Cinema 3.0:

How Digital and Computer Technologies are Changing Cinema

Kristen M. Daly

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ABSTRACT

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Digital and computer technologies and the networks of Web 2.0 are changing cinema. Cinema is morphing from an industrial art to an electronic art and increasingly a tele-cultural form in the interstices of art and information. This dissertation examines this break in order to determine what is new about how we create, experience, and communicate with moving images.

I take both an intrinsic and extrinsic method to ask how cinema has become digital. Intrinsically, this dissertation builds on the work of media theorists like Walter Benjamin, Marshal McLuhan, Friedrich Kittler and Lev Manovich to examine how the automatisms of both the hardware and software of digital cinema technologies encourage new forms, contents and participants. From an extrinsic standpoint, I use both popular literature of cinema and technology as well as theorists like Sherry Turkle in exploring how computer and digital technologies have helped to train new producers and users ready to create and experience cinema in new ways. Also on this tack, I use the work of media historians like Tom Gunning and Jonathan Crary who have demonstrated the role of the interplay of technologies in shaping ways of seeing and expectations of cinema.

The title, Cinema 3.0, merges Gilles Deleuze and *Wired Magazine* and expresses the attempt to define a new form of cinema. By examining five different aspects of cinema, I map out some promising potentials. I examine the experience of cinema working from Walter Benjamin's concept of aura; the emerging processes of production, exhibition and distribution of cinema; the new aesthetics and style afforded by digital cinema technologies; the potential for new narrative forms enabled by a digitally literate viewer; and the social aspects of who is making movies and to what purpose.

Cinema 3.0 is increasingly mutable, hypertextual and interactive. The dissertation examines how these aspects can be empowering and democratizing, allowing more people into the rich media conversation, but also how the ubiquity and decontextualization of digital moving images can be immersive and paralyzing, encouraging distracted remediation rather than meaningful communication.

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Firstly, I would like to thank Professor James Carey who, for some unknown reason, took an options trader with a background in theoretical mathematics into a multi-disciplinary doctoral program. The opportunity to have been in classes with Professor Carey is what I am most thankful for in the entire process. His enthusiasm for culture, communications, technology and especially people and their strange rituals has left me motivation for interesting research for the rest of my life. I miss him terribly and wish he could read this work, as it was only at the end that I realized how deeply his teachings and ideas were at the base of this dissertation.

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Stephane: [Shows 3-D glasses] You can see real life in 3-D
Stéphanie: Isn't life already in 3-D?
Stephane: Yeah but, come on.[1]

I. Introduction

Friedrich Kittler bases his book Discourse Networks 1800/1900 on the premise that the media technology emerging around 1900 represents "a decisive historical and discursive caesura that alters the structure, placement and function of cultural production."[2] Similarly, digital computer technology has brought us to the next decisive historical and discursive caesura. We are in the backslash.[3] This dissertation will describe and explore how this new Discourse Network 2000 has altered the structure, placement and function of, specifically, cinema. Kittler explains how in the movement from Discourse Network 1800 to 1900 poetry disintegrated. In turn, we will examine and expose how cinema, as we have known it, is disintegrating.

Due to the industrial nature of its production, distribution, exhibition and objecthood, early film theorists had to argue that cinema, as film, was an art form. But this very industrial nature allowed cinema as film to retain a privileged place amongst the arts, in that, until recently, it remained hard to produce, reproduce, manipulate and distribute. One still had to go *to* cinema. Thus it remained a mass cultural ritual. Yet, cinema has escaped these constraints, starting with movies on television and home

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[1] *Science of Sleep* (2006)

[2] Foreword David E. Wellbery, Friedrich A. Kittler, *Discourse Networks 1800/1900* (Stanford, Calif.: Stanford University Press, 1990), 284. "These types, denoted by the dates 1800 and 1900, are the discourse networks – the linkages of power, technologies, signifying marks, and bodies – that have orchestrated European culture for the past two hundred years." Kittler, *Discourse Networks 1800/1900*, xiii. "Discourse Network" as defined by Kittler is "the network of technologies and institutions that allow a given culture to select, store, and process relevant data." (369)

[3] Importance of backslash emphasized by anthropologist John Pemberton.

movies then increasingly with videotape and cable television. But I argue that the introduction of digital and computer technologies represents a larger shift, which is taking cinema from an industrial art to an electronic art and increasingly to a tele-cultural form in the interstices of art and information. This dissertation will examine this break and determine what is new about how we create, experience, and communicate with moving images. Although existing in the backslash can be a disadvantage in that the potentials have not yet been fulfilled and numerous paths are still possible, the advantage of being in this liminal zone is that we can see in both directions and the changes remain strange enough to be identifiable.

Use of Terms

Digital technologies are changing the possibilities of cinema. Cinema is no longer sufficiently described by a ninety-minute movie in a theater. Digital computer technology changes the study of any medium infected by it in that data storage and transmission become part of the story. Therefore, when we look at the penetration of digital technologies into cinema, we must consider an expansive definition of cinema encompassing production, distribution, and exhibition. Gene Youngblood refers to the phenomenology of the moving image as "cinema."[4] In the digital age, he says, one must separate cinema from its medium, much as music is separated from its instruments. Thus, although taking a more materialist and less phenomenological viewpoint than Youngblood, as "cinema" I include everything from the traditional feature movie on the big screen to web video, cell phone shorts, clips in taxi rear view mirrors and

[4] Jeffrey Shaw and Peter Weibel, *Future Cinema : The Cinematic Imaginary after Film, Electronic Culture* (Cambridge, Mass. London: MIT, 2003), 156.

machinima.[5] As I will demonstrate, all of these materializations are required to provide a thorough picture of the emerging form of cinema. The very fact that "cinema" is no longer easily defined bolsters the claim that cinema is changing. Some readers will be annoyed with the catholic nature of the examples used, but the porousness of the boundaries is characteristic new media.

If we consider, following Lev Manovich, new media as being the synthesis of the two historical trajectories, audiovisual technologies and computing technologies, then cinema can increasingly be characterized as a new media both in construction and characteristic.[6] Cinema today, as I will demonstrate, is created, stored, distributed, and viewed primarily with computers and digital technologies and has increasingly taken on the characteristics of digital creations. Cinema in digital form can be radically reproducible, manipulable, networked, interactive, hybrid, variable, and dispersive, thus differing greatly from traditional cinema and transforming into a new media.

I will primarily use the term "Cinema 3.0" instead of "digital cinema." "Digital cinema," as a term, can be limiting, implying that the images were created, distributed and exhibited digitally or at least forcing one to define what percentage of digitalness makes a movie "digital cinema." Some of the movies that I will classify as examples of Cinema 3.0 will not be captured or exhibited digitally, or these material characteristics

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[5] Television is only recently taking part in this new form with crowdsourced channels like Current, interactivity and hypertextuality in programs like "Lost," and with Tivo and on-demand allowing viewer control. Thus the boundaries between moving image media are blurring with Cinema 3.0.

[6] "The two separate historical trajectories finally meet. Media and computer --Daguerre's daguerreotype and Babbage's Analytical Engine, the Lumière Cinématographie and Hollerith's tabulator -- merge into one. All existing media are translated into numerical data accessible for the computer. The result: graphics, moving images, sounds, shapes, spaces, and texts become computable, that is, simply sets of computer data. In short, media become new media. This meeting changes the identity of both media and the computer itself. No longer just a calculator, control mechanism, or communication device, the computer becomes a media processor." Lev Manovich, *The Language of New Media* (Cambridge, Mass.: MIT Press, 2001), 25.

will not be the primary qualification. For example, in the fifth chapter, on narrative, I will discuss the narrative form of particular movies as Cinema 3.0 based on their modular or database construction, irrespective of their material makeup. I will cite movies that may have been shot and even edited in celluloid and yet are constructed using an aesthetic or narrative style that I will identify as being characteristic of Cinema 3.0. Thus technology is neither sufficient nor necessary to Cinema 3.0. The qualifications for Cinema 3.0 are broad and include such factors as variability and interactivity, the patterns of which I will establish through the dissertation.

Film theorist D.N. Rodowick, building from philosopher Stanley Cavell, defines a medium as "nothing more or less than a set of potentialities from which creative acts may unfold. These potentialities, the powers of the medium as it were, are conditioned by multiple elements or components that can be material, instrumental, and/or formal."[7] In order to define Cinema 3.0, it is necessary to build a structure of the parameters of these potentialities. Unfortunately for my reader who may desire an upfront definition, in order to define this set of potentialities I must get specific with a set of examples. By examining the change in cinema from different perspectives: physical, social, aesthetic, phenomenological and ontological, I will construct the set of Cinema 3.0.

Included Works

There has been much lamenting as well as exultation over the death of cinema. This exaggerates the situation, for the analog film roots have remained primary in the form and language of cinema. For this reason, the major focus of this dissertation will be on movies less bound by traditional industrial, economic and political paradigms -- examples

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[7] D. N. Rodowick, *The Virtual Life of Film* (Cambridge: Harvard University Press, 2007), 85.

that point toward a more radical and heterogeneous future of cinema. Thus the canon of works in this dissertation will not be well known to most readers.

Each work has been chosen as a harbinger, an example of a possible and promising avenue. One need not be an expert or have any special privileges to amass the list of works included in this dissertation. Careful attention through myriad hyperlinked paths has led me to this canon, yet someone else following similar paths might have developed a completely disparate list. The nature of cinema in a digital age is one of excess. This should not paralyze us in trying to examine the changing mode, but inspire us with the variable opportunities. I admire theorist Sean Cubitt's call to arms when he says, "The task of theory today is no longer negative. The job of media theory is to enable: to extract from what is and how things are done ideas concerning what remains undone and new ways of doing it."[8]

Cinema, like any medium, is experienced in different ways in different places and by different groups. I do not want to assume a homogeneous temporality or time-stamp this dissertation to say that "on this day everything was different, everything was this way." That is why I base this dissertation in examples, which I will examine to demonstrate that cinema has changed in a number of ways and to reveal some promising pathways. Some of these ways will be directly technologically based, while others will be based in changes of communities, networks and ways of communicating. Some examples will prove to be dead ends and much will remain the same or coexist traditionally along side the changes I describe. I hope through examples to show that these changes have global reach and are not solely dependent on fast computers, large storage capacity and

[8] Sean Cubitt, *The Cinema Effect* (Cambridge, Mass.: MIT Press, 2004), 11.

reliable access to Web 2.0. Aspects of new media, like ease of piracy, penetrate beyond and sometimes overleap technological limitations.

Methods

This work will accommodate a holistic view, taking advantage of certain aspects of various theoreticians, but focusing primarily on developing a picture of cinema in a digital world, using a number of different perspectives and tools, rather than engaging in argument with any one ideology. Although I owe much to theorists like Paul Virilio, Gilles Deleuze, and Jean Baudrillard, I do not address their whole philosophical projects, but use certain means of expression and views of the interaction of technology, culture and consciousness that I think are uniquely enlightening for this project. Thus, I invoke Sean Cubitt's metaphorical sortie, where he describes Georges Méliès' accidental discovery of the disappearing truck trick in Place de la Concorde in Paris. As he writes, "Méliès' accident at one of the great crossroads of Paris of the Belle Epoque, is like a Freudian slip, the result of an unconscious overdetermination by new global cultural flows, by new spectacular forms of commodity, and, not least, by the internal logic of cinematography."[9] I place this dissertation in a similar nexus of technological, stylistic, software, social, and cultural flows and attempt, through the study of cinema, to explore the shifts and vicissitudes undergone as the characteristics of digital technologies pervade more and more aspects of media production, consumption and culture.

Lev Manovich frames his book The Language of New Media as two vectors representing the relationship between cinema and new media. The primary vector, the majority of the book, uses the history and theory of cinema to map out the logic driving

[9] Ibid., 42.

the technical and stylistic developments of new media. The second vector reverses this, examining how the logics of new media affect cinema. Manovich asks, "How does computerization affect our very concept of moving images? Does it offer new possibilities for film language? Has it led to the development of totally new forms of cinema?"[10] These are the questions on which this dissertation is focused. Manovich sketches an outline of this vector, but what I will attempt to do is fill out the focal features at a moment when the structures and paradigms of this new mode are beginning to emerge. Computerization has changed the nature of cinema giving rise to new structures of representation, new content and a new role for cinema in society. There are certain expectations that have been made of digital cinema, some of which have come to fruition, but other changes have been unexpected or have happened in forms that were not predicted.

In examining cinema as a new media, media theory will provide the toolbox for study to a much larger extent than film theory. Incorporating Manovich's call for a move from media theory, which might be considered a theory of hardware and apparatus, to software theory, which would work from the bottom up, from protocol and codes and interfaces, herein I will attempt to apply both.[11] I will look both at how the digital camera, small, mobile and cheap, with different requirements for lighting and recording material, can bring new methods of production, new modes and new content, but also how certain functions of the camera/computer software make distinct languages and functions more easily accessible, and therefore more obvious. For example, how the capacity of digital tape and/or hard drives makes a continuous long-take possible and

[10] Manovich, *The Language of New Media*, 287.

[11] Ibid., 19.

removes the inherent need for montage, which the relatively short film reel required. And how the prevalence and ease of storage and editing software makes the composite image increasingly irresistible as an aesthetic form.

An intrinsic view, though, is not sufficient to describe how cinema is digital. Cinema is now more than ever a networked medium and partakes in global flows of information and multi-media. A movie is no longer just a movie, but exists in a social world of interpretation and manipulation from the banality of the fast-forward to the invasiveness of the remix. I will examine how our everyday experience with digital and computer technologies shapes both our experience of and the very capacity and form of cinema. For example, how cinematic narrative adapts to better represent our navigation of space and information on the computer. In this, I borrow from contemporary media theorists such as Nicholas Negroponte and Sherry Turkle who have shown how people's use of computers, or as they might say their life on computers, affects them; effectively describing the digital subject and his or her way of being. They and others, including popular texts such as *Wired* magazine, have demonstrated how the computer user navigates information and how the roles of work and play, producer and consumer, viewer and user have changed in the information age of computers. I do not work in depth through their arguments in this dissertation because I feel they have already entered the public forum, but instead assume that the reader is familiar with these notions and instead I apply them specifically to the emerging form of cinema.

To an even greater extent, this extrinsic description, takes much from recent theorists who have explored proto-cinematic forms and have explicated how film had historical precedents, developing from preceding visual and spectacular technologies,

which trained audiences and created expectations for the form of cinema.[12] I borrow from this school of thought in exploring how computer and digital technologies have prepared audiences for what might be called the post-cinematic forms described herein and have created a new kind of observer or viewer. For example how the prevalent use of video games can prepare viewers for the use of certain digital effects in cinema which mobilize the gaze in a way antithetical from a film camera gaze but very familiar to a video game user.

My methodology is deeply informed by a two contrasting schools of thought. On the one hand, eschewing a more sociological model, and following in the ideological footsteps of Friedrich Kittler and Marshall McLuhan, the majority of this dissertation examines the basic material aspects of digital cinema technologies, the changes that these technologies induce and the pathways that are then revealed. Kittler has argued how the technological media of modernity, like the gramophone, typewriter and film, constituted subjectivity. Whereas Marshall McLuhan wrote of technology as extending the human sensory apparatus, Kittler introduces the idea that technology determines "recording thresholds."[13] In other words, what we can record, store and access determines what we can represent, what we can create and what we can remember. Particularly in the information age of cognitive labor, I believe recording thresholds increasingly structure the possibilities of culture. This dissertation will employ some of Kittler's methods and

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[12] Tom Gunning, "The Cinema of Attractions: Early Film, Its Spectator and the Avant-Garde," in *Early Cinema: Space Frame Narrative*, ed. Thomas Elsaesser (London: BFI Publishing, 1997)., Vanessa R. Schwartz, "Cinematic Spectatorship before the Apparatus: The Public Taste for Reality in Fin-De-Siecle Paris," in *Viewing Positions: Ways of Seeing Film*, ed. Linda Williams, *Rutgers Depth of Field Series* (New Brunswick: Rutgers University Press, 1995)., Jonathan Crary, *Suspensions of Perception : Attention, Spectacle, and Modern Culture* (Cambridge, Mass.: MIT Press, 1999)., Anne Friedberg, *Window Shopping : Cinema and the Postmodern* (Berkeley: University of California Press, 1993).

[13] "Technologies and sciences of media transposition do not simply extend human capacities; they determine recording thresholds." Kittler, *Discourse Networks 1800/1900*, 284.

arguments of causation in describing the breakup of the "storage and transmission monopoly" that is currently happening in the realm of cinema as more and more communication and culture can be stored and transmitted through audiovisual technologies.

And yet, I can follow Kittler only so far into the intrinsic technological logic as my interests lie also in the social implications and the cultural productions of Cinema 3.0 and in cinema as a communicative medium. As a student of the late James Carey, I need to explore the social and cultural implications, not leaving the subject completely post-human as Kittler would like. As Carey has said, "to enter given technological worlds is to enter actual social relations," and therefore, "technologies are cultures."[14] Thus, I also examine how people are experiencing cinema, what they are doing with the new technology and how they are communicating and forming new social spaces. This work will try to be an archaeology of the present and, as such, is an exploration of a moment of flux. While Kittler argues that a theorist cannot examine a discourse network from within because he or she is constituted by the discourse network he or she is attempting to describe, I believe the attempt is valid, in the least as a historical document and at best creating some cultural understanding of ourselves and our communicative potential. Being in the backslash, in a moment of change, we are not yet quite constituted, we have some freedom of perspective not permitted to a more entrenched discourse network subject.

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[14] James W. Carey and Lawrence Grossberg, "Configurations of Culture, History and Politics: James Carey in Conversation with Lawrence Grossberg, Part 2," in *Thinking with James Carey: Essays on Communications, Transportation, History*, ed. Jeremy Packer and Craig Robertson, *Intersections in Communications and Culture* (New York: Peter Lang, 2006), 214.

Why Cinema?

Why is cinema a good subject to look at Discourse Network 2000? Movies were the prime mover cultural form of the 20th century, not the 21st. University of Southern California (USC), which created the first film school in 1929, has recently opened an Interactive Media Division including video game and mobile and immersive media design. [15] Would not a more readily digital or popular media like video games be a more apt subject? Cinema, though, provides an interesting subject for the study of this moment because it has resisted becoming digital. It is a witness to and reluctant participant in the revolutionary moment. Cinema is being trained as a new media along with us.

Hannah Arendt intimates in her introduction to Benjamin's Illuminations that he was such a potent and incisive observer of 20th-century technologies because he was in essence a 19th-century man living in the 20th-century.[16] Cinema, too, acts as a 20th-century observer of the 21st. For this reason cinema, its life or afterlife, can best represent our own transformation from an industrial culture to a digital culture. Cinema has resisted its transformation into a new media, remaining hard to produce, reproduce, distribute and exhibit until the conversion to digital technologies and computerization. Thus, it is on the cusp of becoming new media and can be analyzed at a moment of rearranging paradigms.

The study of cinema at a moment of change says a lot about us, who grew up under its spell and are simultaneously being digitized. I think this is why so many philosophers – Paul Virilio, Gilles Deleuze, Slavoj Žižek, Stanley Cavell, Frederic Jameson – have been entranced by cinema. David Rodowick explains this aspect of Deleuze in Gilles Deleuze: Time Machine. He writes:

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[15] In 2006, the name was changed to the School of Cinematic Arts from the School of Film and Television.

[16] Walter Benjamin, *Illuminations* (New York: Schocken Books, 1969), 22.

> Deleuze argues in "Difference and Repetition" that the only aesthetic problem of concern to philosophy is the relation of art to everyday life. Because our contemporary life is immersed in an audiovisual and information culture, cinema's ways of working through the relations of image concept have become particularly significant to our strategies for seeing and saying. This is not because cinema is the most popular art. Television and video games now have arguable a far greater economic and "aesthetic" impact. However, cinema's history of images and signs is nonetheless both the progenitor of audiovisual culture and perhaps the source of its unfounding as simulacral art.[17]

Like Deleuze in Cinema 2: the time-image, I will strive to describe a new mode of cinema emerging at/from a cultural caesura. Thus the title "Cinema 3.0" in honor of Deleuze's inspiring work and with a smile towards the technology that is enabling this new mode.

Looking Ahead

This dissertation examines from five different perspectives how digital technologies are affecting cinema:

- The **first** section examines the experience of cinema and how that is morphing as digital technologies change both our reception of and use for cinema. I take Walter Benjamin's essay "The Work of Art in the Age of Mechanical Reproduction" and examine how cinema is only now, with the infiltration of digital technologies, fulfilling Benjamin's expectations and even transcending them. This chapter will focus on our experience of cinema as it changes from a ritual art object to an interactive and variable means of communication.
- The **second** section will examine how cinema is digital – how digital and computer technologies have penetrated into all aspects of production, distribution and exhibition. This will be a survey of the current landscape of moviemaking,

[17] David Norman Rodowick, *Gilles Deleuze's Time Machine, Post-Contemporary Interventions* (Durham, NC: Duke University Press, 1997), 202.