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# Digital Media and Art: Always Already Complicit?

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J A Y D A V I D B O L T E R

## Digital Media and Art: Always Already Complicit?

*Always Already New: Media, History, and the Data of Culture*, by Lisa Gitelman. Cambridge, MA: MIT Press, 2006. Pp. 221. \$36.00 cloth.

*Avatars of Story*, by Marie-Laure Ryan. Minneapolis: University of Minnesota Press, 2006. Pp. xxiv + 275. \$60.00 cloth, \$20.00 paper.

*Sweet Dreams: Contemporary Art and Complicity*, by Johanna Drucker. Chicago: University of Chicago Press, 2005. Pp. xviii + 291. \$40.00 cloth, \$27.50 paper.

WHAT DO Manuel Castells, Lev Manovich, Will Wright, Howard Rheingold, Paul Dourish, Christa Sommerer, Margaret Morse, and N. Katherine Hayles have in common? They all create or study digital media artifacts. What else do they have in common? As far as I can see, nothing. Their diverse backgrounds and expertise mirror the diversity of digital media today. Popular writers on new media often tell a story of convergence to some single technological future, but what we are seeing today is a rich diversity of forms of production and critical approaches. The areas of digital media production include communications and publishing software, games and other entertainment software, digital art, and experimental design. The disciplines studying digital media include mass communications and sociology, human-computer interaction, art history and theory, film theory and history, literary theory, and the relatively new field of media studies itself. Even if we limit ourselves to the intersections of art, entertainment, and digital media technology, it would be difficult to tell a coherent story that includes all the forms of production and critique.

Instead of attempting an overview of digital media today, then, I am going to use three recent works as the basis for a discussion of three overlapping issues. Lisa Gitelman, Marie-Laure Ryan, and Johanna Drucker have written three very good books in media studies. Gitelman cites some earlier works of Drucker, but

otherwise there are no cross-citations, despite the numerous references and substantial indexes in each book. Gitelman's book is a historical study that compares the reception of two "new media" technologies in American culture: the phonograph at the end of the nineteenth century and network computer communications in the 1960s and '70s. Ryan is a narratologist who is trying to classify the functions of narrative in digital and other contemporary media. Drucker's book, apparently not about digital media at all, examines contemporary visual art, focusing on painting and photography of the 1990s. Yet the question Drucker raises about the relationship of art and popular visual culture can (and should) also be posed for the growing body of digital art. Each of these books contributes to a debate about new media, although no two of them participate centrally in the same debate.

### The Newness of New Media

The fact that another term for digital media is "new media" opens one such debate. For popular writers today, there is no question that digital media are essentially and necessarily new. For them, digital technology constitutes a revolution in communication and representation, to which each development in hardware and software (the World Wide Web, the DVD, GPS, even Second Life and YouTube) makes its contribution. The technology companies understandably promote this view. According to Steve Jobs, for example, Apple alone has been responsible for three revolutionary developments: the Mac, the iPod, and now the iPhone. Newspaper and magazine writers on technology as well as many academics fall easily into this rhetoric of the new. They assume that they must emphasize the computer's uniqueness to justify it as a new medium, so they try to show that digital technology possesses a set of characteristics that set it apart from all previous media. The assumptions of novelty and medium-specificity have filtered down from the writings of the high modernists of the 1950s and '60s, such as Clement Greenberg and Michael Fried, and today constitute what we might call "popular modernism."

It would be pedantic to try to avoid the term "new media" altogether. We do, however, need to understand the cultural work that the term is made to do, and, where appropriate, we need to challenge the assumptions of popular modernism. Lisa Gitelman provides such a challenge in *Always Already New: Media, History, and the Data of Culture*. Gitelman's field is comparative media studies, now sometimes called "media archaeology." Such scholars examine earlier media and media forms in both their technical and their cultural contexts. They are particularly concerned to get behind the ossified narratives that are told about the development of such media. Media archaeology often deals with the reproductive or broadcast media of the early twentieth century (photography, phonography, film, and radio), and it often makes implicit comparisons between the

reception of those media and the reception of digital technology today. Many media archaeologists have focused on the prehistory and early history of film in an attempt to take us beyond the simple (American) version of the story that sees D. W. Griffith, as he saw himself, as the master who figured out what film is really for. Although Gitelman resists labeling her work as media archaeology, she seems to me to share the goals of the media archaeologists in seeking to draw a more nuanced picture of the cultural contexts in which media are used. In general, media archaeologists reject the view that film, television, or the computer have developed toward some single perfect communications form. As Gitelman puts it: “[M]edia are unique and complicated historical subjects. Their histories must be social and cultural, not the stories of how one technology leads to another, or of isolated geniuses working their magic on the world” (7).

The complex historical subject that Gitelman chooses is not, in this case, early film; she focuses instead on the cultural life of the phonograph from 1878 to about 1910, which she compares with, or at least juxtaposes to, the development of digital networking and the World Wide Web from the 1960s to the 1990s. Gitelman is a meticulous historian, as she details Thomas Edison’s first (largely unsuccessful) attempt in 1878 to promote the phonograph as a medium for public performance, and then the second wave of promotion in the 1890s as a device for office dictation (again largely unsuccessful) and for music entertainment (as “nickel-in-the-slot” public phonographs). After 1910 the phonograph was established in its eventual role as a home entertainment technology. That Edison and others eventually “got it right” becomes for Gitelman a case study in the subtle interactions between producers, consumers, and cultural contexts. Her approach is to attend closely to the vocabulary of contemporary advertising and newspaper descriptions in order to appreciate, for example, how the noun “record” came to signify a changed relationship between speech and writing. Gitelman also points out how women as “new media users” of the phonograph affected its technical development as well as marketing.

Gitelman brings this same method to her study of the Internet when she focuses on how the word “document” changes during the development of the digital transmission of messages over the ARPANET and the beginning of word processing with Douglas Engelbart’s remarkable “Online System.” Gitelman is also fascinated by the threat that the World Wide Web, developed around 1990, seems to pose to the very notion of historically fixed documentation. She offers as a test case a “document” that the World Wide Web Consortium, headed by Tim Berners-Lee, characterizes as “the least recently modified Web page.” The page has not been changed since 1990, but what “unchanged” means in this case is that the HTML code has not been modified, although the page is now different in every other way and is in a sense rewritten every time we display it in our browser. Gitelman notes that “[t]he least recently modified page is offered to readers as a historical document within a context that complicates the very grounds of its historicity”

(126). For Gitelman, the practices and the vocabulary of the Web today seem to challenge the very possibility of ever writing the history of this new medium.

Gitelman is one representative of a varied group of media historians whose work provides historical contexts for understanding the digital. As I have said, film historians have had perhaps the greatest impact: we could mention Thomas Elsaesser, Tom Gunning, and many others.<sup>1</sup> Researchers on the reception of the telegraph, television, and radio include William Uricchio, Carolyn Marvin, and Jeffrey Sconce.<sup>2</sup> Contemporary media philosophers and historians in Germany include Friedrich Kittler, Sybille Krämer, Dieter Mersch, and Peter Gendolla.<sup>3</sup> There are European and Canadian scholars, including André Gaudreault, Jürgen Müller, and Yvonne Spielmann, who characterize their work as the study of “intermediality,” the relationships between and among various analog and electric as well as digital media.<sup>4</sup> Together, these researchers are producing a large body of historically sound scholarship. Their voices, however, cannot rise above the popularizers for whom digital media are still a completely new and teleological solution to the problem of representation. Popular modernism remains attractive both for new media users and for those designers and engineers who are developing the new technologies.

One important aspect of Gitelman’s work separates her from many of the media historians and theorists I have just mentioned: her emphasis on the textuality of media. It has been said by theorists as varied as E. H. Gombrich and Fredric Jameson that our culture has taken a pictorial turn. Yet Gitelman chooses to examine the phonograph in terms of the key term “record,” as well as changes in the notions of reading and writing and the Internet in terms of “documents” and the inscriptional character of Web pages. The relationship of digital technology to print and print literature is a subject that concerns only a small group with established reputations in literary studies, in particular, Jerome McGann, with his book *Radiant Textuality*, and N. Katherine Hayles, in a series of books, including *Writing Machines* and the forthcoming *Electronic Literature: New Horizons for the Literary*.<sup>5</sup> While McGann has argued forcefully for new forms of digital scholarship for the study of print literature, Hayles is almost alone among scholars of her rank in the conviction that digital literature itself should be studied alongside print.

### Digital Media and Narrative

Despite Hayles’s work, the literary community seems to have decided that print technology will remain the defining medium for literature. In the 1990s writers such as Michael Joyce, Stuart Moulthrop, and Shelley Jackson created a compelling form of literary expression called hypertext fiction. Their works, which could only be read at the computer, used hyperlinks to conduct the reader from one screen of text and images to another. Robert Coover, well known for his print fiction, argued in the *New York Times Book Review*, in an article polemically titled

“The End of Books,” that this new form of fiction deserved serious attention. The few literary critics who bothered to react were disdainful of hypertext, principally because it denied the authority of the author. Laura Miller later responded in the *New York Times Book Review* that “[The] surrender . . . and the intimacy to be had in allowing a beloved author’s voice into the sanctums of our minds, are what the common reader craves.”<sup>6</sup> Most of the literary community simply ignored hypertext and hypermedia. I believe that no purely digital literary work has been reviewed in the *New York Times* since 1993.<sup>7</sup>

The failure of literary hypertext stands in obvious contrast to the remarkable success of a popular digital entertainment form: the video game or computer game.<sup>8</sup> This success has encouraged a few scholars to try to bring the study of both games and the remnants of the hypermedia movement into the field of narratology. Marie-Laure Ryan has continued to argue for more than a decade that the computer can support new forms of narrative. Her *Avatars of Story* makes the case for a “transmedial narratology”: the study of narrative across media, including the digital. Ryan’s title comes from the term that is used in MMOs (massively multiple online environments) for the multiple identities that a player can assume; each instantiation of a story in a particular medium can be thought of as an avatar of that story. Ryan offers a thorough review of the relevant literature and debates that surround her position. Because she argues that narratology should look across media, she includes chapters on narratological theory before the computer, and she analyzes reality TV and live sports broadcasts as examples of her expanded definition of narrative. She also reviews the history of hypertext and hypermedia literature and devotes a sensible chapter to the debate over whether computer games should be understood as narratives. Once again, I believe it is significant that this debate has raged among dozens of (generally) younger writers in the contemporary “Games Studies” community without arousing much, if any, interest among traditional literary scholars.

As Ryan herself notes, “narratology is essentially a taxonomical project” (120), and ultimately Ryan too wants to make lists. In doing so, she flirts with essentialism, providing her own list of properties of digital systems that she considers “most relevant for narrative and textuality” (98). She then sets her list against those of Janet Murray, perhaps the other most influential digital narrativist, and of the digital artist Lev Monovich: Ryan shows how their lists can be reduced to hers (98–100; 237–38). Although Ryan accepts the medium-specificity argument of popular modernists such as Murray, she still wants to go beyond the medium to an abstract notion of story. She criticizes those who insist on a verbal definition of narrative as “telling a story,” because in her view this definition makes it more difficult to include filmic narrative or the new digital forms. Nevertheless, Ryan’s structuralism commits her to a primarily textual-symbolic concept of narrative. Despite the fact that she cites Jean Baudrillard, Michel Foucault, and Christian Metz, Ryan has little use for the poststructuralist and postmodern challenges to the representative power of

symbolic structures. The closest she comes to a poststructuralist move is her intriguing final chapter on digital narrative as “metaleptic machines.” Building on Gérard Genette’s notion of metaleptic narrative, Ryan gives examples in which digital artefacts permit one level of representation to penetrate another: for example, in so-called code poetry, in which the computer code that drives the work is sometimes made visible to the user/reader.

Ryan’s mastery of the literature of narratology allows her to offer a more critically aware definition of narrative than many today who study and promote “interactive narrative” (sometimes also called “interactive drama”). The abortive hypertext fiction of the 1990s was written largely by “serious” writers, whose work continued the concerns of postmodern fiction in print. These writers of course wanted to be widely read, but their work was often highly sophisticated in a narrative sense and self-referential. The interactive fiction designers and theorists today come from varied backgrounds, but they are generally disinterested in postmodern theory and literature. Interactive narrative is for them a refuge from the postmodern: it should be the coherent and transparent presentation of a “story world” with believable characters and plausible story arcs. Interactive narrative designers want to combine the medium-specific quality of digital interactivity with what they regard as the universal characteristics of a well-formed (“Aristotelian”) narrative. Their understanding of narrative comes from Victorian literature and drama by way of Hollywood film.

Murray is one such critic, whose book *Hamlet on the Holodeck* has been very influential within this community. The Holodeck is the imaginary virtual reality machine from the television and film series *Star Trek*. Murray proposes this imagined technology as the ultimate goal of interactive narrative. It would be a completely transparent “immersive” medium, in which the player would become one of the characters. It is clear from her examples that although she sometimes uses the language of canonical art (we are awaiting the cyber-Shakespeare), Murray envisions interactive narrative as the ultimate popular entertainment, the heir to the Hollywood tradition. Enthusiasts for interactive narrative like Murray see current story-based computer games as only the first step toward this ultimate narrative experience.

While there is no longer any clear hierarchy in contemporary literature, it is certainly true that there is a vast difference in construction, style, and audience between much of the work reviewed in the literary journals and the novels, films, and computer games that constitute models for the interactive narrative. No one in the interactive narrative community has suggested using, for example, Mark Danielewski’s *House of Leaves* as the basis for a digital narrative. They aspire to digital versions of the detective, romance, science fiction, and fantasy genres. Ryan, however, does try to include both experimental digital fiction and popular games in her narratology. She offers a circular diagram that maps four types of interactivity, each represented by a compass direction, and populates the circle with

examples of digital narrative (121). The upper half of this circle consists of computer games that sell in the hundreds of thousands of copies, while the lower half consists of hyperfictions, some of them a decade old, with an audience that numbers in the hundreds.

Ultimately, Ryan's narratology must be more attuned to the transparency of the 3-D computer game than to the reflexivity of experimental literature. Transparency must be the favored mode of representation for a "transmedial" concept of narrative, which will be looking for a story behind the stylistic variations of any particular media form. It is hard to see how this approach could not be reductive. (For a narratologist, who wants to look beyond the medium, *Ulysses* is, after all, a dull story about a Jewish advertising canvasser as he roams through Dublin on a June day.) In this respect, Ryan's transmedial narratology ends up at the same place as the interactive narratology of Murray and others who insist so strongly on the specificity of the digital medium, with its capacity to disappear, immerse the reader, and leave her with the pure story.

Although hypertext fiction failed in the 1990s to engage the literary establishment, a small group of writers have continued to produce what is often called "digital poetry." For these writers and their audiences (again we are speaking of hundreds or at most a few thousand), the literary mode has changed from prose fiction to poetry, which means abandoning the goal of extended narrative in favor of the combination of lyric and short, personal narrative that characterizes contemporary poetry. These digital poets have almost nothing to do with the interactive narrative community and are seldom interested in computer games. Their pieces are often kinetic in the sense that their appearance on the screen morphs in response to the user's input.<sup>9</sup> Like contemporary "traditional" poetry, digital poetry often has a strong performance element. Digital poetry readings are multimedia events and often may be closer in character to performance art than to a traditional poetry reading. While the interactive narrative community wants to live in a fictional world on analogy with popular literature and film of the twentieth century, the small digital literature movement follows an avant-garde practice that suggests the rejection of narrative and even purely literary models and connects itself to visual art and performance.

### New Media and/as Art

Once we cross the uncertain border between literary and visual art, we find a community of digital artists who seem to be faring better. The artists themselves may disagree, because the gallery and museum system certainly has not granted their work the same status as "traditional" painting, sculpture, photography, and installation art. Nevertheless, the connection between digital art and traditional forms seems to be better established than the connection between any form of digital literature and the literary establishment in print. Given the development

since the 1960s of multimedia art, it would be difficult to argue that digital installations and performances are not art, as the literary establishment did argue that hypertext was simply not literature. The digital arts community has its own festivals and centers, such as Ars Electronica in Linz, the ZKM (Zentrum für Kunst und Medientechnologie) in Karlsruhe, Germany, or the traveling biennial ISEA (International Symposium for Electronic Arts). There are artists such as Christa Sommerer, Natalie Jeremijenko, Lev Manovich, Eduardo Kac, or Jane Prophet, who move unself-consciously among material forms that are digital, analog, or even biological.

Digital artists share the same heritage as those artists working in other forms. Many come from the installation and performance traditions of the past several decades, and they share with all artists the promise and the burden of the avant-garde. For that reason, it is appropriate to discuss here Johanna Drucker's remarkable *Sweet Dreams: Contemporary Art and Complicity*. As noted above, Drucker's book is not about digital art at all, but focuses instead on recent painting, sculpture and non-digital installation—pieces largely from the 1990s. Her argument is that this body of work is “in dialogue with” popular visual culture. She shows us how artists such as Gregory Crewdson, Vanessa Beecroft, and Lisa Yuskavage appropriate the styles and subject matter of popular culture and even pornography. While the appropriations themselves are not surprising, Drucker's point is that these artists are not taking an oppositional stance—that is, they are not doing what the avant-garde is supposed to be doing. Instead of citing popular forms in order to critique them, they are apparently “complicit” (to use Drucker's term) in celebrating the exuberance of our visual culture. Drucker argues that academic art theory, which still assumes the rhetoric of the avant-garde, is hopelessly out of date.

Drucker's notion of complicity is a subtle one. She writes: “Works of fine art are capable of sustaining contradictions, performing oppositional or resistant functions while simultaneously serving mainstream interests. Fine art frequently is also both what it *claims to be* (independent thought, discrete from the other forms of cultural expression, a separate domain of alternative values) and what it *pretends not to be* (bound up with the values of the status quo and the ideological system that sustains it)” (17). To appreciate what Drucker makes of this ambivalence, one needs to read the carefully nuanced analyses of specific works and artists that constitute her longest chapter, “Forms of Complicity.” These analyses make a convincing case that artists today have “complicit sensibilities” and show (once again) the futility of the avant-garde dream that the artist could achieve political revolution through formal innovation. Still, we are left with a key question that Drucker does not address: what is the artist to do who feels impotent rage in the face of the disaster of American politics today? Many, perhaps most, of the works Drucker studies were produced in the 1990s, when complicity involved compromises with the neo-liberalism of the Clinton years. As Drucker

frames it, in fact, complicity is involvement in the consumer culture of global capitalism. Today complicity suggests acquiescing in the deaths of hundreds of thousands of people, state-sanctioned torture, the suspension of habeas corpus, and the like. We can hardly blame artists for trying to find some form of oppositional practice today, and we can hardly blame academic critics (Drucker's favorite target) for wanting to read opposition into the art they study.

The academic art critics can presumably defend themselves. The question I want to ask is how Drucker's argument relates to contemporary digital art. And I propose to read Drucker in conjunction with Lev Manovich, who is both an artist and a media theorist and who argues in *The Language of New Media* that digital art is in fact the heir to the avant-garde of the 1920s, specifically the Russian filmmaker Djiga Vertov. *The Man with a Movie Camera* serves as an emblem for Manovich's book; the formal qualities of Vertov's film prefigure the characteristics of digital art and, in particular, "database cinema," which is Manovich's own project. *The Language of New Media* argues for the digital avant-garde as a formal rather than political practice. Manovich's book is an original contribution to media history, and he certainly could not be said to speak for digital artists in general. I do think, however, that many digital artists share his sense of affiliation. Most have been trained in other media forms, such as film or painting, and most see themselves as artists whose medium is digital, rather than digital media designers who happen to be artists. Manovich clearly believes that some kind of avant-garde practice is still possible in (digital) art today. Drucker does not.

The importance of Drucker's book lies both in the common ground and the differences between contemporary "analog" art and digital art. She claims that contemporary artists are complicit with popular visual culture, and she expects this claim to be a surprise, contested by the academic art historians. For there is still a belief in a fundamental difference between popular cultural forms and the visual art supported by the gallery and museum system, even if the claim that visual art is superior can no longer be made with the confidence shown by Greenberg fifty years ago. The artists that Drucker discusses, however, still participate in that rarefied world of art, from which they "descend" into the common world of cartoons, advertisements, and shopping malls. If they are oppositional at all, their opposition comes in relation to an elite art establishment. Digital artists are in a sense coming from the other direction. Because their medium has enjoyed spectacular popular success, they are inevitably "in dialogue with" such forms as computer games, the World Wide Web, and the computer graphics displayed in film and television. But this is not to say that they would necessarily abandon any hope of constituting an avant-garde.

There have been two broad classes of definitions of the avant-garde in the twentieth century: the avant-garde as formal innovation and the avant-garde as political opposition.<sup>10</sup> These categories are not mutually exclusive, and digital artists sometimes seek to be avant-garde in both senses. They can make the case

that the digital medium itself constitutes formal innovation, which is Manovich's argument. Even when digital artists are recycling popular visual forms, they are doing so in a new medium. In addition, many digital artists promote their work as a critical cultural practice. For example, Natalie Jeremijenko's "Suicide Box" used motion detection to record objects (people) falling (jumping) from the Golden Gate Bridge in San Francisco—a digital witness to potential suicides. Examples of Web-based political game art are offered by the Web site <http://molleindustria.org>, including "Operation: Pedopriest" and the "McDonald's Videogame." I could go on and mention many other such works. Not all digital artists need to be motivated solely by Drucker's notion of the joy of creating amid the wealth of visual cultural forms; some can still see their work as oppositional. And because digital art is only beginning to be accepted into the elite gallery system, digital artists can be complicit with popular culture with perhaps less hypocrisy.

### Social Computing and Digital Art

Whether complicit or truly avant-garde, the digital arts still have different concerns and a very different audience than do interactive narrative (which hardly exists) and computer games. And the concerns of media studies are obviously different from all of these. As varied as Gitelman's, Ryan's, and Drucker's books are, they only begin to reveal the complexities of the discourses of digital media today. These discourses are characterized by subtle interactions of the oppositions we have touched on: theory and practice, avant-garde and mainstream, elite and popular, and visual and verbal.

None of our authors addresses the recent phenomenon of social computing: the tremendous popularity of such Web sites as MySpace, Facebook, and YouTube and the growth of new forms of social interaction, such as text messaging, through mobile devices. Another aspect of social computing is the development of MMOs, such as World of Warcraft and Second Life. (World of Warcraft is the most influential example of a computer game genre that Ryan could have discussed, because the shared communication in MMOs poses interesting problems for a theory of narrative.) Social computing is often about identity formation: the participants in MySpace or Facebook create Web pages to describe themselves, and they add their notes and other interventions to the pages of their friends. But the identities that they project are seldom stable or coherent; instead, MySpace pages are fragmented and contingent stories of identity. Mobile text messaging, or texting, becomes an unstable, ad hoc form of social organization. In *Smart Mobs* Howard Rheingold argues that texting and other forms of mobile communication have emerged as a means of group definition in both political and social contexts.<sup>11</sup> The disruptive or playful smart mob (also called "flash

mob”) events have something in common with the artistic and political interventions of the Situationists in the 1960s.

These manifestations of social and mobile computing are popular media forms that do not fall under any traditional definition of art. I mention them here because they might be said to realize the avant-garde goal of abolishing the distinction between art and everyday life. Speaking of the classical avant-garde, Peter Bürger wrote: “What distinguishes [the avant-garde] is the attempt to organize a new life praxis from a basis in art . . . When art and the praxis of life are one, when the praxis is aesthetic and art is practical, art’s purpose can no longer be discovered, because the existence of two distinct spheres (art and the praxis of life) . . . has come to an end.”<sup>12</sup> Social computing is art as life practice, or perhaps (what amounts to the same thing) it is the parody of art as life practice. What for the Situationists—or much earlier, for the Dadaists—were occasional events have become a way of life for the young users of Facebook today. The events of this new avant-garde range from the political engagement of mobile protests at World Trade Organization meetings to the sheer complicity of the promotion on YouTube of rock bands and Hollywood films. Perhaps YouTube is exactly what Bürger is describing: a future in which art’s purpose can no longer be discovered. YouTube goes far beyond the complicity that Drucker discusses in *Sweet Dreams* when she argues that contemporary painters are borrowing from popular visual images and that a few are making fortunes in gallery sales. The posters on YouTube, which Google purchased in 2006 for more than 1.5 billion dollars, are mimicking and at the same time contributing to the mass marketing of videos and popular music—a market that is orders of magnitude greater than that of contemporary art. The ironies of social computing seem at this particular moment in the rapid churn of digital media to be more culturally significant than either the screen-based computer game or the quest to remediate Victorian literature in virtual reality.

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## Notes

1. See Thomas Elsaesser, “Cinema Futures: Convergence, Divergence, Difference,” in *Cinema Futures: Cain, Abel, or Cable: The Screen Arts in the Digital Age*, ed. Thomas Elsaesser and Kay Hoffmann (Amsterdam: Amsterdam University Press, 1998). Also Tom Gunning, “An Aesthetic of Astonishment,” in *Viewing Positions: Ways of Seeing Film*, ed. Linda Williams (New Brunswick, NJ: Rutgers University Press, 1995).
2. William Uricchio, “Phantasia and Technè at the Fin-De-Siècle,” *Intermedialités*, no. 6 (2005): 27–42; Carolyn Marvin, *When Old Technologies Were New: Thinking about Electric Communication in the Late Nineteenth Century* (New York: Oxford University Press, 1990); Jeffrey Sconce, *Haunted Media: Electronic Presence from Telegraphy to Television* (Durham, NC: Duke University Press, 2000).

3. Friedrich Kittler, *Gramophone, Film, Typewriter* (Stanford, CA: Stanford University Press, 1999); Sybille Krämer, *Medien, Computer, Realität: Wirklichkeitsvorstellungen und Neue Medien* (Frankfurt am Main: Suhrkamp, 1998); Dieter Mersch, *Ereignis und Aura: Ästhetik Des Performativen* (Frankfurt am Main: Suhrkamp, 2002); Peter Gendolla, and Jörgen Schäfer, eds., *The Aesthetics of Net Literature: Writing, Reading, and Playing in Programmable Media* (Bielefeld, Germany: Transcript, 2007).
4. André Gaudreault and Philippe Marion, "The Cinema as a Model for the Genealogy of Media," *Convergence*, no. 8 (2002): 12–18; Jürgen E. Müller, *Intermedialität: Formen Modener Kultureller Kommunikation* (Münster: Nordus Publikationen, 1996); Yvonne Spielmann, *Intermedialität: Das System Peter Greenaway* (München: W. Fink, 1998).
5. Jerome McGann, *Radiant Textuality: Literature after the World Wide Web* (New York: Palgrave Macmillan, 2001); N. Katherine Hayles, *Writing Machines* (Cambridge, MA: The MIT Press, 2001); and N. Katherine Hayles, *Electronic Literature: New Horizons for the Literary* (Notre Dame, IN: University of Notre Dame Press, 2008).
6. Laura Miller, "www.claptrap.com," *New York Times Book Review* (March 15, 1998), 43.
7. I imagine that most readers of this journal, for example, have never read a single hyperfiction, and possibly have never even heard of hyperfiction. In 1998 Miller noted: "I've yet to encounter anyone who reads hypertext fiction. No one, that is, who isn't also a hypertext author, or a journalist reporting on the trend." Miller, "www.claptrap.com."
8. The obvious technical difference between video games and computer games is that special consoles—the PlayStation, the Xbox, the Nintendo Wii—are needed for video games, while computer games are played on general-purpose desktop or laptop computers. I will use term "computer game" here to describe both kinds.
9. See Maria Engberg, *Born Digital: Writing Poetry in the Age of New Media*, PhD dissertation, Uppsala University, Sweden, September 3, 2007.
10. The case for the formal avant-garde was made by Clement Greenberg in "Modernist Painting," *Forum Lectures* (Washington, DC: Voice of America, 1960). Peter Bürger provides a classic definition of the political avant-garde in his *Theory of the Avant-Garde*, trans. Michael Shaw (Minneapolis: University of Minnesota Press, 1984).
11. Howard Rheingold, *Smart Mobs: The Next Social Revolution* (Cambridge, MA: Perseus Publishing, 2002).
12. Bürger, *Theory of the Avant-Garde*, 49, 51.