drama and the Acted Drama: Some Points of Comparison as to Technique," *Moving Picture World* 3, no. 12 (19 September 1908): 213.
- 8 Cf. Barry Salt, *Film Style and Technology: History and Analysis* (London: Starword, 1983), 89.
- 9 *Moving Picture World* 8, no. 15 (15 April 1911): 815.
- 10 John M. Bradlet (J.M.B.), "The Size of the Picture," *Moving Picture World* 8, no. 10 (11 March 1911): 527.
- 11 *Ibid.*
- 12 *Ibid.*
- 13 "On Filming a Classic," *Nickelodeon* 5, no. 1 (7 January 1911): 4.
- 14 Charles Musser, *Before the Nickelodeon: Edwin S. Porter and the Edison Manufacturing Company* (Berkeley, CA: University of California Press, 1991), 264-265.
- 15 Reviewer [sign.], "Views of the Reviewer," *New York Dramatic Mirror* 68, no. 1761 (18 September 1912): 24-25.
- 16 *Ibid.*, 25. This specific sentence could be understood as polemical against the competitor *Moving Picture World*. As a rule, *New York Dramatic Mirror* featured more positive comments than *Moving Picture World* did (though there are exceptions).
- 17 "The Factor of Uniformity," *Moving Picture World* 5, no. 4 (24 July 1909): 115.
- 18 *Ibid.*, 116.
- 19 *Ibid.*
- 20 The dubious teleological implications notwithstanding, I use the term "transitional" for the period between early and classical cinema, although reluctantly and for sheer pragmatic reasons, since it is so well-established.
- 21 See e.g., Yuri Tsivian, *Early Cinema in Russia and Its Cultural Reception* [1991], rev. ed., trans. Alan Bodger (London: Routledge, 1994), 196-198; Ben Brewster and Lea Jacobs, *Theatre to Cinema: Stage Pictorialism and the Early Feature Film* (Oxford: Oxford University Press, 1997), 164-174. "Legitimate theater" here refers, of course, to the American term to designate the "serious," non-vaudeville type of theater.

- 22 Felix Salten, "Zu einem Kinodramen, Anmerkungen," *Dresdner Neueste Nachrichten*, April 27, 1913, quoted in Brewster and Jacobs, *Theatre to Cinema*, 167.
- 23 H.F. Hoffman, "Cutting Off the Feet," *Moving Picture World* 12, no. 1 (6 April 1912): 53.
- 24 The debate on closer framings and the four keywords derived from it is the topic of a book of mine (published in Swedish), where each keyword is given much more attention. The length of this essay does not allow for more than mentioning them. See Jan Holmberg, *Förtätade bilder: Filmens närbilder i historisk och teoretisk belysning* (Stockholm: Aura förlag, 2000).
- 25 Yhcam [sign.], "La Cinématographie considérée au point de vue théâtrale," *Ciné-Journal* 5, no. 193 (4 May 1912): 16.
- 26 See Janet Staiger, "The Eyes Are Really the Focus: Photoplay Acting and Film Form and Style," *Wide Angle* 6, no. 4 (Fall 1984): 15; Eileen Bowser, "Acting: The Camera's Closer View," in *The Transformation of Cinema 1907–1915* (New York, NY: Charles Scribner's Sons, 1990), 93; Gunning, *D.W. Griffith and the Origins of American Narrative Film*, 107; and James Naremore, *Acting in the Cinema* (Berkeley, CA: University of California Press, 1988), 38.
- 27 See Roberta Pearson, *Eloquent Gestures: The Transformation of Performance Style in the Griffith Biograph Films* (Berkeley, CA: University of California Press, 1992), 154–156.
- 28 Marvin as paraphrased in Lillian Gish and Ann Pinchot, *The Movies, Mr. Griffith and Me* (Englewood Cliffs, NJ: Prentice-Hall, 1970), 60.
- 29 Mary Pickford claims the statement is about her. See Mary Pickford, *Sunshine and Shadow* (Garden City, NY: Doubleday & Company, 1955), 123–124.
- 30 "Comments on the Films," *Moving Picture World* 14, no. 11 (14 December 1912): 1081–1082.
- 31 See Béla Balázs, *Early Film Theory. Visible Man and The Spirit of Film* [1924/1930], ed. Erica Carter (New York, NY: Berghahn Books, 2010); Jean Epstein, "Magnification" [1921], trans. Stuart Liebman, *October* 3 (Spring 1977); Ingmar Bergman, "Varje film är min sista film" [Each Film Is My Last], *Filmnyheter* 14, no. 9–10 (19 May 1959).
- 32 Hugo Münsterberg, *The Photoplay: A Psychological Study* [1916], reprinted as *The Film: A Psychological Study* (New York, NY: Dover Publications, 1970), 91.
- 33 *Ibid.*, 38.

CHAPTER 24

- 1 The concept of *dispositif* understood in this way was introduced into film theory by Jean-Louis Baudry in the 1970s. See Jean-Louis Baudry, "The Apparatus: Metapsychological Approaches to the Impression of Reality in the Cinema," in *Narra-*

tive, Apparatus, Technology, ed. Philip Rosen (New York, NY: Columbia University Press, 1986), 299-318. In English, “*dispositif*” is commonly translated as “apparatus.” For reasons why it is preferable to keep the French expression, see Frank Kessler, “Notes on *Dispositif*,” 2007, <http://www.frankkessler.nl/wp-content/uploads/2010/05/Dispositif-Notes.pdf>. For a historical pragmatic perspective on *dispositif*, see Frank Kessler, “The Cinema of Attractions as *Dispositif*,” in *The Cinema of Attractions Reloaded*, ed. Wanda Strauven (Amsterdam: Amsterdam University Press, 2006), 57-69. With regard to the transition from celluloid to the digital, the concept of *dispositif* is also used by Giovanna Fossati in her book *From Grain to Pixel* (Amsterdam: Amsterdam University Press, 2009).

- 2 See CNC: Centre national du cinéma et de l'image animée, *Results 2010*, by Éric Garandeau, ed., CNC Report # 318 (Paris: CNC, 2011), 100 [part 9: exhibition], accessed April 5, 2013, <http://www.cnc.fr/web/en/publications/-/ressources/133765>. See also FFA: Filmförderungsanstalt | German Federal Film Board, *Entwicklungen der Kinostandorte, Spielstätten und Kinosäle 2008 bis 2010* (Berlin: FFA, 2011), accessed November 15, 2012, http://www.ffa.de/downloads/marktdaten/4_1_Standorte/08_bis_10_jahresabschluss.pdf. For the Netherlands, see the press release by Cinema Digital on December 1, 2010: “Nederland koploper in Europa: alle Nederlandse bioscopen en filmtheaters digitaal in 2012,” Cinema Digitaal, accessed October 1, 2014, <http://www.cinemadigitaal.nl/persberichten.aspx>.
- 3 See CNC: Centre national du cinéma et de l'image animée, *Results 2011*, by Éric Garandeau, ed., CNC Report #322 (Paris: CNC, 2012), 114-115 [part 9: exhibition], accessed April 5, 2013, <http://www.cnc.fr/web/en/publications/-/ressources/1830606;jsessionid=D845D5162955FD21A104C64E7D9E71DB.liferay>, and *Results 2012*, CNC Report #326 (Paris: CNC, 2013), 116/117, accessed August 21, 2013, <http://www.cnc.fr/web/en/publications/-/ressources/3610918>. For Germany, see FFA: Filmförderungsanstalt | German Federal Film Board, “Digitaler Kinobestand,” in *Struktur der Kinosäle in der Bundesrepublik Deutschland 2003 bis 2011* (Berlin: FFA, 2012), 49, accessed April 5, 2013, http://www.ffa.de/downloads/publikationen/kinosaele_brd_2003_2011.pdf. For the Netherlands, see Cinema Digitaal, accessed October 1, 2014, <http://www.cinemadigitaal.nl/persberichten.aspx>. For the US, see, for example, Samantha Murphy, “Movies Replace Film by 2015,” *TechNewsDaily*, November 18, 2011, 5, accessed April 5, 2013, http://www.scientificamerican.com/article.cfm?id=digital-movies-to-replace-film-by-2015&WT.mc_id=SA_CAT_TECH_20111122. Different data are given by *European Cinema Journal Media Salles* (August 2012), accessed April 5, 2012, http://www.mediasalles.it/journal/ecj2_12ing.pdf.
- 4 “All Cinemas in the Netherlands are to become digital by 2012, at a cost of \$50.5m (€38m), it was announced today.” This headline by Sarah Cooper (“All Dutch Cinemas to be Digital by 2012,” *Screen Daily*, December 6, 2010, accessed October

- 1, 2014, <http://www.screendaily.com/news/digital/all-dutch-cinemas-to-be-digital-by-2012/5021311.article>) became reality in September 2013. See “Dutch Cinemas Become 100% Digital,” *Film Journal International* (October 2012), accessed April 5, 2013, http://www.filmjournal.com/filmjournal/content_display/news-and-features/news/digital-cinema/e3i5949f5b47c97611182377a5d96020559. For Norway, see *European Cinema Journal Media Salles*, http://www.mediasalles.it/journal/ecj2_12ing.pdf, for the UK, see <http://www.cinema.uk.org.uk/facts-and-figures/uk-cinema-sites-and-screens/uk-digital-sites-and-screens-2000-2013/>, accessed October 1, 2014.
- 5 Michael Karagosian, “Update on the Digital Cinema Rollout,” *mkpe.com*, April 2013, accessed August 20, 2013, <http://mkpe.com/publications/d-cinema/presentations/NAB-TSC2013-Karagosian-Cinema-Rollout-w-text.pdf>. Cf. also Michael Karagosian, “A Review of Digital Cinema,” *mkpe.com*, May 11, 2012, accessed August 20, 2013, <http://mkpe.com/publications/d-cinema/presentations/2012-5-11%20ABCine%20Digital%20Cinema%20Review%20-%20Karagosian.key.pdf>. Michael Karagosian is president of MKPE Consulting and SMPTE Fellow.
 - 6 Another profession is dying as well: the laboratories specialized in producing prints.
 - 7 David N. Rodowick, *The Virtual Life of Film* (Cambridge, MA: Harvard University Press, 2007), 86.
 - 8 André Gaudreault and Philippe Marion, *The Kinematic Turn. Film in the Digital Era and Its Ten Problems* (Montreal: Caboose, 2012), 7.
 - 9 Other contributions to these discussions come from Dudley Andrew, *What Cinema Is* (Oxford: Wiley-Blackwell, 2010); Jacques Aumont, *Que reste-t-il du cinéma?* (Paris: Vrin, 2012); Raymond Bellour, *La Querelle des dispositifs. Cinéma – installation, exposition* (Paris: P.O.L., 2012); Philippe Dubois, et al., eds, *Où c’est du cinéma. Formes et espaces de l’image en mouvement / Yes It’s Cinema. Forms and Spaces of the Moving Image* (Pasian di Prato: Campanotto, 2009); or the special issue “Relocation” of *Cinéma & Cie* 11 (2008). One should not forget, on the other hand, that for someone like René Barjavel in 1944, liberation from the “flat ribbon that is called film” simply was a necessary step to be taken towards a future “total cinema.” See René Barjavel, *Cinéma total* (Paris: Denoël, 1944), 51.
 - 10 See Boleslas Matuszewski, “A New Source of History,” *Film History* 7, no. 3 (1995): 322-324; André Bazin, “The Ontology of the Photographic Image,” in *What Is Cinema?* (Montreal: Caboose, 2009), 3-12; Stanley Cavell, *The World Viewed* (Cambridge, MA: Harvard University Press, 1971).
 - 11 See, among others, Rodowick, *The Virtual Life of Film*, and also Paul Frosh, “Digital Technology and Stock Photography: And God Created Photoshop,” in *Image Ethics in the Digital Age*, eds. Larry Gross, John Stuart Katz, and Jay Ruby (Minneapolis, MN: University of Minnesota Press, 2003), 183-216; Tom Gunning,

- "Moving Away from the Index: Cinema and the Impression of Reality," *differences: A Journal of Feminist Cultural Studies* 18, no. 1 (2007): 29-52; Frank Kessler, "What You Get Is What You See: Digital Images and the Claim on the Real," in *Digital Material. Tracing New Media in Everyday Life and Technology*, eds. Marianne van den Boomen et al. (Amsterdam: Amsterdam University Press, 2009), 187-197; Jean-Luc Liout, *À l'enseigne du reel: Penser le documentaire* (Aix-en-Provence: Publications de l'Université de Provence, 2004).
- 12 But often they have to book their seats far in advance, as is generally the case with high-class theater performances.
 - 13 The champagne might not be found everywhere, however. See, for instance, Kay Armatage, "Operatic Cinematics: A New View from the Stalls," in *Audiences*, ed. Ian Christie (Amsterdam: Amsterdam University Press, 2012), 218-224.
 - 14 See Kira Kitsopaniidou, "Electronic Delivery of Alternative Contents in Cinemas before the Digital Era: The Case of *Theater Television* in the US Exhibition Market in the 1940s and 1950s," *Mise au point. Cahiers de l'association française des enseignants chercheurs en cinéma et audiovisuel* 4 (2012), <http://map.revues.org/775>. See also Douglas Gomery, *Shared Pleasures. A History of Movie Presentation in the United States* (Madison, WI: University of Wisconsin Press, 1992), 131-134.
 - 15 *Ibid.*, 295-296.
 - 16 See FFA: Filmförderungsanstalt | German Federal Film Board, *Der Kinobesucher 2012* (Berlin: FFA, 2012), accessed September 27, 2013, http://www.ffa.de/downloads/publikationen/kinobesucher_2012.pdf.
 - 17 See Francesco Casetti, "Filmic Experience," *Screen* 50, no. 1 (2009): 56-66, and "Back to the Motherland: The Film Theatre in the Postmedia Age," *Screen* 52, no. 1 (2011): 1-12.
 - 18 Casetti, "Filmic Experience," 62-63.
 - 19 Raymond Bellour, "The Cinema Spectator: A Special Memoir," in *Audiences*, 206.
 - 20 Aumont, *Que reste-t-il du cinéma?*, 82.
 - 21 *The Collins Paperback English Dictionary* (Glasgow: William Collins Sons & Co. Ltd., 1986), 730. See also Fossati, *From Grain to Pixel*, who argues that the shift from analog to digital should be seen as a transition rather than a revolution.
 - 22 There are several issues here that we will not go into, such as the risk that programs in commercial theaters may become increasingly uniform at the expense of productions that deviate from the mainstream, or the role of digitized archival films.
 - 23 Roger Odin, *Les espaces de communication* (Grenoble: Presses Universitaires de Grenoble, 2011), 39.
 - 24 The fictionalizing reading is not the only one that can be produced within the physical space of a film theater. Depending on the program, (S) and (R) can be pushed to produce meaning along the lines of a documentarizing reading, a reading in terms of art, etc. It is important not to confuse a communication space with a physical space.

- 25 But again, we have to insist on the fact that there are historical and cultural differences even with regard to the social space called cinema. In Italy or the Netherlands, there is an intermission somewhere in the middle of every feature film, something a French cinephile might consider intolerable. Moviegoing in certain parts of India also appears to be an experience that differs radically from Western viewing habits. See Lakshmi Srinivas, "The Active Audience: Spectatorship, Social Relations and the Experience of Cinema in India," *Media, Culture & Society* 24, no. 2 (2002): 155-173.

CHAPTER 26

- 1 Samuel Goldwyn, "Cinema – Birthday of the Revolution," *Time* 62, no. 15 (1953): 110.
- 2 For a positive argument about the technology's expressive potential, see, for example, Owen Weetch, *Images in Depth: Spectacle, Narrative and Meaning Construction in Contemporary 3D Cinema* (PhD thesis, University of Warwick, 2013). For a condemnation, see Mark Kermode, "No, Your Eyes Aren't Deceiving You – 3D Really Is a Con," *The Guardian*, April 11, 2010, accessed February 6, 2014, <http://www.theguardian.com/commentisfree/2010/apr/11/3d-avatar-hollywood>; and Roger Ebert, quoting from a letter by Walter Murch, "Why 3D Doesn't Work and Never Will. Case Closed," *Roger Ebert's Journal*, January 23, 2011, accessed February 6, 2014, <http://www.rogerebert.com/rogers-journal/why-3d-doesnt-work-and-never-will-case-closed>.
- 3 Ian Christie, "Will the 3D Revolution Happen? A Brief Perspective on the Long History of Stereoscopy (with special thanks to Eisenstein and Bazin)," in *Technē/Technology*, ed. Annie van den Oever (Amsterdam: Amsterdam University Press, 2013), 115.
- 4 *Ibid.*, 128.
- 5 *Ibid.*, 116.
- 6 André Bazin, "La révolution par le relief n'a pas eu lieu," *Radio, Cinéma, Télévision* 324 (April 1, 1956). Republished in English: "The 3D Revolution Did Not Take Place," in *André Bazin's New Media*, ed. and trans. Dudley Andrew (Oakland, CA: University of California Press, 2014), 258-264.
- 7 André Bazin, "Un nouveau stade du cinéma en relief: le relief en equations," *Radio, Cinéma, Télévision* 131 (July 20, 1952). Republished in English: "A New Stage in the Process: Math Equations for 3D," in *André Bazin's New Media*, 235-242.
- 8 As discussed by Christie during a 2013 symposium held at EYE Filmmuseum Netherlands: Ian Christie, "Will the 3D Revolution Happen?" (paper presented at the Workshop on Film & Media Technologies: The Film Archive as a Research Laboratory, Amsterdam, the Netherlands, December 12, 2013).

- 9 Following an early period of enthusiasm, recent box-office charts show a sobering tendency, according to which the ratio of 3D revenue to 2D revenue is in decline. Notwithstanding the higher ticket price of a 3D screening, in 2010 the ratio reached a tipping point where screenings in 3D and 2D made the same profit (Kristin Thompson, "Has 3D Already Failed? The Sequel, Part One: RealDlighted," *Observation on Film Art*, January 20, 2011, accessed February 6, 2014, <http://www.davidbordwell.net/blog/2011/01/20/has-3d-already-failed-the-sequel-part-one-realdlighted/>). The tendency did not change between 2011 and 2013, when 3D revenues had hit new low-water marks (Brent Lang, "'Gravity' Represents 'Turning Point' for 3D at the Box Office, Analyst Says," *The Wrap*, October 10, 2013, accessed February 6, 2014, <http://www.thewrap.com/gravity-represents-turning-point-3d-box-office-analyst-says/>).
- 10 For economy-focused arguments, see Kermode, "No, Your Eyes Aren't Deceiving You," and Ebert, "Why 3D Doesn't Work"; for a technical approach, see Barbara Flueckiger, "Aesthetics of Stereoscopic Cinema," *Projections* 6, no. 1 (2012): 101-122; for cognitive considerations, see Weetch, *Images in Depth*; Murch in Ebert, "Why 3D Doesn't Work"; for ideological motivations, see Sergei M. Eisenstein, "Du cinéma en relief [1946]," in *Eisenstein: le mouvement de l'art*, eds. Naum Kleiman and François Albera (Paris: Editions du Cerf, 1986), 97-158.
- 11 David N. Rodowick, *The Virtual Life of Film* (Cambridge, MA: Harvard University Press, 2007), 27-28.
- 12 On the psychology of the collective viewing experience, see Julian Hanich, "Watching a Film with Others: Towards a Theory of Collective Spectatorship," *Screen* 55, no. 3 (2014): 338-359.
- 13 Even though Thomas A. Edison and William Dickson's Kinetoscope was invented in 1881, years before the Lumière brothers patented their Cinématographe, it did not prevail as mass entertainment, partly because of its social exclusion operating as a single viewer device.
- 14 There is already a "movie" called ZERO POINT, which is the first 3D, 360-degree film for the Oculus Rift.
- 15 Christie, "Will the 3D Revolution Happen?," 134.
- 16 Thomas Elsaesser, "The 'Return' of 3-D: On Some of the Logics and Genealogies of the Image in the Twenty-First Century," *Critical Inquiry* 39 (Winter 2013): 221.
- 17 Jesko Jockenhövel, "What Is It if It's Not Real? It's Genre – Early Color Film and Digital 3D," *Cinemascope* 15 (January-June 2011): 10.
- 18 Ryan Pierson, "Research Provocation: A New Haptical Cinema," *Stereoscopic Media*, October 10, 2013, accessed August 13, 2014, <http://www.stereoscopicmedia.org/?p=421>.
- 19 Brendan Rooney, Ciarán Benson, and Eilis Hennessy, "The Apparent Reality of Movies and Emotional Arousal: A Study Using Physiological and Self-Report Measures," *Poetics* 40 (2012): 405-422.

- 20 Brendan Rooney and Eilis Hennessy, "Actually in the Cinema: A Field Study Comparing Real 3D and 2D Movie Patrons' Attention, Emotion, and Film Satisfaction," *Media Psychology* 16, no. 4 (2013): 454.
- 21 *Ibid.* The fact that this study was limited to data collection from only one film (Kenneth Branagh and Joss Whedon's 2011 *THOR*) may temper its finding's general validity.
- 22 Frank Rose, "Movies of the Future," *The New York Times*, June 22, 2013, accessed February 7, 2014, http://www.nytimes.com/2013/06/23/opinion/sunday/movies-of-the-future.html?_r=0.
- 23 Tom Gunning, "The Cinema of Attraction: Early Film, Its Spectator and the Avant-Garde," in *Film Theory: An Introduction*, eds. Robert Stam and Toby Miller (New York, NY: John Wiley and Sons, 2000), 229-235.
- 24 *Ibid.*, 233.
- 25 Wendy Mitchell, "As 3D Novelty Wears Off, Some Experts Call for More Extreme Uses," *Screen Daily*, March 25, 2012, accessed February 7, 2014, <http://www.screendaily.com/news/digital/as-3d-novelty-wears-off-some-experts-call-for-more-extreme-uses/5039712.article#>.
- 26 The expression "uncanny valley" refers to a sudden drop in viewers' felt comfort, empathy, and familiarity while seeing something unnatural but overly realistic. See Stephen Prince's cinematic contextualization of the term, originally coined by roboticist Masahiro Mori in 1970: Stephen Prince, *Digital Visual Effects in Cinema: The Seduction of Reality* (New Brunswick, NJ: Rutgers University Press, 2012), 121-126; Masahiro Mori, "The Uncanny Valley," *Energy* 7, no. 4 (1970): 33.
- 27 Adrian Pennington and Carolyn Giardina, "'Gravity' Stereo Supervisor Reveals How 3D Was Used to Put Sandra Bullock in Space," *The Hollywood Reporter*, October 10, 2013, accessed February 7, 2014, <http://www.hollywoodreporter.com/behind-screen/gravity-stereo-supervisor-reveals-how-647234>.
- 28 David Bordwell, "'Dial M for Murder': Hitchcock Frets Not at His Narrow Room," *Observation on Film Art*, September 7, 2012, accessed February 7, 2014, <http://www.davidbordwell.net/blog/2012/09/07/dial-m-for-murder-hitchcock-frets-not-at-his-narrow-room/>.
- 29 Bazin, "La révolution par le relief," 4. Or see the English version; *André Bazin's New Media*, 263.
- 30 See the 3D versions of Herzog's 2010 *CAVE OF FORGOTTEN DREAMS*, Wenders's 2011 *PINA*, or Gondry's 2011 *THE GREEN HORNET* as well as our empirical research (and a forthcoming paper) about the differences in viewership as to *THE GREEN HORNET*'s 2D and 3D versions: Miklós Kiss, David Hayes, and Brendan Rooney, "Attention, Memory, and Narrative Attribution: Comparing 2D and 3D Film Viewing Using Eye-Tracking and Self-report Measures" (forthcoming).

- 31 “Chris Parks Delivers the Goods on ‘Gravity’ 3D,” *3D Focus*, October 14, 2013, accessed February 7, 2014, <http://www.3dfocus.co.uk/3d-news-2/3d-film/chris-parks-delivers-the-goods-on-gravity-3d/13840>.

CHAPTER 26

- 1 Janet Harbord, *The Evolution of Film: Rethinking Film Studies* (Cambridge: Polity, 2007), 142.
- 2 Note from the editor: Please note that in December 2014 the EYE Basement and the Panorama installation have been renamed, the names are the EYE Panorama and the 360° installation, respectively.
- 3 The short film clips were digitized from EYE’s collection through the Images for the Future project and are played back through an onsite server via Mac mini computers installed in the ceiling. Images for the Future began in 2007, and consisted of photographs, radio content, films, and television programs from throughout the twentieth century, all of which were made available to educational, cultural, and creative industries online and through other research platforms. This project resulted in the digitization of 91,183 hours of video, 22,086 hours of film, 98,734 hours of audio, and 2.5 million photos. This project also established an infrastructure for future digitization projects within the Netherlands.
- 4 “Film ist. 1-6,” [gustavdeutsch.net](http://www.gustavdeutsch.net), <http://www.gustavdeutsch.net/index.php/en/films-a-videos/117-film-ist-1-6.html>. Sections 1 to 6 are titled “Movement and Time,” “Light and Darkness,” “An Instrument,” “Material,” “The Blink of an Eye,” and “A Mirror.” These sections were followed by five more sections, completed in 2002: “Comic,” “Magic,” “Conquest,” “Writing and Language,” “Emotions and Passion,” and “Remembering and Document.” The most recent addition to this project, *FILM IST. A GIRL AND A GUN*, a film drama in five parts, was released in 2009.
- 5 Christopher Zimmerman, “*Film ist. A Continuum*. Found Footage, The Archive, Collaboration,” *Christopher Zimmerman: View from the Corner* [blog], June 27, 2014, <http://cmzimmermann.blogspot.com/2014/06/film-ist-continuum-found-footage.html?q=gustav>.
- 6 *Ibid.*, n.p.
- 7 “Film ist. 1-6.”
- 8 Paolo Cherci Usai et al., *Film Curatorship: Museums, Curatorship and the Moving Image* (Vienna: Austrian Film Museum Books, 2008), 175.
- 9 Erika Balsom, *Exhibiting Cinema in Contemporary Art* (Amsterdam: Amsterdam University Press, 2013), 16. See also Jean-Louis Baudry, “The Apparatus: Metapsychological Approaches to the Impression of Reality in Cinema,” in *Narrative, Apparatus, Ideology: A Film Theory Reader*, ed. Philip Rosen, trans. Jean Andrews and Bertrand Augst (New York, NY: Columbia University Press, 1986), 299-318.

- 10 Adrian Martin, "Turn the Page: From Mise en scène to Dispositif," Screening the Past, <http://www.screeningthepast.com/2011/07/turn-the-page-from-mise-en-scene-to-dispositif/>.
- 11 Giovanna Fossati, "Found Footage Filmmaking, Film Archiving and New Participatory Platforms," in *Found Footage: Cinema Exposed* (Amsterdam: EYE Film Institute Netherlands and Amsterdam University Press, 2011), 178.
- 12 Erika Balsom, "Around The Clock: Museum and Market," *Framework: The Journal of Cinema and Media* 54, no. 2 (2013): 177-191.
- 13 EYE Film Institute Netherlands, *Welkom! in de basement van eye* (Amsterdam: EYE Film Institute Netherlands, 2013). Translation from Dutch to English by author: "Kijk rond in het Panorama en vind voorbeelden van een zwart-wit, een met de hand ingekleurde, een film gekleurd in een kleurenbad en een echte kleuren-film."
- 14 Jason Malone, in discussion with the author, November 22, 2012.
- 15 Harbord, *The Evolution of Film*, 142.
- 16 Malone, n.p.
- 17 *Ibid.*, n.p.
- 18 Giovanna Fossati, *From Grain to Pixel: The Archival Life of Film in Transition* (Amsterdam: Amsterdam University Press, 2009), 128.

CHAPTER 28

- 1 Kubelka claims that he had the idea for the Invisible Cinema in 1958 but did not succeed in getting it constructed until 1970. Peter Kubelka, "The Invisible Cinema," *Design Quarterly. Special Issue on Film Spaces*, no. 93 (1974): 32-36. According to film scholar Sky Sitney, daughter of Anthology Film Archives founder P. Adams Sitney, the IC was built by Giorgio Cavaliere and funded by the art patron Jerome Hill. Sky Sitney, "In Search for the Invisible Cinema," *Grey Room* 19 (Spring 2005): 102-113. On the role of Jerome Hill, see Peter Decherney, *Hollywood and the Culture Elite. How the Movies Became American* (New York, NY: Columbia University Press, 2005).
- 2 Quoted from Vincent Canby, "Now You Can See Invisible Cinema," *The New York Times*, November 29, 1970, 1, 38.
- 3 Quoted from Sitney, "In Search for the Invisible Cinema," 103.
- 4 Giuliana Bruno makes a convincing case for considering Frederick Kiesler's Film Guild Cinema in New York City (built in 1929) with its absorptive architecture to be a precursor of the IC. Giuliana Bruno, *Atlas of Emotion. Journeys in Art, Architecture and Film* (London: Verso, 2002), 45-47. At the time, Kiesler's cinema was advertised as "100% cinema." Quoted from David J. Skal, *Hollywood Gothic. The Tangled Web of Dracula from Novel to Stage to Screen*, rev. ed. (New York, NY: Faber

- and Faber, 2004), 148. Kubelka himself mentions another precursor of the IC: “Historically, the closest thing to it was the black tent which cinema distributors used right after the invention of film. They just had a black tent with seats in it.” Kubelka, “The Invisible Cinema,” 35.
- 5 The Berlin version was called “black box” and differed insofar as it only had room for one viewer at a time. However, the website of the library cites the IC as the model. “Cinemathek,” Zentral- und Landesbibliothek Berlin, accessed December 1, 2013, www.zlb.de/fachinformation/spezialbereiche/cinemathek/black-box-das-einpersonen kino.html#c5071.
 - 6 This information derives from a personal email by Anna Carey, member of the marketing and communications department of the Whitney Museum, sent on January 6, 2014.
 - 7 In my research I have been trying to pay greater attention to the various *collective film experiences* that different types of cinema bring forth among its co-present viewers. See, for instance, the chapter “Multiplexperiences. Individualized Immersion and Collective Feelings,” in *Cinematic Emotion in Horror Films and Thrillers. The Aesthetic Paradox of Pleasurable Fear* (New York, NY: Routledge, 2010).
 - 8 Kubelka, “The Invisible Cinema,” 32.
 - 9 Quoted from Sitney, “In Search for the Invisible Cinema,” 103.
 - 10 Kubelka, “The Invisible Cinema,” 32.
 - 11 Ironically, according to Ken Kelman this goal was not reached fully due to the construction of the seats: “the black hood overhead had a shine. That was a little distracting, because right in front of me was this shine that didn’t exactly reflect the movement of the screen. Anything more or less at eye level, you’re going to see, and so the Invisible Cinema was not invisible.” Quoted from Sitney, “In Search for the Invisible Cinema,” 106.
 - 12 Tom Gunning, “Film Studies,” in *The Sage Handbook of Cultural Analysis*, eds. Tony Bennett and John Frow (London: Sage, 2008), 194.
 - 13 Canby, “Now You Can See Invisible Cinema,” 38.
 - 14 Kubelka, “The Invisible Cinema,” 32.
 - 15 Alexander Horwath in a personal conversation.
 - 16 For an earlier attempt to discipline an audience in a similar way, see Linda Williams, “Learning to Scream,” in *Horror, the Film Reader*, ed. Mark Jancovich (London: Routledge, 2002).
 - 17 Kubelka, “The Invisible Cinema,” 34 [my italics].
 - 18 Quoted from Howard Thompson, “Silence Says a Lot for Film Archives,” *The New York Times*, December 4, 1970, 55. Ken Kelman, one of the founding members of the Anthology Film Archives, equally stresses the theater’s efficiency in preventing verbal disturbance: “it discouraged people from talking to the person next to them, and in those terms of counteracting certain disturbances the theater largely succeeded.” Quoted from Sitney, “In Search for the Invisible Cinema,” 106.

- 19 Frank Kessler, "Viewing Pleasures, Pleasuring Views. Forms of Spectatorship in Early Cinema," in *Film – Cinema – Spectator: Film Reception*, eds. Irmbert Schenk, Margrit Tröhler, Yvonne Zimmermann (Marburg: Schüren, 2010), 61-73.
- 20 I thank the anonymous reviewer of my essay for bringing this point to my attention.
- 21 Canby, "Now You Can See Invisible Cinema," 38.
- 22 Sitney, "In Search for the Invisible Cinema," 108.
- 23 *Ibid.*, 109. Consider also Ken Kelman's description on the same page: "The dozing off phenomenon, I believe, if I'm not mistaken, can be attributed to a psychological rather than a physiological effect. I think that people in the isolation of this little booth—a kind-of womb-like thing—sort of had a tendency to drowse off a little more than they would have normally."
- 24 Cf. David Bordwell and Kristin Thompson, *Film History. An Introduction*, 2nd ed. (New York, NY: McGraw-Hill, 2003), 594; Bruno, *Atlas of Emotion*, 47; and David A. Cook, *Lost Illusions. American Cinema in the Shadow of Watergate and Vietnam 1970-1979* (Berkeley, CA: University of California Press, 2000), 454.
- 25 Decherney, *Hollywood and the Culture Elite*, 198.
- 26 Bruno, *Atlas of Emotion*, 47.
- 27 J. Hoberman and Jonathan Rosenbaum, *Midnight Movies* (New York, NY: Da Capo, 1991), 25.
- 28 Quoted from Kubelka, "The Invisible Cinema," 32.
- 29 Julian Hanich, "Watching a Film with Others. Towards a Theory of Collective Spectatorship," *Screen* 55, no. 3 (2014): 338-359.
- 30 Decherney, *Hollywood and the Culture Elite*, 199.
- 31 Quoted from Stefan Pethke and Stefanie Schlüter, "Sammeln und Vermitteln. Filmmuseen im Film," *Kunst der Vermittlung*, accessed February 12, 2014, <http://www.kunst-der-vermittlung.de/dossiers/filmvermittlung-und-filmmuseum/museen-im-film/> [my translation].
- 32 Thompson, "Silence Says a Lot for Film Archives," 55.
- 33 Kubelka, "The Invisible Cinema," 34 [my italics].
- 34 *Ibid.* Consider also a text written collectively by the members of the Anthology Film Archives: "What do we want from a film theater? The creation of an audience spirit and the possibility of experiencing intensely the filmic reality. Since the communal spirit is strongest and most effective in the absence of disturbance from one's neighbor, the special features of the new Cinema are tools to this end. One can hear the sound of the audience, but that noise is subdued. [...] The seat hoods make concentration possible without destroying the sense by which a person senses the presence of others in a room, even in the dark." In: P. Adams Sitney, ed., *The Essential Cinema* (New York, NY: Anthology Film Archives and New York University Press, 1975), v-xii; vii. With regard to disliking other viewers due to their noises, see also Barbara Rose's opinion: "I find the viewing situation at

Anthology the best I have ever experienced, but that is because I can live without the communal experience of my neighbor blowing bubble gum in my face.” Quoted from Sitney, “In Search for the Invisible Cinema,” 108-109.

- 35 Again, Giuliana Bruno criticizes this silencing effect: “Communication with one’s neighbor was discouraged, for it was difficult to achieve through the partition. In theory, talking and touching were not possible during the show. [...] [I]n this view of cinema, architecture must nearly shut up—and shut itself down. The movie house is the house of silence.” Bruno, *Atlas of Emotion*, 47.
- 36 As my term “tacit sense” indicates, this is not something viewers had to *consciously* focus on.
- 37 For a much more detailed account of the arguments in this paragraph, see Han-ich, “Watching a Film with Others.”
- 38 Ironically, after Frederick Kiesler’s Film Guild Cinema had changed owners and was renamed 8th Street Playhouse, it became the site of seven-nights-a-week mid-night movie screenings. According to commentaries on the wonderful oral-history website *Cinema Treasures*, THE ROCKY HORROR PICTURE SHOW played for 15 years every Friday and Saturday night there. See Cinema Treasures, accessed January 31, 2014, <http://cinematreasures.org/theaters/4699>.
- 39 As Kubelka once said: “You can hear [the other people in the auditorium] laugh, but it’s subdued. It’s as if we were all brothers and sisters in our mother’s womb.” Quoted from Canby, “Now You Can See Invisible Cinema,” 38.

CHAPTER 29

- 1 Susan Leigh Star and James R. Griesemer, “Institutional Ecology, ‘Translations’ and Boundary Objects: Amateurs and Professionals in Berkeley’s Museum of Vertebrate Zoology, 1907-39,” *Social Studies of Science* 19, no. 3 (1989): 387-420.
- 2 Bruno Latour, *We Have Never Been Modern*, trans. Catherine Porter (Cambridge, MA: Harvard University Press, 1993). Or as Sybille Lammes phrases it, the interfaces as a Latourian sign-thing “invites users to perform certain actions that are then inscribed in it and become mediated through it.” Sybille Lammes, “Destabilizing Playgrounds: Cartographical Interfaces, Mutability, Risk and Play,” in *Playful Subversion of Technoculture*, eds. Daniel Cermak-Sassenrath, Chek Tien Tan, Charles Walker (Heidelberg: Springer, forthcoming).
- 3 Alexander Galloway, *The Interface Effect* (Cambridge: Polity Press, 2012).
- 4 Bruno Latour and Steve Woolgar, *Laboratory Life: The Construction of Scientific Facts* (Princeton, NJ: Princeton University Press, 1979); Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network Theory* (Oxford: Oxford University Press, 2005).

- 5 Nanna Verhoeff, *Mobile Screens: The Visual Regime of Navigation* (Amsterdam: Amsterdam University Press, 2012).
- 6 About found footage and questions of programming and accessibility of this kind of heritage material, see Marente Bloemheuvel, Giovanna Fossati, and Jaap Guldemon, eds., *Found Footage: Cinema Exposed* (Amsterdam: Amsterdam University Press, 2012).
- 7 “Cronovizor—Visit the Interbellum City,” Colorbitor website, accessed February 2013, http://www.colorbitor.com/portfolio_page/cronovizor/ [my italics].
- 8 For a more extensive discussion of stitching and plotting, see Nanna Verhoeff, *Mobile Screens: The Visual Regime of Navigation* (Amsterdam: Amsterdam University Press, 2012).
- 9 This effect is strikingly visible in the looped animated GIF posted on the Colorbitor website, http://www.colorbitor.com/portfolio_page/cronovizor/.
- 10 Marshall Berman, *All That Is Solid Melts Into Air: The Experience of Modernity* [1982] (New York, NY: Penguin Books, 1988).

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