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**Digitizing the Novel, 1987-2010**

A Dissertation Presented

by

**Bradley Joseph Reina**

to

The Graduate School

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# **Digitizing the Novel, 1987-2010**

by

**Bradley Reina**

**Doctor of Philosophy**

in

**English**

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The novel is digital, it was digital, and it will be digital. Most authors have written on word processors and most publishers have made books with some form of desktop publishing software since the early 1990s. The first novels for digital display were written and published in the late 1980s. From a literary perspective, the question is whether such digital-born literature translates into palpable changes in the novel form, why, and how.

Previous theories of the meeting of digital technology and literature have all too often presented a predetermined fate for this pairing—an essentialist vision of literature, technology, or both. I begin by showing this process at work in the creation of Michael Joyce's *afternoon, a story* (1987), the most well-known hypertext fiction. Joyce's work is often understood as evidence that hypertext and digital technologies were inherently suited to experimental practice. I show, instead, that hypertext technology was initially reader and user friendly, and that the experimentalism of *afternoon* should be credited to Joyce's literary goals. Print books also

became digitally born in the 1990s, with all major American publishers shifting to digital typesetting (or desktop publishing). This largely unnoticed shift shows a technology developing according to the particular state of the publishing industry during this period, and the fading influence of high postmodern literary style. I show how three authors—Mark Z. Danielewski, Jennifer Egan, and Junot Díaz—turn digital technology toward more narrative means during this period, augmenting textual meaning with an enhanced typographical paratext. Last, I look at a digital book within a book, the Primer from Neal Stephenson’s *The Diamond Age or, A Young Lady’s Illustrated Primer* (1995), to show how this digital book remediates the social and contextual aspects of the early British novel. The Primer shows how clearly digital fiction has been defined as highly experimental, and how this constricts how we think about digital fiction and what it can be. Digitizing the novel has not meant something stable or predefined, but is a moving target, shifting to account for context, public, and literary moment.

To my wife, Amalea Smirniotopoulos, and our son Jack.

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## **Introduction: What is Essential in the Digital Novel?**

What will the digital novel be like, when it eventually makes its way into the world, and how can we hope to predict it? Rather than simply try to predict the future, I try in this project to assess the *current state* of the digital novel. For, as Katherine Hayles (5, 43) and Jessica Pressman (257) both suggest, all of our print novels have been “digital born” for decades now. Most authors have written on word processors and most publishers have made books with some form of desktop publishing since the early 1990s. The first novels for digital display were written and published in the late 1980s. From a literary perspective, the question is whether such digital-born literature translates into palpable changes in the novel form, why, and how. I have concerned myself with three versions of the digitizing or digitized novel here: the most well-known hypertext fiction, Michael Joyce’s *afternoon, a story* (1987); the effects of the shift to digital typesetting of print books that began in the 1990s, as expressed in Mark Z. Danielewski’s *House of Leaves* (1999), Jennifer Egan’s *A Visit from the Goon Squad* (2010), and Junot Díaz’s *The Brief Wondrous Life of Oscar Wao* (2007); and a digital book within a book, the Primer from Neal Stephenson’s *The Diamond Age or, A Young Lady’s Illustrated Primer* (1995). With this range of texts and contexts, I discuss what digitization has meant in practical terms for writers and readers, and what lessons that teaches us for the future. In practice, digitizing the literary has not meant something stable, but is a moving target, shifting to account for context, public, and literary moment.

I argue instead that the meeting of digital technology and the novel is not something that can be predefined or assumed. At each of the meeting points I will discuss, digital technology was bent to literary, social, and cultural pressure and purposes. In other words, the progress of literary technology has not been *technologically determined* and it is not something that is easily

defined by looking for the *essential* qualities of the medium. Instead, if we want to know how digital fiction originated, we cannot focus simply on the technological possibilities of hypertext. We cannot understand the movement to digital production of print books simply by thinking about what kind of software intervention desktop publishing programs are. As Neal Stephenson does in *The Diamond Age*, we have to look to the social roles of the technologies in everyday life, we have to look at the prevailing literary style in place when desktop publishing came to be widely used, and we have to look at the role of critics, authors, and programmers in defining how technologies are used.

Each of the three versions of the digital novel that I consider has presented an opportunity to change the course of the novel, much in the same way modernism and postmodernism rewrote aesthetic and literary standards. Yet the novel as digital object has added a new layer to this argument. In addition to arguing about what makes for an excellent novel or what its role in society is, the movement of the novel to the digital sphere has intensified questions about what the new digital novel *is*. The digital novel as it is and has been forms a central point between media studies and literary studies. On the one hand, the novel is seen as a sacred object of our collective history and, on the other, as a vestige of old narratives in need of revision and explosion. The digital, meanwhile, is a symbol of freedom and the new, but also subject to corporate power, a surveillance tool, and a force of distraction. The combination of such symbolic concepts has led to both interesting new avenues in literature and a new discussion about the *essence* of technology, especially as it pertains to the literary. This latter discussion has made it all the more difficult to understand the significance of digital technology in the literary sphere.

I begin by considering how these issues play out in the first and most often studied hypertext fiction, *afternoon, a story* by Michael Joyce. Around the time of its writing and publishing, Joyce and other scholars became focused on the way that hypertext allowed for new types of storytelling, arguing in scholarship and fiction that hypertext was *defined* by its experimental and postmodern qualities, such as non-linear narratives, avoidance of closure, and multiple plots. Because of Joyce's role as scholar, author, advocate, progenitor, and programmer, and the consensus reached among likeminded scholars like J. David Bolter, George Landow, Jane Yellowlees Douglas, Stuart Moulthrop, and Robert Coover, the characterization largely stuck. Hypertext fiction largely, and digital literature more broadly, came to mean difficult, experimental work with largely postmodern style and politics.

This vision of digital literature was partly set against an idea of the traditional, realist novel. Though it is ever more apparent in some circles that the book is a communications medium of its own, it often seems impossible to view the book's entry into a digital world in a clear-eyed way, treating novel-reading instead as sacred and unchanging.<sup>1</sup> Sven Birkerts is the best example of this problem. His *Gutenberg Elegies* (1996) is a thoughtful but deeply nostalgic view of what he believes is a losing battle between print, exemplified by the novel, and all the other media vying for human attention. To Birkerts, reading has both a medial nature (it is a device for getting deeply involved in a text—"where we can slip out of our customary time orientation" [32]) and an essence (print is the "soul of our societal body," bearer of a special

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<sup>1</sup> This tradition is largely conservative, and erupts particularly out of the debates over canon constitution that arose in the 1980s, such as Allan Bloom's *The Closing of the American Mind* (1987) and Alvin Kernan's *The Death of Literature* (1990). The narrative opened up to a wider public debate with the publishing of the NEA's fearful report *Who Reads Literature?: The Future of the United States as a Nation of Readers* (1989/1990), and its introduction as a *Washington Post* op-ed.

history that cannot be accessed by other media [20]).<sup>2</sup> Though the medial nature of the novel is something that is increasingly being studied and considered, the essence of the novel is a powerful idea. It is a general sense that a book has a life of its own, a soul, an inherent nature that makes it different, special, good or bad.

I define this rhetorical move here as *essentialism*, rendering certain qualities of a technology as above all others, and defining the technology according to these qualities. For Birkerts this quality is the deep reading experience and the connection to a shared past culture. Yet Birkerts shows how essentialism blinds us to everyday realities and contexts. There is no purity, for instance, no grace and beauty that extends to *the novel form itself*, regardless of the content or skill of the author. If it did, there could not exist both Faulkner's *The Sound and the Fury* and Nicole "Snooki" Polizzi's *two novels* (two).<sup>3</sup> Any meaningful description of the essence of the novel would not admit both these examples. Certainly, Birkerts is not thinking of Ms. Polizzi's work when he is arguing about the primacy of the novel over other media. But the argument about essential qualities, in the way that it is often made, does not admit for much practical information. Birkerts's own arguments about the way that the novel is losing power in a digital world are like this, too—Birkerts laments the inability of his college students to enjoy Henry James (18), and then later relates that he himself had no interest in reading anything that

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<sup>2</sup> Twenty years of technological process later, Birkerts remains convinced of the essence of the novel, and is newly resistant to the idea of placing that essence in digital form. He laments in *Changing the Subject* (2015) that the ebook is "a loss of a crucial layer of density . . . the text has been unhoused, rendered transient" (194). Oddly, for Birkerts, the ebook is not a text without a box, but a soul without a container: "the book itself has been vaporized, taken out of spatial existence, *made ghostly*" (196, my italics). Birkerts's vision of the print novel as a kind of body for the intellect, a house for thought and collective history, makes the package *essential*, sacred. And a transmutation of the work is not something that Birkerts appears able to come to grips with analytically, instead portraying it as a death.

<sup>3</sup> Nicole Polizzi was one of the stars of MTV's reality show *The Jersey Shore*, which followed a group of largely superficial friends as they rented a house on the shore for the summer. It was a step down, most agreed, from even late seasons of *The Real World*. Her two novels are examples of a publishing industry focused largely on sales from successful brands, whether it is Snooki, Stephen King, Glenn Beck, or Jonathan Franzen. Name recognition is key. I will discuss the reasons for this in chapter two. Suffice it to say that Snooki's novels are sold based on her celebrity and personality, not any inherent literary quality.

was on his own college syllabi, despite being an otherwise interested reader (49). Whatever the novel is, and whatever individual novels can do, it makes little sense to argue that they all share a particular special essence that defines them.<sup>4</sup>

Digital literature in all its forms exists at the intersection of narratives like those of Birkerts and similar arguments about the role of technology and media (both digital and analog).<sup>5</sup> Hypertext fiction is an example of the collision between arguments about the essential qualities of literature and about the essential qualities of media. Like Birkerts's characterization of print, many of these arguments about media are not socially or historically situated, but content- and context-blind.

We can lay part of the blame for this at the feet of Marshall McLuhan. McLuhan's famed 1964 statement bears repeating within the context of his own words: "the medium is the message. This is merely to say that the personal and social consequences of any medium—that is, of any extension of ourselves—result from the new scale that is introduced into our affairs by each extension of ourselves, or by any new technology" (7). McLuhan's work was important in drawing attention to the role of the medium in both society and in understanding art. In a time in which almost no attention was paid to the medium, and all to the content, McLuhan's intervention was key. But today, after many years of media criticism, the construction of McLuhan's explanation should give us pause. McLuhan argues, at length and with his trademark brashness, that a medium boils down to the part of the human sensory experience that is extended by the medium, and the degree of extension. He states, as an explanation and clarification, that "the effect of the movie form is not related to its program content" (18). For

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<sup>4</sup> This is not to say that we cannot argue about what novels are generally about or what they do, as will be clear from my reliance on theorists of the novel in chapter three, only that arguing for essential qualities in such a way blinds Birkerts to other realities of the novel.

<sup>5</sup> See for example, the technophobia of Neil Postman's *Amusing Ourselves to Death* (1985) and *Technopoly* (1992), and more recently Nicholas Carr's *The Shallows* (2010).

McLuhan, then, the effect of the medium is wholly wrapped up in what it does *to* our senses, rather than what it does *with* them—as if there were no difference between Ken Burns’s *Jazz* and Michael Bay’s *Transformers: Age of Extinction*.

Even as scholars have become critical of McLuhan’s work, it remains highly influential. Friedrich Kittler’s *Gramophone, Film, Typewriter* (1986) is a strong example of this tendency and the dangers associated with it. Kittler’s argument for media essence begins with McLuhan’s simple sense that media extend human possibility, but re-frames it using Lacanian psychoanalysis. For Kittler, the break between the handwritten word and the “materiality and technicity” of typewritten words has pushed words (“linguistic signs”) into the symbolic. Meanwhile, the imaginary “implements precisely those optical illusions” that defined the early days of cinema (15). For Kittler, the medium is as much an extension of thought and agency as it is an extension of simple senses. The construction of this analogy leads Kittler to the conclusion that with humanity’s journey through psychological stages expressed through technology, the human “essence escapes into apparatuses” (16). The ramifications of such a position are that technology becomes the supreme power. If people give up their essential qualities to technology, then we live in a world determined by those technologies. Kittler makes this perfectly clear. In the preface to *Gramophone, Film, Typewriter*, he states simply, “media determine our situation” (xxxix). This is not surprising given that Kittler has rhetorically ceded the essence of humanity to film and the typewriter.

Kittler also represents a kind of bridge between studies of analog technologies and digital ones. Kittler expands on McLuhan’s conviction that media are defined by transmission method rather than content. He argues that digitization will “standardize” the “formerly distinct media of television, radio, telephone and mail” through shared transmission over fiber optic cable. This

will, he states, “erase the very concept of medium” (1-2). If the essence of a medium is in its transmission, in the distance it moves from analog human behavior, or in the mental state that it represents, then such a conclusion logically follows. And, though McLuhan and Kittler are now criticized for their technological determinism, the idea that certain technologies have powerful essences has held more permanent sway at the connection of literary and media scholarship.

The early proponents of hypertext fiction were particularly susceptible to the positive side of this argument. George Landow argued that hypertext technology was so powerful that it would free readers from the hierarchical power of the author and from the evils of meta-narratives. He wrote that “critical theory promises to theorize hypertext and hypertext promises to embody and thereby test aspects of theory” (2), and more famously that “hypertext creates an almost embarrassingly literal embodiment of [the concepts of decentering and the readerly text]” (32). Landow’s conviction that hypertext and critical theory are linked is at the center of much of his thinking about the technology, but it is not a position that has aged well. Matthew Kirschenbaum calls Landow’s convergence “oddly out of step with mainstream literary studies, where high postmodernism had all but been eclipsed” even at the time Landow wrote (165). As we move further from the excitement that surrounded the appearance of literary hypertext, it becomes clearer that Landow’s position was an especially committed version a shared conviction about the *essence* of hypertext.

Landow doesn’t begin in a deterministic mode like Kittler and McLuhan do. Instead, the idea of the essence of hypertext leads Landow into a situation in which the technology has agency over people. Landow does not argue that he and other proponents of hypertext saw clear parallels for possible uses of this technology. He argued that it *embodied* theory, that hypertext technology *creates* an embodiment of theory. Even as Landow credits Vannevar Bush, Ted



Nelson, and Douglas Englebart with developing the ideas that created hypertext as he knew it (7-10), it is hypertext that comes to create and embody, rather than Bush, Nelson, Englebart, or even Joyce and J. David Bolter, who developed Storyspace, the software used to read and write many early hypertext fictions. Landow's essentialist argument leads him to a deterministic one.

In some sense, it is acknowledged that there are problems with technological determinism and essentialism in the work of these three writers. Bolter recognizes criticisms of determinism in his own work by partly pointing back to similar criticisms of McLuhan (xiii). Notes on the translation of Kittler's *Gramophone, Film, Typewriter* also recognize that American scholarship on Kittler has found his work to be deterministic (xxxiii-iv). And Marie-Laure Ryan has taken issue with the deterministic relationship between theory and hypertext that Landow sets up (6). But the issue also appears in more recent, and more thoughtful, scholarship in strange ways. The deterministic aspects are fading away, but the essentialism seems to be sticking around.

Bolter and Richard Grusin, in their long look at media, *Remediation: Understanding New Media* (2000), fall into this trap both in the general and the specific. In one very clear sense, Bolter and Grusin essentialize the entire evolution of new media by framing the development of new media in terms of remediation. New media, in their view, present themselves "as refashioned and improved versions of other media" (14-15), language which both makes remediation the central feature of a new medium and shifts agency toward the technologies and away from human actors. In the specifics, this has interesting repercussions. "A new medium is justified," Bolter and Grusin argue, "because it fills a lack or repairs a fault in its predecessor, because it fills the unkept promise of an older medium" (60). This explains many developments in new media, such as highly realistic CG special effects and animation, but makes other new media phenomena inscrutable. Bolter and Grusin seem surprised that the Voyager ebooks

remediate the book format without challenging “print’s assumptions about linearity and closure” (46). In fact, the same can be said about Kindle ebooks and most fiction that is now read on screens. The same was true of the iPod; both the iPod and the Kindle improved on storage and portability, but in practical use the iPod and most ebook readers degrade the quality of the medium that they follow up on, rather than repair a fault or improve it. Neither is explainable in terms of a move toward hypermediacy or immediacy; they are simply examples of a public choosing portability over fidelity. The idea that the new medium must improve on the prior one, and that this tends to oscillate between hypermediacy and immediacy, makes Bolter and Grusin blind to these kinds of developments. Remediation for them has become the essential quality of how new media works and anything else is hard to explain or predict.

The introduction of digital technology into much of print bookmaking in the 1990s is one of those moments that becomes inscrutable in the terms of essentialist narratives. Rather than a clear introduction of a new medium, it was a change in the production methods of the old medium—the addition of a software layer and a digital to analog conversion. In essentialist narratives, this should lead to a *fundamental* change into the print book. The book should be “standardized” by its digital transmission and creation (to use Kittler’s terms), or it should participate in the rest of media’s oscillation between immediacy and hypermediacy as it tries to improve on previous print technology (to use Bolter and Grusin’s terms). But neither of those happened on any appreciable scale. The changes to print production happened without the notice of a committed community of scholars or writers, leading to a new injection of meaning into the space around the author’s words (the typography and the surface of the page). Digitizing major aspects of the production of print novels led to quiet, unexpected changes driven largely by contextual, not technological, forces.

N. Katherine Hayles's influential work on digital literature can help to make clear how this is possible, and also why defining essentialism as an issue in new media studies is itself problematic. In *Electronic Literature* (2008) Hayles argues that electronic literature "can be understood as creating recursive feedback loops" between human and computer processes. This extends, she argues, far beyond simply dramatizing the experience of being human in a rapidly technologizing world, but includes the way that computers work on our language, emotions, and our bodies (131). This is a compelling and thoughtful argument, including a lengthy consideration of the history and roles of electronic literature. Rather than argue that technologies are controlling humanity, Hayles figures them in a co-evolving relationship, human agency operating within a world now filled with "nonhuman actors" (131). In fact, there is a certain kinship here, between Hayles's argument and Michael McKeon's influential argument that the novel is a "cultural instrument designed to mediate the transition to modernity" (xxi). McKeon's argument had the novel mediating the shift from a world organized by rank or bloodline to a world that is dominated by class, and the shift from a world view defined by religious thought that explained all things to a world where science and history were breaking up an agreed upon order of the universe. McKeon had the benefit of working with a form that has been widely read for hundreds of years; his concept of the novel as mediator for modernity created from the general outlines of the novel and from social and historical contexts. Hayles, working with a new form that is still evolving and does not have a wide readership, is dealing with a much trickier subject.

This means that, just like Bolter and Grusin, Hayles may miss certain aspects of the developing form, that there will be aspects of electronic literature that she cannot foresee or explain, like the simplicity of Voyager ebooks or the Kindle. Hayles privileges non-linear or

non-narrative works in the digital realm, works that trouble the relationship among narrative, humans, and computers. In an exemplary virtual reality work described by Hayles, two competing narratives appear on a wall, and as the reader tries to read them, the words begin to fall off the wall. There is no successful outcome to the work; the words always inevitably fall onto the floor in an unreadable heap, resisting both narrative pleasure and user control (13). The idea of a work in which human and machine work well together, that moves toward closure in a narrative fashion, would seem to be outside the qualities of the medium of electronic literature, as Hayles defines them. Though Hayles's conception of digital literature as a form that will mediate the relationship between humans and technology is powerful, she has made narrative difficulty, experiment, and reader/user frustration essential qualities of the medium, and thus a key part of her argument.

Just as important as moving past essentializing new media is not returning to the media-blind position that prevailed before McLuhan. The digitization of the novel is a narrative that suggests both the need for better approaches to studying new media and one way of doing so. I would argue, as Lisa Gitelman does in *Always Already New* (2006), that essentializing is detrimental to both understanding and to our broader relationship with technology. Gitelman sees a prevailing mode in talking about new media to “naturalize or essentialize . . . to cede [media] a history that is more powerfully theirs than ours” (2). In addition to the tendency to determinism, essentializing is a problem for understanding how media and new media work and develop. Gitelman argues that when new media appear, they are “never entirely revolutionary,” but “socially embedded sites for the ongoing negotiation of meaning” (6). In other words, to ignore the human role in the development of new media is to miss out on a large part of the process. The ebook did not come into the world fully formed; it was introduced a number of times, as the

Voyager ebook, as the Sony e-reader, as the Kindle, as the Storyspace hypertext, the html web fiction, and the flash web fiction. Not all of these became popular with critics or readers, and the ones that are today may not remain so. But, as Gitelman makes clear, new media owe a great deal of their eventual nature to their publics and their contexts, not only to their engineering or essential natures.

Gitelman's argument is best exemplified by her discussion of the introduction of the phonograph. If we think about the phonograph today, generally we think of it as a way to listen to recorded music—as a precursor to record players, cassette tapes, and the recording industry. Gitelman's research shows that this was not at all a foregone conclusion when the technology first appeared in 1878 as the “Edison Speaking Phonograph” (29). It was not introduced as a musical recording and playback device, but within the context of a public educational lecture. At lectures and events, the phonograph and its technology would be introduced, explained, and demonstrated for the crowd, so that people would leave “edified” and “entertained” (34). Even after an improved phonograph was introduced, the device's “purpose was still primarily textual; it was a business machine for taking dictation” (46). Our understanding of the phonograph as a medium for recorded music comes not from Edison, or the inherent nature of the technology, but instead from a “sideline” to the dictation business developed by one of Edison's local sales companies: a “nickel-in-the-slot phonograph” that played music through “hearing tubes.” These phonographs were so popular that they spread across the country's parlors, saloons, hotels, depots, drugstores, and arcades in a little more than a year (46). The public, rather than the inventor or the technology itself, pushed the phonograph into the music business.

Gitelman's description of the phonograph is instructional for the specificity of her inquiry and for the increased role that she gives to the public to shape the direction of technology.

Seeking to understand the technology, Gitelman is concerned with what it means, how it came to be, and who does what with it. In many of the more essentializing approaches to media, either the use of the medium or the history of the medium fades away. This is especially true of electronic literature, where avant-garde practices and lack of traditional publishing mean that there is little reading public to speak of, and where scholars have privileged experimental works over popular games and fiction. This is not a recent development: newspapers at the time dismissed the nickel-in-the-slot phonographs but showered the original tin-foil cylinder phonograph with coverage, while media historians have done the opposite—recovering the history of proto-jukeboxes so that it seems the phonograph was always destined to be musical (55).

Recognizing the very real historical role that forces other than technology play in the development, adoption, and popularity of any technology makes it easier to see media as evolving, rather than as stable philosophical constants. Gitelman concentrates on publics and contexts—such as the way that print media traditions corralled the early path of the phonograph. In changing the way that media are studied, Gitelman’s concern is both with portraying an accurate picture of the development of media and with resituating the human presence in media studies, where it can often go missing.

Like the phonograph in the late nineteenth century, digital literature today is still finding its purpose. To borrow a term from book history, we are in the incunabula. As such, it bears considering the human agents involved, as people are still directly involved in driving the technology and its adoption. Digital literature has not reached the point, outside of a small group of enthusiasts perhaps, where it is a defined genre or medium. It remains defined by previous

traditions, when it is defined at all. Essentializing the genre at this point would be either rash or, as with hypertext, a determined effort to shape its path.

Digital literature rests at the intersection of book tradition, software, hardware, and culture. This is what makes it so fruitful for Katherine Hayles as a subject: it is especially prone to questions about humans within technological feedback loops. However, the incunabular state of the genre means that thinking about this in the abstract, or on the evidence of a small group of experimental texts, can lead toward essentializing rather than understanding. One example of this is the way that scholars of digital literature have a tendency to ignore popular ebooks. Just as Hayles privileges experimental digital works, few scholars of digital literature argue that popular, plot-driven romance and thrillers—the books that readers seem to prefer to read on screen—are particularly suited to the digital space or a precursor of things to come.<sup>6</sup> This is not to say that these popular novels *will be* the future of digital literature either, only that what most people would call digital reading is still very much influenced by the standards of popular print novels.

This moment, when digital literature remains poorly defined, makes it all the more important to consider how the medium is developing rather than prematurely defining it. Representing the intersection of literature and technology means that digital literature is prone to the influence of software. As Lev Manovich has made clear, software defines much of how we interact with the world today. As much as we like to credit “technology” and think of smartphones, laptops, and tablets, we interact with the hardware of these devices (and much else besides) only through the conceptual layer of software (14-15). As Jaron Lanier, an early pioneer

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<sup>6</sup> For discussion of romance, science fiction, and other genre works with as consistently bestselling genres, see Graeme McMillan, “Why Big Publishers Think Genre Fiction Like Sci-Fi Is the Future of E-Books.” *Wired*. 26 June 2013. Web. Accessed 4 March 2016. A March 2016 *New York Times* ebook fiction bestseller list is also instructive, featuring the posthumous addition to the *Girl with the Dragon Tattoo* series, and novels titled *Roomhate* and *Runaway Vampire*. “E-book Fiction, *New York Times* Bestsellers” *New York Times*. 13 March 2016. Web. Accessed 24 March 2016.

of VR technology, writes, software is itself culturally influenced and profoundly culturally influential, “expresses[ing] ideas about everything from the nature of a musical note to the nature of personhood” (3). Unlike ideas in literature or philosophy, the process of computer programming “can cause digital designs to get frozen into place by a process known as lock-in.” Lock-in happens when one program becomes central to the working of many other programs, making it increasingly difficult to change the central aspects and ideas imbedded in the original program (7). Lanier makes clear that this is a human issue, with human origins and human solutions: “it takes only a tiny group of engineers to create technology that can shape the entire future of human experience with incredible speed. Therefore crucial arguments about the human relationship with technology should take place between developers before such direct manipulations are designed” (6). Lock-in, in other words, is one way that digital media acquire characteristics that can be defined by some as *essential*—but rather than being part of the true and unchanging nature of the technology, these are characteristics over which humans have (or had) control.

Thinking of technology in this way makes it clear that the Internet is not a technology defined by crowd-sourced ideas and the free exchange of content and information, but a technology co-evolving with its public and its engineers. While the engineers may push ideas, the public will push its weight behind some aspects of the Internet (like the embrace of crowd-sourced Wikipedia at the expense of other digital encyclopedias like Encarta and Encyclopedia Britannica), but will also push back against others (as Facebook users did when the company introduced “Beacon,” a feature that broadcast user purchases) (55).<sup>7</sup> In other words, despite

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<sup>7</sup> Another example would be when Instagram users pushed back against new end user agreements that suggested the company could indiscriminately mine user photos for advertising. See Matthew Lynley, “Why the Web Is Freaking Out Over Instagram’s New Terms of Service.” *Wall Street Journal Digits Blog*. 18 December 2012. Web. Accessed 22 March 2016.



various attempts to define certain qualities of technology as essential, Lanier's work reinforces the role of human engineers in creating these technologies, and also the power of the public to refine, reject, and embrace technologies as they are introduced and after.

Gitelman and Lanier look for meaning in the existence and evolution of media that does not rely on essentializing, or being deterministic about the present and future of media technology, and that is not media-blind. Rather than try to apply a single concept across media, as with McLuhan's extension of the senses, Kittler's application of Lacanian psychoanalysis, or Bolter and Grusin's focus on immediacy and hypermediacy, Gitelman and Lanier suggest a model for a more contextual study of media. Such a model not only allows for a greater understanding of the forces that shape media and their publics, but also returns the much-needed human presence to the study of media and new media. As Lanier makes clear, hardware and software are made by people, and both designers and consumers of media technologies should be invested in what those technologies are and how they are used. Essentializing a technology, or painting a deterministic picture of the relationship between humans and technologies, helps to make it more difficult for humans to have influence over the technologies that are more and more part of our everyday lives.

In chapter one, I consider how Michael Joyce's *afternoon, a story* (1987) came to act as its own force for defining the essential nature of digital literature. *afternoon* is a deeply digital work; it is not only composed on computers, it can only be viewed on a computer (currently still only available on a CD-ROM from publisher Eastgate Systems). Joyce, J. David Bolter and UNC computer scientist John B. Smith developed the specific authoring and reading software for *afternoon*, Storyspace in 1985, which was then used to create and read other seminal works of digital fiction, like Shelley Jackson's *Patchwork Girl* (1995) and Stuart Moulthrop's *Victory*

*Garden* (1991). All of these works are often referred to now according to their software medium—they are *Storyspace* hypertexts. In hypertext fiction (or hyperfiction), text is not necessarily linear, but can jump from unit to unit (sentence, paragraph, page, or anything in between). Like hyperlinks today, words and phrases were used as links, but unlike today's underlined script, *Storyspace* hyperlinks were not always marked. Joyce's pioneering work in hypertext fiction had great power to define the genre, as he created the writing tool, the reading tool, and the first work really to be authored for the *personal computer*, a technology that was just becoming popular for consumers.

As I argue, the reasons for Joyce's overdetermination of the genre of digital literature are *not* medial or technological, but cultural. By looking back at the history of hypertext before hypertext fiction, I argue that it was a technology designed to serve the user in a clear responsive way—mainly as a non-fiction tool for organizing information. Joyce, however, saw the technology as a way to craft fictions that had multiple reading paths—stories that were different each time that the reader came to them. This *literary* goal was combined with an interest in replicating in fiction what Umberto Eco called the “work in movement,” an artistic work that was incomplete until a participant (in Eco's examples often a director or composer) made a series of choices or decisions (56, 48). *afternoon* is as difficult, as experimental a work as it is because these two goals come together with a general postmodern avoidance of narrative closure. With complete control over the hypertext software he used to write it, and that readers would use to read it, Joyce crafted a work that resists closure, resists reader control, and, rather than telling multiple stories, circles endlessly around a series of narratives that are difficult to connect to one another.

The series of cultural choices Joyce made resulted in a non-linear, experimental reading experience, more apparent for most readers than the multiple fiction or “work in movement” that he sometimes argued it was. Early scholarship on hypertext further helped to overdetermine the genre in Joyce’s image. Scholars like George Landow, David Bolter, Jane Yellowlees Douglas, and Robert Coover all argued that the essence of hypertext was postmodern and/or poststructural experimental literature. All these scholars would eventually be considered apologists for the genre of hypertext, rather than thoughtful critics. But the combination of this criticism and Joyce’s seminal position explains how, for more thoughtful critics like Jessica Pressman, N. Katherine Hayles, and Pequeno Loss Glazier, the essence of digital literature remains the way it allows for experimental work.

In chapter two, I consider how digital bookmaking evolved without such pressure from scholars around a seminal work. In the early to mid 1990s, all of the major US publishing houses underwent a drastic technological shift, moving from photo-lithographic typesetting and book design to an entirely digital book design and typesetting process. Rather than remake the novel, or destroy its printed essence, desktop publishing (as computer typesetting became called) was used to bolster traditional aspects of the novel like character, plot, and textual meaning.

The transition to desktop publishing was arguably the fourth or fifth major change in printing and compositing technology, which in roughly half a millennium had gone from human-powered letterpress printing to industrially-powered letterpress printing to lithography and photographically-reproduced lithography. The shift to photolithography was a long one; first developed in the early twentieth century, photolithography is still in use in the twenty-first century, albeit retrofitted for printing computer-produced pages. With the transition to desktop publishing, the process of creating a page of type for setting in a book went from a hand-

sketched, photographed correspondence between printer and designer to a process that occurred entirely on the screen of the designer's desktop computer.

Unlike the development of hypertext fiction and Storyspace, desktop publishing has received little scholarly attention. In fact, it is only in publishing trade publications that the introduction of desktop publishing receives significant attention. Scholars interested in the role of technology in literature passed over this development up until very recently, with both Jessica Pressman (2012) and Katherine Hayles (2008) noting that, essentially, all literature was now digital born—without giving much attention to the specifics of digitally produced print. Given that the consensus transition to desktop publishing occurred between 1990 and 1995, this is a significant lag.

It is just this lack of invested scholarly and artistic attention that allows us to see another way that digital literary technology might develop and be used. In fact, without scholars like George Landow and J. David Bolter, and without a single well-connected and technologically sophisticated author like Michael Joyce, desktop publishing developed as a tool for a generally subtle enhancing of textual meaning. This was and is achieved through the paratext, those aspects of a book that are not simply the author's words. Though paratext is more often defined by aspects such as author biographies and critical commentary, formatting and typesetting decisions are the only paratextual elements that cannot be discarded. Any printed words have formatting—even the plainest of formatted type is just another kind of formatting.

Authors throughout print history have used formatting in innovative ways, but the shift to digital print has made paratextual enhancement more common in both artistic and popular works. To consider this development, I look at three texts that make clear use of desktop publishing: Mark Z. Danielewski's *House of Leaves* (2001), Jennifer Egan's *A Visit from the Goon Squad*

(2010), and Junot Díaz's *The Brief Wondrous Life of Oscar Wao* (2007). Each text uses desktop publishing in an entirely different way and each has been considered differently by scholars. Yet all three novels, despite vast differences in look, content, and tone, use desktop publishing to augment textual meaning, rather than disrupt it, to enhance plot and character rather than to tear them apart. In the absence of a directed push toward digital literature as an essentially experimental field, desktop publishing was used to augment more traditional aspects of the novel. The difference between digital print and hypertext reinforces the idea that digital literary technologies cannot and should not be essentialized.

My third and final chapter considers a digital work that unites these two strains of thinking on digital literature, a digital work that is interactive and technological like *afternoon, a story* but engaged with readers and with meaning like the more traditional works of digital print. This reader-focused digital work is a fictional children's book, the eponymous work in Neal Stephenson's *The Diamond Age or, A Young Lady's Illustrated Primer* (1995). Stephenson's *Primer*, though it is powerfully interactive, more so than any work of digital literature or video game today, replicates many of the social roles of traditional English novels—it acts like a novel, and society values it for this role.

*The Diamond Age* is set in a near future defined by nano-technologically enabled abundance. Humans have learned to manipulate the world at the atomic level—almost anything can be made from hydrogen and oxygen pulled from the sea or from the recycling of old products. Rather than crafting a utopia or dystopia from this conceit, however, Stephenson attempts to consider the effect that such technology would have on today's cultural, economic, and political structures. The effect is a total remaking of the world: diamond is a cheap and ubiquitous building material, so handmade items become vastly expensive and sought after;

explosives are tiny and hard to detect, so surveillance and distance equal security; nations break down and reconstitute themselves in terms of racial, political, and other affinities not defined by simple borders.

Within this world, the Primer is developed in order to reinvigorate one of these post-states—as a tool to teach children. Despite this didactic purpose, the Primer acts in important ways like a novel. One of the main readers of the Primer leaves her home to become an independent subject as a result of her interaction with the Primer, like Defoe's protagonists. It teaches her cultural competencies to fit in with a new political group and to move between those groups with ease, as Ian Watt argued the novel did for Victorian servant women. So, too, the figure of the author is re-formed in *The Diamond Age* as a combination of the reader, the programmer, and a performer who interacts with the reader. As such, the Primer both remediates traditional expectations of the novel's cultural roles and shows how technologies adapt to their publics. The Primer does not merely re-make the novel as a more experimental or interactive work, but shows how new technologies adapt to fill cultural needs. *The Diamond Age* shows how these needs evolve even as they are connected to the past.

The Primer gives the lie to the idea that literature has nothing to gain from technology, and that technology will inherently re-make literature. Instead, it argues that literary technology will evolve alongside its publics to fill cultural needs. Like the other texts I study in this project, it argues that humans have much more control over the media that they consume than we acknowledge. Rather than fearing technology, or crediting its outsize influence, we should recognize that technologies, especially cultural ones, react to public response, that there are designers, programmers, authors, CEOs, and other people behind the development and marketing of media technologies. This project reinforces the idea that we are only at the mercy of the

technologies that we want to consume. This does not mean that media technologies are not worth studying, but rather that the cultural, social, and human contexts of their development and use are more important than we have so far acknowledged.

## Chapter 1: *afternoon, a story* and the Experimental History of Digital Literature

If you have read any digital fiction, then you have read Michael Joyce's *afternoon, a story* (1987). *afternoon* (for short) is by far the most widely read and studied work of digital fiction. Unlike many other hypertexts, it has a well-established critical tradition. It has been included in the *Norton Anthology of Postmodern American Fiction*. Robert Coover called it "the granddaddy of full-length hypertext fictions" ("End of Books"). In a field without a distinct canon, *afternoon* has both great value as an object of study and an outsize influence on how critics and authors see digital literature as a genre.

This makes *afternoon* an ideal place to start a consideration of what happens when the literary and the digital are combined. Before *afternoon*, the genre was open and undefined. After *afternoon*, there was a place to start from. As it happens, *afternoon* was not just a place to start but a very influential work. I will argue here that *afternoon* is partly responsible for the way that we now see digital literature as a space for experimental works that avoid or disrupt narrative. Despite the claims of critics, this is not because of the nature of hypertext technology, but because of very specific literary and theoretical goals that Joyce pursued. By combining Umberto Eco's concept of the "work in movement" (56) with a general tendency to avoid narrative closure, Joyce ended up with a work that is highly resistant to interpretation, and committed to difficulty. Combined with the intense focus of scholars on *afternoon* around its release, this marks out the digital literary space as a place for experimental work, rather than user-driven or narrative works. Hypertext fiction, and digital literature in general, is an experimental genre due to the influence of *afternoon, a story*.



*afternoon* is a very different reading experience than a normal print book. As Matthew Kirschenbaum shows in his study, there are subtle changes in the six different editions, including the web edition created for the *Norton Anthology*. Unlike a print text, the version sold to the public has no search function or even a go-to-page function, so it is difficult to refer back to specific passages. Even while supporting the project of hypertext and arguing that it would supersede print literature, Robert Coover asked, “How does one judge, analyze, write about a work that never reads the same way twice” (“End of Books”)? Though this is not exactly true of *afternoon*—you can read it the same way twice if you keep records of how you move through the text—without significant sharing of extra-textual materials it is very unlikely that two different people would read the work in the same order.<sup>8</sup>

What might be more difficult for scholars and students of literature is the way that the work resists our ability to interpret it. Since *afternoon* has many links, and since these links are often redundant, there are numerous ways to move through the work. Joyce has then programmed these links to shift based on what windows the reader has visited. Sequence, so important for interpreting causation, relationships, or simply which character is being referred to, is changeable. Joyce’s preference for using pronouns instead of names further complicates the simple process of knowing to whom the text is referring at any given moment. By complicating the simplest aspects of textual interpretation, Joyce makes higher-level statements about the content and form of *afternoon* extremely unstable.

Part of this instability was built into the text as part of Joyce’s literary project. As he began playing with computers and thinking about computer-based literature, Joyce wrote in a

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<sup>8</sup>Coover may be referring here to Joyce’s use of “guard fields,” a feature that allows the text to move and change during a reading. Yet these fields reset when the program is quit and reopened—it does not save and record your progress like a modern video game. So it is possible to read the text the same way many times, but it does require a certain amount of extra effort.

letter that “in my experience, the author, sensing two directions, will attempt to keep them open within the pathway of one story” (personal correspondence, qtd. in Kirschenbaum 171). This kind of writing, which Kirschenbaum describes as “multiple fiction” (170), finds an outlet in *afternoon*, as does Joyce’s related goal to write a text that “changes every time you read it” (*Of Two Minds* 31).<sup>9</sup> These two literary goals attempted to extend previous experimental literary techniques, as is evidenced in Joyce’s suggestion that multiple plots and perspectives were already present in modern print fiction in works such as Faulkner’s *The Sound and the Fury* and Darrell’s *Alexandria Quartet* (“Creative Writing and Hypertext” 48). Both the shifting structure and the multiplicity of order tend to disrupt small-scale interpretive acts by making order unstable, as well as preventing the reader from drawing conclusions based on an ending, a sense of closure.

Joyce combined these literary goals with a structure that seems largely based on what Umberto Eco called “the work in movement” (56). To put it very simply, a work in movement requires the participation of others to be completed. The creator of such a work gives an audience or collaborator a specific role, and by fulfilling this role, the participant helps to complete the work. While this is similar to the way that Eco conceived of the reading process—a process that could not be completed without the mind of the reader—the work in movement has a greatly increased role for other persons. As far as practical examples go, Eco’s description includes only performance-based media. However, *afternoon* bears a striking resemblance to the concept, and Joyce cited Eco’s work as having an influential impact on the software he helped

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<sup>9</sup> While the essay from *Of Two Minds* was first published after *afternoon*, the statement is also echoed in a 1987 talk with Bolter, “Hypertext and Creative Writing”: “[the reader] might have to read the tale many times to understand a structure that changes, in a controlled fashion, with each reading” (47-48).

create to write and display *afternoon*.<sup>10</sup> In a sense, Joyce's work could be considered an attempt to create a literary work in movement, a hypertext novel with the same involvement of a performance art piece or avant-garde musical composition, in other words, a novel that would only eventually yield a narrative, a narrative that would be stitched together in the reader's mind. In another sense, the work in movement is the structure that Joyce's ideas of multiple and changing fiction came to take when they were enacted in hypertextual form.

As many critics have noted, hypertext literature bears a striking resemblance to ideas about textuality expressed by theorists including Barthes, Derrida, and Deleuze and Guattari. In "Creative Writing and Hypertext," Bolter and Joyce note that French writers, specifically Philip Sollers and the Tel Quel Group, were at the forefront of the realization that "to attack the form of the novel was also to attack the technology of print that helped to shape that form" (45). The implications of this statement suggest both that Joyce intended to attack the form of the novel in his work and that deviating from print technology was an inherent attack of its own.<sup>11</sup> Literary goals, work in movement structure, and theory come together here to qualify the possibilities of the reader as synthesizer, as stitcher together of disparate parts: "Such a reader is like a mathematician who attempts to envision a four-dimensional object by looking at several projections in three dimensions: each projection is a snapshot, and all the snapshots must be synthesized to win a sense of the whole, *if indeed such a sense is possible*" ("Creative Writing and Hypertext" 48, my emphasis). Such a synthesis is possible in the abstract, in the potential,

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<sup>10</sup> Matthew Kirschenbaum notes that Eco's "theories of the open text and the idea that a literary work was a field of relations in which a reader could be invited to intervene and interact" were influential on the development on the program, which came to be called Storyspace (*Mechanisms* 172). Eco's work also appears often in Joyce's critical work, *Of Two Minds* (1995, see pages 100-101, 136-139, 229, 231, 240, 266-267).

<sup>11</sup> Of course, attacks on the novel form were common in experimental print of the post-war era, as should be clear by the fact that Joyce and Bolter cite print novelists and theorists in support of this idea. Other examples include Pynchon's attack on satisfying narrative closure; and the disruption of both narrative and authorial control that comes with the aleatory methods, like the cut-up, developed by Tristan Tsara and then used by William S. Burroughs and Kathy Acker.

but the equivocation reveals Joyce's resistance to closure, suspicion of meta-narratives (to paraphrase Lyotard), and suggests that the difficulty of interpreting *afternoon* is purposeful.

I argue that the way that Joyce enacted Eco's concept of the work in movement is partially responsible for the overdetermined character of literary hypertext. Since I am attempting to consider *afternoon* within a literary context in which it may not be fully understood, I will begin by introducing hypertext as we know it today, and *afternoon*'s particular version of the format. I follow this with a short history of hypertext and how *afternoon*'s version of the technology was developed. I focus on how hypertext was created to be a user-driven medium, an understanding that is lost in literary hypertexts, partly due to Joyce's influence. After explaining Eco's particular theory of the reader and author relationship, "closed" and "open" texts, and his concept of the work in movement, I move on to *afternoon, a story*. I will show how the software structure of a work in movement, combined with the literary form and content of an experimental novel, results in a text that resists interpretation, and interferes with normal reading processes (as defined by Eco), and even impairs Joyce's stated goal to create a work that is "a global pattern that slowly takes shape in the mind [of the reader]" (Ryan 589). This work, driven by so many different forces, is a picture of the complexity that greets us when we try to talk about technologically sophisticated literary works. It is not just the technology, or just the literary movement; it is always a complex interaction between users, authors, history, and technology.

### 1. Hypertext and *afternoon*, an Introduction

*Hypertext*, at heart, is a reaching toward a different kind of book. Yet today, because of the association between the Internet and multimedia, we have largely lost this understanding of hypertext. We associate *hypertext* with the *hyperlink*, the colored text on the Internet that takes us to the next article, the next way to spend two minutes. What makes the text *hyper* is that the

link takes you away from one narrative (or page) and on to something else which may or may not follow sequentially: continuation of the current narrative, a tangential narrative, a wholly new subject, a reference, an image, an animated .gif file, a YouTube video—probably of a cat trying to jump into a box.<sup>12</sup> While it is hard to think of a multifarious medium like the Internet as at all related to the book, the Internet is based in hypertextual navigation and hypertext is based in the dream of a better book, a different kind of book.<sup>13</sup> As Marie-Laure Ryan puts it, “Like many authors before them—Proust, Mallarmé, James Joyce—the pioneers of hypertext dreamed their brainchild as the ultimate literary work, the sum of all possible narratives, the only text the reader will ever need because its meaning cannot be exhausted” (586). Michael Joyce’s *afternoon, a story* would become the most well known of these attempts.

Because it is so unlike a print novel, *afternoon* bears a bit of an introduction. Because it has the goal, at least, of being a different story every time that one reads it, what follows is a description of one of my experiences reading. I have made use of maps and screenshots here in order to try and give a more full experience of what it is like to read a fictional work that attempts to complicate and disrupt normal reading practices yet is also far different than the user controlled, slightly addictive experience of navigating the Internet.

When I open the file that holds *afternoon*, as an executable file in my applications folder, I am greeted with a long navigation bar and the following window, a kind of frontispiece:

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<sup>12</sup> Maru Cat. Maru cat has his own YouTube channel, with 311,635 subscribers; his videos have a total of over 204,000,000 views. He has a wikipedia page. He climbs into boxes. [www.youtube.com/user/mugumogu](http://www.youtube.com/user/mugumogu), accessed 9 Apr. 2013.

<sup>13</sup> Wikipedia is the most well known example of this today. As a web-based, crowd-sourced hypertext encyclopedia, it has roots in both the print encyclopedia and in multimedia encyclopedias on CD-ROM, like Microsoft’s *Encarta*. In that sense, it is a double remediation of the print encyclopedia. Its hypertextual aspects come from the significant use of links to other articles within Wikipedia and the way that the open structure of the Internet allows readers to branch out from Wikipedia to both cited sources and related outside web pages. The link—a transporting reference to associated but not necessarily directly involved information—is the central aspect of hypertext both as we know it now, and as it has developed since 1945.



Figure 1: Start Screen

Like a book, this screen contains copyright information, even a list of numbers (“1 2 3 4 5...”), meant to replicate the list used in print books to denote which printing the text is. Unlike a book, the first screen gives me a direct choice: “for directions click yes (y)--to start press Return.” Outside of the choose-your-own adventure books of

my childhood and Julio Cortázar’s *Rayuela*, no other literary text that I know of starts with such a meaningful choice.

Being familiar with *afternoon*’s navigation from reading about it, I choose to start.<sup>14</sup> To navigate the text, I can choose from three basic options. In addition to simply pressing return, I can click on words in the window, looking for “words which yield,”<sup>15</sup> or what we would call a hyperlink. However, it bears repeating that these words are not visibly apparent *in any way*. Moreover, if I click on a word that does not yield, I will most likely arrive at the window I would have reached had I pressed return (hereafter, the default). I can also bring up a list of links, via the browse icon—the small book-shaped icon on the left side of the navigation bar (see image 1). Having pressed return after reading the first window, I reach the window titled <begin>. If I then open the list of links (hereafter, the link browser), I see the image below.

<sup>14</sup> I proceed here with a strongly first-person narration of this reading in order to make the process easier to follow.  
<sup>15</sup>From the window titled, <a hypertext> which I arrive at if I choose to see the directions. There is no standard way of citing the name of a window in a hypertext. There is some consensus, after George Landow’s *Hypertext* (1992), that the windows should be called *lexia*, after their similarity to a concept from Roland Barthes. For simplicity, I will refer to the windows *as windows*. However, I will mark window titles as I have done above, in angle brackets, so that they will be distinct from quotations, and text titles.

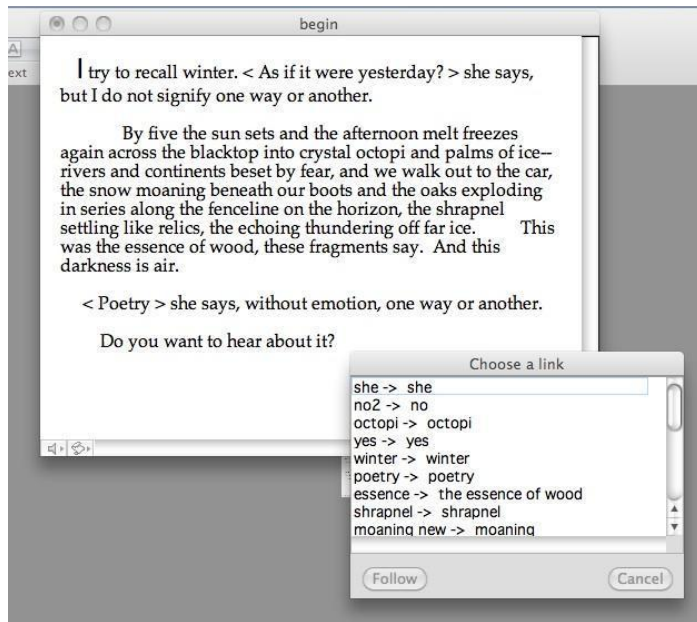


Figure 2: <begin>, with link browser

Though only nine options are visible in the image at left, I have twenty choices presented to me by the link browser if I scroll down. Some of these are accessible via words which yield, some are the result of pressing the yes and no buttons, and others are only available via the browser.

In the text of the first window, there is no tension, no strong hint of plot. There are no character names and no identifying characteristics of the setting. There are two characters identified with pronouns, a description of winter full of contradictions and odd pairings: “octopi and palms of ice” and “oaks exploding.” The window ends with a final gesture that seems to be directed at me: “Do you want to hear about it?” With so many choices, no clear decision to make other than a general assent, I press return.

I am greeted by one of the simpler windows in this work, but also by the one that drives the plot:

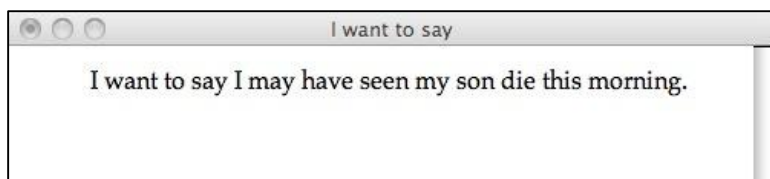
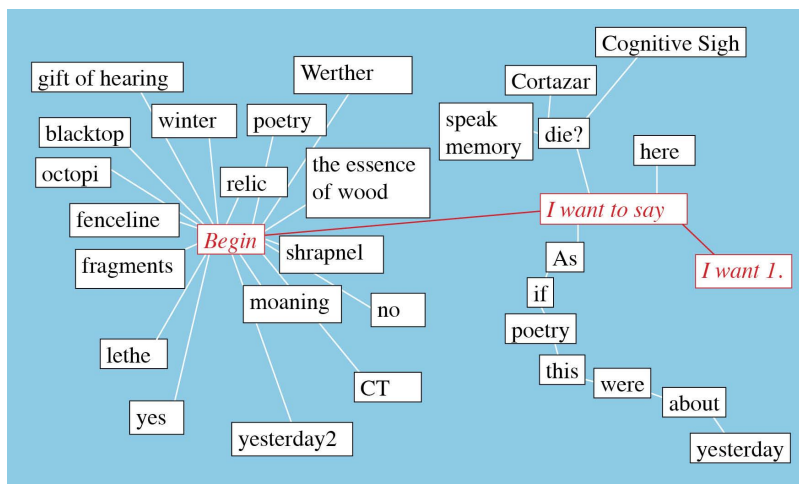


Figure 3: <I want to say>, cropped for space

After the contradictory and detached description of winter in <begin>, <I want to say> raises clear questions and piques my narrative interest. Its text is simple, suggestive, and short. It makes an extreme jump, logically, from <begin>, which mentions no son, no death, only descriptions of winter set within a conversation between an unnamed man and an unnamed woman. Conversely, the text of <I want to say> introduces the central questions of this work: what happened to the narrator’s son, and why does he “want to say”? Why the equivocation?

The default reading (progressing through the text just by pressing return<sup>16</sup>) is quite like turning pages in a work of experimental print fiction, though you can only start the text this way (after thirty-six windows, pressing return will not result in a new window opening). To this point, I have been doing just that. Apart from looking at the choices that I might take, I have not explored at all the multiplicity of the text. So I will shift strategies with the options extending from this important window. Just as one can with a choose-your-own adventure book, I will see what would happen based on the available options. I will, so to speak, put my thumb in the page and sneak ahead.



Map 1: preliminary reading

As you can see from the map, when I decide to move from <I want to say>, I have four options: <die?>, reached by clicking the word “die” or choosing it in the link browser;

<sup>16</sup> A map of the default path is included on the final page of the chapter, as image 14.



<here> and <As>, reached only through the link browser; and <I want 1> reached by keying return, clicking on any of the other words in the window, or choosing it in the link browser. Again, there is nothing to suggest that the word “die” functions as a link, and if I were to try to click any other word in the window, or any of the empty spaces or punctuation, I would be directed to <I want 1>.

The default option, <I want 1>, seems to continue the sentence started in <begin>. The infinitesimal pause between links serves as a moment of departure away from serious question to qualification: “This would be too dramatic for me, although not for Werther.” Werther, it will turn out, is Peter’s boss.<sup>17</sup> The statement seems to suggest a simple answer to the question of why the equivocation—it would be too dramatic. The text of this window then proceeds to describe Werther’s practice of driving his truck directly down the road for stretches, “unveering” and imagining not swerving as he runs over “imaginary beasts.” Looking further down this path, if I follow the default path from this introduction of Werther, I reach a window about a friend’s car accident that introduces Peter’s ex-wife (<I want 2>), and then a few more windows following a conversation with Werther that seems to take place in a diner. The discussion of driving and car accidents foreshadows the event that prompts Peter to suggest that he may have seen his son die, a car accident possibly involving his son, Andy, and his ex-wife, Lisa.

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If I instead happen to click “die” or choose it from the link browser, I reach<die?>, which describes Peter coming upon the scene of a car accident. It opens with the statement that he “felt certain it was them,” then relates that the location of the accident is on their route to school, and describes the location of bodies in the grass, the lights of emergency vehicles. But the window

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<sup>17</sup> The narrator of much of *afternoon* is named Peter. This information is surprisingly hard to come by—unavailable in the entire default path. I use his name starting here for simplicity, though I would not know it yet in this reading.

also closes with the phrase “It was like something from a film: Blowup or the Red Desert,” lending a certain sense of unreality to the scene and recalling Peter’s original equivocation about the accident. The move to <die?> from <I want to say> follows the direct thread of the plot, and a direct link—click on “die,” and a possibly deadly accident appears in the next window. Though Peter remains barely equivocal here, this is often a window I consider when thinking about what he knows, and when he knows it.

Following the path from <die?> leads to odd places. The default option, <Cortazar>, cites the reference in the last sentence of the window. It is four lines quoted from Julio Cortázar’s short story, “Blow-Up,” with the title in parentheses separated from the text. After this window, the default options lose the direct thread established by <die?> and <Cortazar>, returning to Werther in the diner, and then another scene of the accident site. Eventually, I would return to the default path near its end. Other options from <die?> are also jarring, as far as simple narrative movement is concerned. <Cognitive Sigh> seems to be an oddly intimate conversation with Andy’s school headmaster (she chides Peter for not exercising, and suggests he call Lolly, who is Werther’s wife and a therapist). <Speak memory> seems to be descriptive and conversational fragments that reference the web-like nature of writing in hypertext. Nabokov’s memoir of the same title is referenced in the title of the window, and in the text of the window a female says, “Who’s afraid of Virginia Woolf! . . . There! I knew I would remember,” referring to the classic Edward Albee play. Other than <Cortazar>, which links to a reference at the end of <die?>, the paths from this window diverge without order.

The default path through <I want 1> mostly follows a general thread—either conversing with Werther, making inquiries about Andy and Lisa’s well-being, or recalling the morning of the accident. Yet <die?> takes me in different directions. I encounter quotations, complex

windows of text that seem to draw from a different conversation from paragraph to paragraph, and a conversation with a person speaking in a weird parody of a British accent. Though I can piece together the last window now (having spent a great deal of time with the text), it would make very little sense to me if I encountered it before Peter explained that Andy’s headmaster is given to “pseudo-Britishisms” <no end>, which appears much later than <Cognitive Sigh>, about halfway through the default path.

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If, instead, I do not click at all in <I want to say> and instead choose <here>, I am confronted with what appears to be an excerpt from a poem. The poem does not follow directly from <I want to say>, neither syntactically (as <I want 1> followed from <I want to say>) nor topically. It can be loosely connected to Peter, as it is mentioned later that he is a poet. However, the threads that lead from <here> are not expressly concerned with Peter’s writing. They will take me back to <begin> or to threads dealing with Peter and Nausicaa’s relationship.<sup>18</sup> I could read the poem as a

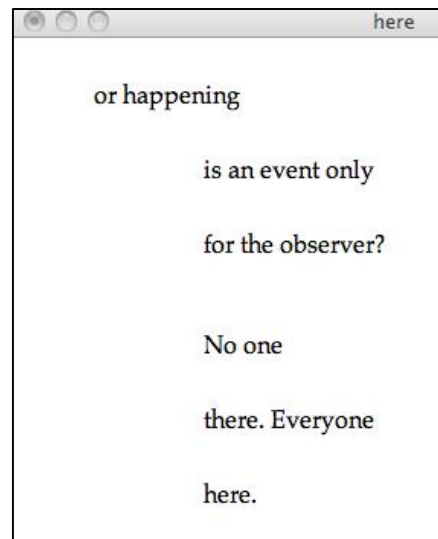


Figure 4: <here>, cropped

reference to the accident (reading “event” as euphemism for “accident”). But the text here seems too detached and philosophical—how would ownership of an event relate to an accident which would seem to overwhelm this kind of philosophical distance? If the poem doesn’t relate to the accident, could it relate to Nausicaa? The following windows offer no specific evidence either

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<sup>18</sup> Nausicaa is the lover of both Peter and Werther, a former prostitute, and named for the sexually charged episode of James Joyce’s *Ulysses* or the episode of Homer’s *Odyssey* of the same name.

way. I can only guess that this must be a fragment of Peter’s poetry, and perhaps I only do so because of the way that the text is presented, as if in modern stanzas.

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The last option from <I want to say> takes me to a window with one word on it. It is the same word as the title of the window, <As>. It is capitalized the same. When I click the link browser for this odd window, it reads only “fragments→ if.” <As> is followed by six windows in what I call the fragments loop<sup>19</sup>: <if>, <poetry>, <this>, <were>, <about>, <yesterday?>. After these six, I can choose to continue the fragments loop, move to a narrative thread about Lolly, or arrive at <Die>, the twin window of <die?>,<sup>20</sup> which I would also encounter six windows down the default path from <I want to say>. Given that the fragments lack text, all we can associate with them is the random connections that the titles seem to make—here, they seem to *want to say* “as if this were poetry about yesterday?” but they do not. I have to stitch it together myself.

The reading above gives both a general sense of how a reader interacts with *afternoon* and what the content is like. Readers have great control over the text and little control over the text. You can see a number of options in the link browser or click around the windows, but following narrative patterns is nearly impossible. Instead, the normal reading experience is defined by unmoored personal pronouns, pieces of narration that need to be assembled, and jarring shifts in time, setting, and tone.

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<sup>19</sup> In an early reading of the text I charted 192 windows in the loop, including one that explained that the window titles were a randomized list of other window titles. I had not found this 6-window loop in that earlier reading.

<sup>20</sup> While <Die> and <die?> have exactly the same text, entirely different links extend from each. While guard fields can change the linking options for a single window, these two are differently named and thus act as two separate places, rather than as one place that moves. While this is the only occasion I know of a twinned pair of windows, <begin> and <>false beginning> contain largely the same text with significant differences.

Either because it is more akin to a print book or because it is now defined practice, most readers will begin *afternoon* by pressing return at the end of every window until it ceases to yield new windows. This default path follows almost exclusively the question of what happened to Peter's (the speaker's) son and Peter's acceptance or rejection of that event. In this path, the reader will never learn that the speaker's name is Peter. But the reader will follow him through repeated, though perhaps half-hearted, attempts to find out whether his son and ex-wife were killed in a car accident. Peter will talk about the possibility with his boss, Werther, who will instead ask to discuss sleeping with Peter's ex-wife. Peter will call his son's school, his ex-wife's office, and her new boyfriend. He will program a computerized device named "datacom" to call the hospital, but the hospital will not provide the device with information. He will call someone named "Nausicaa." But neither Peter nor the reader will find out what exactly has happened to his son, Andy, and his ex-wife, Lisa. Instead, at the end of the default path, Peter will decide not to call the hospital himself, and will "take a pill and call Lolly" <I call>.

Though the default path is centered almost exclusively on the accident, other questions do appear in the rest of the work: what is Peter's relationship with Lolly? what is Werther's relationship with Peter's ex-wife, Lisa? what is the relationship between Peter's lover, Nausicaa, Lolly, and Werther? Yet these are ancillary questions—the central question is what happened to his son and ex-wife, and why Peter seems unable to say directly what he saw.

In a sense, the second window of the default path opens onto a detective story. The detective story is the plot that Brian McHale has described as the "epistemological genre *par excellence*" (147). This genre, which McHale strongly associates with literary modernism, should propel the reader along toward the solution to the detective's problem. Instead, much like Pynchon's *The Crying of Lot 49* or Auster's *The New York Trilogy*, *afternoon* comes with a

structure that complicates the reader's pursuit of that knowledge, of conclusion and closure. At the end of the default path, pressing return will yield no results. The reader must then confront the full reality of navigating the work, as expressed in the instructions I mentioned above: searching for yield words or using the link browser to choose where to go. However, cryptic link titles and hidden links disrupt consistent pursuit of narrative, even though topical strands can often be followed for several windows via the link browser or some default links.<sup>21</sup>

Because of the difficulty of affecting a narrative path, and the work's tendency to privilege movement away from plot threads, Espen Aarseth calls *afternoon* a "game of narration" (96). Rather than a text which has no plot, or no story, *afternoon* has a story, but it is one that you have to "play" to reveal. In other words, in the game that is *afternoon*, you win by being able to construct a narrative, or narratives. As Bolter and Joyce put it in 1987, the reader's goal will be to bring together "the synthesis of many readings" into a whole understanding (87), if not a traditional story.<sup>22</sup> But as I have noted, aspects of the novel's construction make this synthesis an uncertain result.

## 2. The Ideas of Hypertext

Hypertext as a concept has a long history, and it is important to locate literary hypertext within that history, lest we lose sight of the way the concept was adapted for literary use. In "As We May Think" (an article published in both *Atlantic Monthly* and *Life* in 1945), Vannevar Bush suggested a new way of reading through large amounts of information that were increasingly becoming available: a divergent path based on associations rather than traditional sequential

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<sup>21</sup> In image four, there are four link titles, none of which, in either the left-hand side of the column or the right-hand link title, explains what the window that follows will contain. Although <die?> comes the closest, in that it is about the question of death, being able to see link titles and the left-hand descriptors (for lack of a better term) does not give readers the control to remake the work in their own way. It remains a wandering reading experience.

<sup>22</sup> Marie-Laure Ryan, who posits a similar goal for readers of hypertexts like *afternoon*, describes the process of creating a synthesis as comparable to putting together puzzle pieces: "some fit easily together, and some others do not because of their intrinsic content, the narrative equivalent of their shape" (588).

narrative. To facilitate this approach, he proposed an analog computer that would allow a reader or writer to connect articles and smaller passages via *associative* links. The idea for this computer, called a “memex,” was picked up by computer scientists Douglas Engelbart (1962) and Theodore Nelson (1965 and 1974/1987), who expanded the idea and argued that it was particularly suited for use with digital computers. Along the way, associative thinking and hypertext took on both natural and utopian qualities: natural in that it is similar to the way that people think; utopian in that, according to Nelson, hypertextual thinking and computing could change education and free us all from the tyranny of thinking like one another. However, all three thinkers largely considered hypertextual technologies to be research or educational technologies. Rather than improvements to the novel, they considered the technologies as a kind of improvement to the researcher’s notebook, the scholarly monograph, or the stack of cards and books in a researcher’s study—or a replacement for all of these at once.

*afternoon, a story*, as well as two of the other most often read hypertexts, Shelley Jackson’s *Patchwork Girl* and Stuart Moulthrop’s *Victory Garden*, was written with a computer program called Storyspace, developed by Michael Joyce, J. David Bolter, and John B. Smith. It was designed to make hypertextual navigation available to writers of literature. Readers use a version of the same program, included with copies of the works, which may be altered to have fewer functions and controls than the full author’s version.<sup>23</sup> Storyspace was developed between 1984 and 1990, mostly by Bolter and Joyce (they were joined by Smith in 1988). Joyce came to experiment with computers and computer fiction after publishing his first novel; Bolter was a UNC Chapel Hill classicist who had begun experimenting with software for writing interactive

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<sup>23</sup> Though almost all readers today will encounter *afternoon* through the reader version, Espen Aarseth writes that early critics of *afternoon*, George Landow, Stuart Moulthrop, and J. David Bolter, had access to Joyce’s author-version files of *afternoon* (“Nonlinearity and Literary Theory” 70). These author versions allowed for searching of the text and contained maps of the windows, two functions that were made unavailable in the reader version.

fiction at the Yale Artificial Intelligence Lab. The two connected through Bolter's work at Yale and Joyce's correspondence with Northwestern University sociologist Howard Becker and Yale AI researcher Natalie Dehn. At the time, Joyce was searching for ways to write "multiple fictions" and to express multiple indeterminate paths in a single fiction (Kirschenbaum 170–171).<sup>24</sup> This combined with Bolter's interest in creating programs that could be used to write game-like interactive fictions like *Adventure* and *ZORK*.<sup>25</sup> The collaboration between author and academic, interested in different aspects of computer fiction, turned out to be representative of the capabilities that Storyspace came to have.

Storyspace allows for the writing of many kinds of computer fiction. As Kirschenbaum argues, it developed out of various technological and literary traditions that included narrative storytelling (story generators partly based in folklore), less narrative storytelling (Eco's theory of the open text and experimental print fiction like Cortázar's *Rayuela*), conversation (AI research), riddles and games (interactive fiction), and early concepts of hypertext computing for non-fiction (177). Among these traditions are narrative genres, more experimental fiction genres that tend to avoid or complicate narrative, and highly user-determined genres.

Out of these influences came a program capable of being used to write in all of these genres. In literary terms, Storyspace is a program that accommodates a range of works from the simplest choose-your-own adventure story to the most complex and multiple avant-garde fiction. Like a computer, Storyspace is highly flexible. At its most basic, the program is a word

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<sup>24</sup> I rely heavily here on Matthew Kirschenbaum's excellent software history of Storyspace in *Mechanisms*. It is the only study on the program, and considers the role that Joyce's literary position had in its development.

<sup>25</sup> Nick Montfort's technical definition of interactive fiction in *Twisty Little Passages* (2003) is that they are "those computer programs that display text, accept textual responses, and then display additional text in reaction to what has been typed" all in a version of human language, rather than in computer code (vii). *Adventure* and *ZORK* were two of the most popular games, and ones that staged this interaction within the context of something like a game of *Dungeons and Dragons* with the computer acting as dungeon master. In response to simple textual inputs by the user (go north, pick up lamp, open door), the computer program would display more text, keyed to the action and the location (i.e., you see a stream...).



processor that allows the author to link windows of text together in many different ways. One window can be linked to many other windows, and many windows to one window. Storyspace can also represent the text as a map, a tree, or an outline. These views can be made available to the reader, or, as in *afternoon*, they can be turned off. In addition to these simpler aspects of the program, Storyspace also offers authors the ability to block and unblock certain windows in the text, and to change the available links based on which windows readers have visited. This feature, called a “guard field,” harkens back to text adventure games in that it acts like a key—opening a new way that was locked before—but it was made possible by giving each window a unique identifier, an unrelated aspect of the programming (Kirschenbaum 175).<sup>26</sup> In its conglomeration of concepts, ideas, and influences from literature and technology alike, Storyspace had the capability of serving as a place for creating and reading a wide variety of works, from interactive fiction and choose-your-own adventure to sophisticated and complex works like *afternoon*.

Yet, almost as quickly as it was available to the public, literary hypertext, closely associated with Storyspace, came to be defined differently. Rather than being viewed as a way for readers to shape, parse, and combine texts, hypertext was defined as strongly connected to poststructural theories of textuality. While these theories championed reader involvement, they were not invested in reader control over narrative. Aarseth describes this movement as “the larger project within the hypertext community of trying to connect their technology-ideology of hypertext to various paradigms of textual theory, as ‘embodiments’ and ‘incarnations’” (*Cybertext* 25-26). Landow began making these claims in *Hypertext* (1992), marking hypertext and poststructural theories as deeply interrelated: “critical theory promises to theorize hypertext

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<sup>26</sup> Kirschenbaum’s example of the concept from interactive fiction is also worth reprinting: “There is a bear here. If you have the honey pot, then you can get past the bear. If not, the bear eats you” (175n).

and hypertext promises to embody and thereby test aspects of theory” (2). The theories that hypertext is said to embody or express vary from critic to critic. Landow ties hypertext to Barthes’s ideal textuality, Foucault’s networks (2), and Deleuze and Guattari’s rhizomes and plateaus, which are also cited by Moulthrop and Joyce (61). Landow also makes the now oft-cited statement that “hypertext creates an almost embarrassingly literal embodiment of both [Derrida’s decentered text and Barthes’s readerly text]” (52). Mark Poster investigates the way that Derrida’s deconstructive philosophy is expressed, enhanced, and distributed throughout society in computer-based textuality (*Mode of Information* 99-128). Bolter also described hypertext as an embodiment of “semiotic views of language and communication” in the first edition of *Writing Space* (195), but broadened and softened these statements by the time of the 2001 edition, then suggesting a seemingly natural alliance between hypertext’s “radical departures from traditional writing” and theoretical approaches that are “radical departures from traditional ways of understanding literary texts” (161). Yet Bolter’s revisions showed that the consensus around the pairing of hypertext and poststructural thought was fading by 2001.

In some sense, this consensus had already been questioned with the publication of Aarseth’s “Non-linearity and Literary Theory” in Landow’s collection, *Hyper/Text/Theory* (1994). In the article, Aarseth placed hypertext (both literary and non-fiction) within a fuller literary and conceptual context. He did not see hypertext as new, freeing, or revolutionary, but as the bearer of a long history of avant-garde, non-linear, experimental work (71 especially). Aarseth’s conclusion (84) seemed to indicate a feeling that would be echoed by Marie-Laure-Ryan in 2002, that the “most striking feature [of digital textuality] is the precedence of theory over the object of study” (580). Aarseth’s book-length study, *Cybertext*, substitutes the privileged combination of hypertext and poststructural theory for other concepts of narrative, like

the cybertext and “ergodic literature.”<sup>27</sup> In doing so, Aarseth helps to cement a more broad understanding of hypertext within a field of texts that vary in the effort required to navigate them. When Bolter makes significant revisions to *Writing Space* for the 2001 edition, it is partly in response to criticisms like Aarseth’s. By the time of Kirschenbaum’s comments on *afternoon* in *Mechanisms* (2008), the “close coupling of hypertext writing to poststructuralist literary theory” has become a kind of oddity, since “it could be argued that even at the time this ‘convergence’ was oddly out of step with mainstream literary studies” (165). But then, what happened? How did we end up with such a simplistic and seemingly broad consensus that hypertext was innately tied to poststructural theory when literary hypertext had so many other influences?

If we largely disregard the technological influences on both Storyspace and Joyce’s fiction and consider the literary and theoretical influences on Joyce’s text, the consensus begins to make more sense. Though the critical consensus must in some way be credited with perpetuating itself, recovering the place of *afternoon* as an actor is key. The technological influences on Storyspace and *afternoon* include previous concepts of hypertext, the game-like works of interactive fiction, artificial intelligence and automatic story generators, as well as more basic aspects of computing in the 1980s, like word processors and early desktop publishing (Kirschenbaum 177). Word processors and early concepts of hypertext were aimed largely at writers of nonfiction, and were meant to be managed and directed by the reader. Even though earlier hypertexts were often meant to be displayed in a non-sequential, associative manner, they were conceived of as a tool for developing or reading through large volumes of complex research in a user-defined way. Meanwhile, interactive fiction, or text adventure games, focused on an

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<sup>27</sup> Aarseth defines ergodic literature as that in which “nontrivial effort is required to allow the reader to traverse the text” (1). He cites examples of this in both print and electronic works, in both hypertext fiction and games.

experience that was like playing a character in a role-playing game or video game. Though a user's travel through these text-based games was highly defined by the interface and the game's producer, the user could direct the progress of the game and the main character, even if one had to do so in simple noun-verb combinations that the programs could understand. Despite Kirschenbaum's excellent history and important commentary on the medium of hypertext literature, none of these historical influences seems pertinent to *afternoon*. Though Storyspace is designed so that it could be used to create most any kind of story, Joyce's choices in *afternoon* shied away from its technological heritage and toward texts that could easily be mistaken for test cases for theory.

I would argue that we can credit Joyce's *afternoon, a story* with helping to shape this understanding of literary hypertext in general. Though we can certainly credit theorists like Bolter and Landow for developing and nurturing the consensus around hypertext, understanding *afternoon*'s place in the history of hypertext will help make it clear why critics felt so strongly that hypertext was a poststructural mode. Though Kirschenbaum especially argues for a more technologically aware reading of literary hypertext, his histories of Storyspace and the six editions of *afternoon* make clear how relevant an understanding of this work is to the history of literary hypertext. In 1987, at a time when Storyspace had not yet reached a public release, Joyce distributed several dozen copies of the first version of *afternoon* to interested critics and attendants to the ACM Hypertext meeting. Essentially, the first edition was not published, but distributed to parties already interested in creating and exploring hypertext.<sup>28</sup> When Eastgate began distributing *afternoon* and Storyspace in 1990—a date which could be considered the first time it had been “published” in the common sense of the term—it had already been distributed

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<sup>28</sup> This history is also reflected in the *afternoon* window titled <copyright and editions> where Joyce writes that “[t]he first edition of *Afternoon* [sic] was distributed quite informally to a number of Storyspace beta-users and interested writers and scholars beginning in 1987.”

twice by Joyce, at hypertext meetings in 1987 and 1989 (Kirshenbaum 178-180). At a time when the prevailing movement in literature was toward more experimental textuality, at a time when the prevailing critical movement was toward radical departures from print forms, Joyce's theoretically influenced, experimental hypertext fiction was perfectly positioned. To be clear, I am not arguing here that Joyce hoped to define what literary hypertext would be with *afternoon*, no more so than any other author. Instead, I argue that Joyce was, in a sense, the right author for the right time. Hypertext literature was a wholly new medium, so the first work to be published in it, by an author well versed in print literature and well connected with hypertext scholars, was well positioned to be a very influential work.

### 3. Reader/Participant/User

To my knowledge, no one but Michael Joyce has yet considered, or even mentioned, the particular context of Eco's open work in relation to *afternoon*. Though Kirschenbaum extracts the citation from Bolter and Joyce's 1985 report to the Markle Foundation, he ties it mainly to the "conceit of text processing" as a more structured and more flexible alternative to word processing as pertaining to the production of Storyspace (172). However, Eco's theories in *The Role of the Reader* (1979), about reader participation and the way that texts anticipate it, have the possibility to illuminate many of the difficult aspects of *afternoon*. And, as I have noted above, the text was clearly important to Joyce's thinking about hypertext in general and *afternoon* in particular. The key lies in the relationship between three large concepts in Eco's book: his basic concept of what readers do when they read a text, the *open text*, and the *work in movement*. In the conflict between the three concepts lie some of the interpretive issues with *afternoon*.

Put very simply, in *The Role of the Reader*, Eco suggests that the literary work is a communication between author and reader. As such, the reader must figure into the creation of

the text. As Eco puts it, “The reader as an active principal of interpretation is a part of the picture of the generative process of the text” (4). The author must rely on a textual expression to communicate with readers, and in order to do so, Eco argues, he must “foresee a model of the possible reader” who will be able to interpret the finished text (7). By envisioning a model reader, the author can address problems of interpretation that will arise in the reading and gain more control over the communication in a linguistic world of “unlimited semiosis” where “the semantic space can be reduced only through the cooperative activity performed by the reader in actualizing a given text” (39). This is done both by writing for the model reader and by informing the reader through the text itself, to create a more model reader out of anyone.

The communication between author and reader resides in a complex interaction between information that the author provides and information that the reader uses to make sense of the text. According to Eco, the words on the page are interpreted by the reader through “codes and subcodes” that the reader brings to the text and what the reader knows (or can glean from the blurb) of the circumstances surrounding the text and its production. The latter category includes information about the author, the time and social context of the work, and suppositions about the nature of the speech act included in the work (fiction, non-fiction, etc.) (see diagram 14).

Eco’s codes and subcodes seek to define how a reader makes “actualized content” and interpretations from the physical manifestation of a text, in other words, how readers get from what is literally on the page to what they know about the book, in all its aspects. The most basic aspect of this process is the interpretation of words based on dictionary definitions and encyclopedic knowledge. In addition to this, the reader uses “rules of co-reference” (both “semantic analysis” and “syntactical properties”) to decide to whom the text is referring with pronouns or other terms that might be applied to more than one person (18). The reader also uses

“contextual selections and circumstantial selections” to make sense of the meaning of specific word groups (context) and to make sense of what certain words mean given the situation. To paraphrase Eco’s example, “aye!” means “I vote yes” on the floor of congress, and something like “I will obey” in the Navy (19).

Eco’s conception of the reader in the text also eschews a simplistic relationship in which the reader is the dominant force. Instead, Eco’s author makes decisions based on the knowledge that this is what readers do (whether that knowledge is implicit or explicit goes unsaid). This can result in a text that is “closed” to interpretation or “open.” This, though, is a paradoxical idea in Eco’s thought. A “closed” text assumes an average reader, or a reader who shares the writer’s codes quite strictly. By constructing an average model reader, the author leaves the text quite *open* to aberrant readings/interpretations by unforeseen readers. Eco’s examples of closed texts are Superman comics and Ian Fleming’s James Bond novels, which allow themselves to be easily counter-read, since they do not strongly seek to drive the reader’s interpretive process (8-9). In an “open text,” meanwhile, “the reader is strictly defined by the lexical and the syntactical organization” (10). While the text has been constructed with a model reader in mind, this model reader is much more specific, perhaps combined with a text that seeks to create a certain kind of reading competence as it proceeds (8). Paradoxically, this results in a text where “[y]ou cannot use the text as you want, but only as the text wants you to use it” (9). In contrast to Ian Fleming’s spy novels and Superman comics, Eco cites *Finnegan’s Wake*, *Ulysses*, and *The Trial* as examples of open texts. Where the closed texts allow for aberrant readings quite easily, these texts are either interpreted largely as their authors intend or perhaps not at all. *Finnegan’s Wake* expresses perfectly the final paradox of the open text: some texts are created with a certain kind

of reader in mind but do not do enough to create that reader with the text, so these texts are literally closed to interpretation for many readers.

Apart from basic semantic interpretation, Eco identifies other codes and subcodes that aid more sophisticated interpretive aspects. “Rhetorical and stylistic overcoding” help the reader understand when an author is speaking literally and when he is speaking figuratively (19). The reader can also make various kinds of inferences both to anticipate the text and to fill in information that is not expressly specified by the author. “Inferences by common frame” allow the reader to fill in information about stereotypical or everyday situations (most readers will know, for example, what items are available at a supermarket, what kind of people would be there, etc.) (20-21). Meanwhile, “inferences by intertextual frame” are inferences readers make according to genre rules and conventions coming from similar texts, often aiding the reader in anticipating the action of the story (21). If any of these interpretive codes fails to render a unit of text sufficiently clear, the reader can refer to her understanding of “a presupposed ‘aboutness’ of the co-text, usually labeled as its *textual topic*” (24, italics in original). All this, to put it very simply, is how a reader creates the idea of the text in her mind from the text on paper.

Essentially, Eco developed a spectrum of reader involvement based in semiotics. At one end is the basic working of texts and readers (a complex communication itself), then the closed text, the open text, and, at the other end, “the work in movement.” The work in movement takes reader involvement one step further than what Eco describes in open and closed texts. Whereas an open text is created with the interpretive faculties of the reader in mind, giving the reader specific spaces in which to make specific interpretations, the work in movement allows others to assist in the completion of the work itself. It “characteristically consist[s] of unplanned or physically incomplete structural units” (56), allowing “the interpreter, the performer, the



addressee” to complete or rearrange the structure. But like an open text, “it is not an amorphous invitation to indiscriminate participation. The invitation offers the performer the chance of an oriented insertion into something which always remains the world intended by the author” (62). In this way, it remains, like the open text, not quite free of the author but involves others in its completion. Unlike the open text, the work in movement is never a finished “text” in Eco’s conceptualization of it.<sup>29</sup> As examples, Eco mainly offers musical compositions, such as *Scambi*, in which Henri Pousseur constructed a composition made up of sixteen sections, each of which “can be linked to any two others, without weakening the logical continuity of the musical process.” *Scambi* offers the performer predetermined sequential choices, such that there are “a considerable number” of permutations (48). It does not offer these choices to music critics or the audience.

The reader of a sequential narrative uses a number of codes and subcodes (to use Eco’s terms) to assemble content from the words on the page. These codes and the skills to use them are based partially, but not entirely, on the sequence of the words on the page (or screen). While non-sequential narratives, including poems and more experimental prose, are often understandable, the clues given to the reader by text immediately surrounding an ambiguous word, phrase, or sentence are often central to creating meaning. The codes and subcodes of co-reference, syntax, context, circumstance, even sometimes rhetorical and stylistic overcoding all become harder to enact the less sequential the narrative is.<sup>30</sup> If there is not a clear referent for a pronoun, it is harder to connect it to a specific character. If the circumstance of an event is separated from the description of the circumstance, it becomes harder to define what is ordinary

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<sup>29</sup> Eco does cite Mallarmé’s *Livre* (Book), but this is a description of a project that was never completed, rather than a text that a reader can participate in completing. Furthermore, Eco questions whether, if “the work been completed, the whole project would have had any value” (57).

<sup>30</sup> This can be a problem in cut-up novels like William S. Burroughs’s *Naked Lunch* or Kathy Acker’s novels, in which setting and character seem to change without the reader’s noticing.

and what is special in the event. If the context of an utterance is not clear, it can be harder to define shifts in style and harder to locate the reference for a figurative passage. Whether a text is open or closed may complicate these parts of the reading process. And often, this can be what we prefer to study—texts where the interpretation is not immediately clear. But can it remain the same when the text becomes a work in movement? Can a reader-participant interpret in the same way? Eco’s description of the genre, centering on performance and a flawed vision of an imaginary book, suggests that the answer is no.

#### 4. *afternoon, a story*—In Movement

*afternoon* shows clear signs of being most understandable as a work in movement. The reader chooses paths through the work, but these paths are pre-defined. The work can be experienced differently on different occasions, and is often experienced differently by different readers. Since *afternoon* cannot just be read as a pile of cards,<sup>31</sup> with no reader choices to be made, it is incomplete without these choices. And notably for literary scholars, these actions can make the text difficult to interpret.

Commentaries have often made this resistance to interpretation and closure the very point of the work, rather than a feature of it. Jane Yellowlees Douglas’s influential reading in “How Do I Stop This Thing?” is concerned with how a reader finds a sense of closure in the text, focusing on a few central nodes and four reading paths through this complex text (165-172). She is also the critical progenitor (she may be following Joyce’s own lead) of a problematic

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<sup>31</sup> This is in contrast to experimental literature in print, such as Mark Saporta’s *Composition No. 1* (1967), a box of unbound pages that can be rearranged, or Robert Coover’s “Heart Suit,” a short story printed on oversized playing cards, included in *McSweeney’s Quarterly Concern* 16 (May 2005). Either of these could be read with minimal reader input, just by reading them in order. Once the reader finishes the default path of *afternoon*, she has to choose among options.

interpretive strategy proceeding from the assumption that each reading of the text is a *new* reading—that readings are not cumulative (“Performing Texts” 22). In *Writing Space*, Bolter hews to spatial metaphors for navigating the text (126), and figures *afternoon* as a text that empowers readers by “freeing us from the constraints of print” (127). Landow follows similar narratives of possibility, and, in his view, readers become “reader-authors and help *tell* the tale we read” (232, my italics) as in Eco’s description of the work in movement, participating in the performance of the text but not exactly in a creative way. Yet Landow at times also seems compelled to explain *afternoon* only as it relates to critical work, citing Genette on Stendhal and Proust (231), J. Hillis Miller on the print reader’s creation of meaning through webs and connections, and Levi Strauss’ *bricoleur* (232). In all three assessments, the reader’s wide-ranging movement becomes the point of the text, rather than something to study, though in Landow’s case the point is how this movement reflects upon poststructural theories. Meanwhile, Terence Harpold notes a somewhat underconsidered situation in hypertext, the way that the “hypertext link . . . is the mark of a *division* between lexias” (206) and the double bind that this creates in *afternoon* where it is combined with a larger structure that denies narrative or epistemological closure. However, the connection Harpold makes between reading practices and obsessional and neurotic behavior again seems to place the interpretive issues with the text as its main feature and goal.

Kirschenbaum, Hayles, and Douglas have all argued that a reading of *afternoon* is highly specific—to the reader, to the version, and to the medium. This creates a problem of verification and repetition for the literary scholar. To try to make *afternoon* visible and accessible within the format of textual scholarship and to allow my readings to be verifiable and repeatable, I will note some of the specifics of my reading. I have purchased a CD ROM copy of *afternoon, a story*,

Eastgate 6th edition, 2007, and it is running on Mac OSX, version 10.6.8. In order to render this text more readable in a literary setting, and to render it accessible for those who have not interacted with it, I have made use of other technologies to record aspects of the text. I have mapped my reading paths on paper and then transferred some of those rough maps to more readable digital files. I have made free use of screen grabs, allowing me to show what the interface looks like, and how a reader operates within it.

What I would like to make clear in this more extended reading is the way that certain windows and progressions of windows create problems for very basic textual interpretation. While such resistance to interpretation is not wholly caused by Eco's structure, I would like to draw attention to it, since it has been previously ignored. It is hard to divorce Joyce's conception of "multiple readings" from the work in movement, as the former seems to result in the latter—reader choice, combined with multiple options, leads to something that falls into Eco's category. However, the influence of other literary theories, such as those mentioned in Bolter and Joyce's "Creative Writing and Hypertext" or Joyce's *Of Two Minds*, also could be credited with providing a goal of resistant interpretation, since it would be consistent with breaking down expectations derived from print narratives.

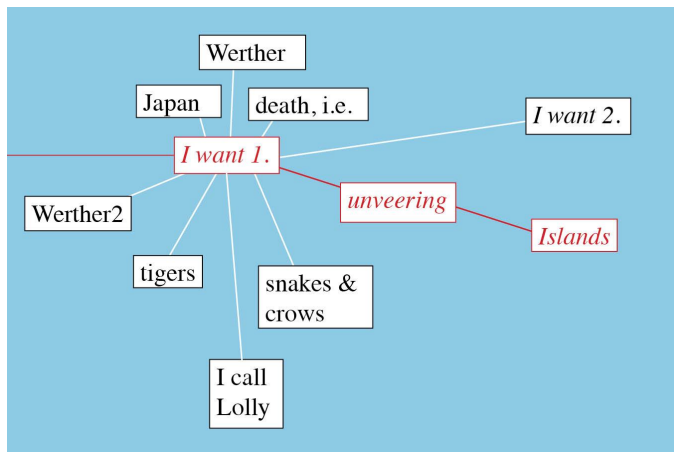
Which is not to say that this is a problem. Interpretive difficulty is a feature of most literary fiction. What makes *afternoon* a special case is the degree of interpretive difficulty present and the influence it had over an otherwise reader-centric medium. Hypertext had been defined by Bush, Englebart, and Nelson as a non-fiction, user-driven technology. To the degree that hypertext had an essence or purpose, it was to serve reader-interpretation. Subverting the nature of the medium up to this point, Joyce defined both digital literature and hypertext fiction as experimental practices. He did so not because of the essence of hypertext technology, but

because he combined Eco's concept of the work in movement with a literary text focused on avoiding narrative closure.

The reading that I began this chapter with is in many ways preliminary. It does not extend very far into the story; it expands from just the second window in the default path. Even given my extensions of the narrative threads explored following these four windows, there is a great deal of content that is left unaddressed. Like a print novel, but more so, a summary is wholly incomplete. But where in a print novel I could easily describe how the text moves, the sequence of the plot, I cannot do that here, for I will make choices that you may not make. While I could read the whole work, finding all 598 windows, and assembling them into a single narrative, or more likely a group of interrelated narratives, and then describe *that*, the four simple windows surrounding <I want to say> offer some reasons why that scenario is unlikely. <Here>, the seemingly poetic window discussed earlier, given its ambiguity as an object and the lack of connection it has with the windows around it, is unlikely to be connected to the rest of the text. I cannot be sure whom to attach the utterance to. I cannot place it in a sequence of events. I cannot place it in an everyday context, nor can I confidently place it in a generic context. It drifts. Can I say for sure how I should integrate the repeated windows, <die?> and <Die>? How should I interpret the repeated window, with only a question mark? In <speaking memory>, am I reading one conversation, or two, or four? Where is it happening and who is conversing? Which of the fragments are quotations from other texts and which are unique to this one? These questions, arising from such a small sample of the windows, are echoed in other groups of windows throughout the text. The functions of the work in movement—multiple paths, the gap between windows produced by that movement, Joyce's ambiguous literary style—repeatedly

prevent the reader from staging productive interpretations of the text and from building the synthesis that Bolter and Joyce suggest will result.

Bronwen Thomas has argued that one of hypertext’s unique abilities is that it can “unmoor scraps of and fragments of dialogue from any notion of a fixed context or set sequences (358). Yet Thomas, like many other scholars, seeks to find ways that readers might learn to enjoy this, citing, as Katherine Hayles does in *Electronic Literature* and elsewhere, the way that hypertext converges with the experience of technologized life. However, this same aspect of *afternoon* may also explain how it resists even the most basic literary interpretation. While we can begin to see this in the short sample above, a more scattered reading should make clear the way that the structure of the work in movement fights against simple interpretation.



Map 2: first encounter with <unveering>

Joyce’s particular use of the hypertext structure in *afternoon* can unmoor more than just scraps of dialogue. One of the options I could take from <I want 1> is <unveering>. Attached as it is to Werther’s special kind of driving, I might initially assume that the following window would contain text that is attached

to Werther, just as <die?> was concerned with an accident and other windows named with Lolly and Werther’s names follow their stories in some way. However, this is not the case.

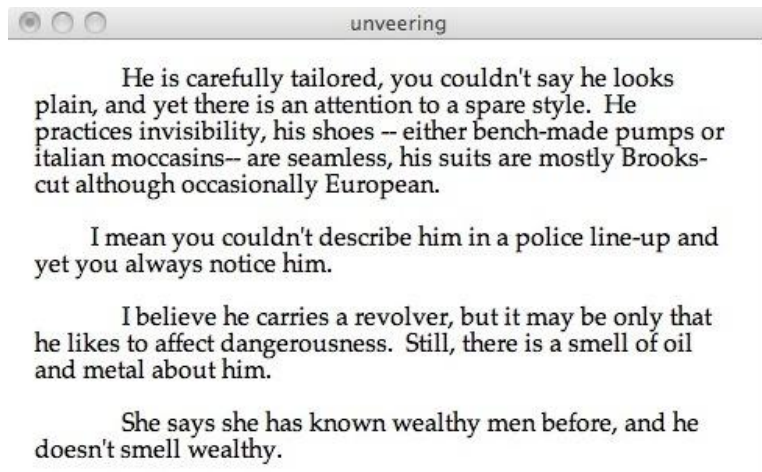


Figure 5: <unveering>

Werther is elsewhere described as dangerous, as would befit a man who practices running over animals, so this at first seems to refer to him. He wears a fishing lure in his ear and is interested in a plastic surgeon “who will fit one out with dueling scars” <Werther>. He asks his

friend and employee Peter “How... would you feel if I slept with your ex-wife?” <asks>, and makes sexually suggestive comments to the waitress at the diner that they frequent <thank you>. Yet, given the fishing lure in his ear, there is no way that he would be described as hard to pick out in a police line-up. And such earrings do not a “spare style” suggest.

What we have here is a complex breakdown of interpretive codes. My ability to attach reference to either the “he” or the “she” used above fails because of the dissociative gap produced by the link and the lack of a clear reference for the pronouns within the window. Likewise, attempts even to place this narration in context fail. As I have noted, the gap between windows makes it difficult to establish a sequence of events or reference, but even so, it sometimes can offer a way to attach one event to another. Yet the windows surrounding <unveering> deal only with Werther, Peter, and Nausicaa (<I want 1> and <Islands>). None clearly relate to the situation that seems to surround this description. While the utterance itself is clear, the circumstances of the utterance prevent establishing simple ownership of the pronouns. Without this information, the passage must remain ambiguous, which is strange, given the rhetorical weight it seems to possess through the specter of the revolver.

At this point, given the seemingly closed world of the work, with a few characters that we return to over and over, I might decide that the passage describes Peter. Since Peter narrates much of the work, he is somewhat absent, kind of a Nick Carraway figure. Given that I do not know much about his appearance, that the windows surrounding <unveering> deal with both Peter and Werther, I could connect this information to Peter, decide that he affects dangerousness and might carry a revolver. Though this would be almost entirely out of character for Peter, other than leaving the information totally unattached, I would have no other choice.

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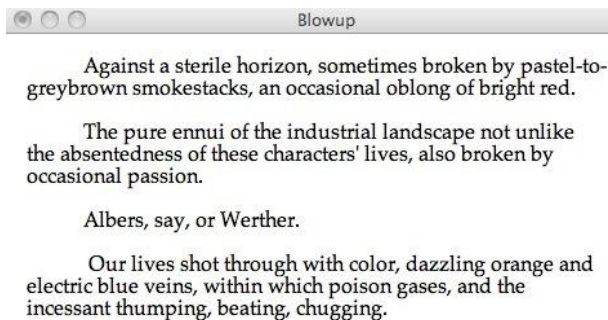


Figure 6: <Blowup>

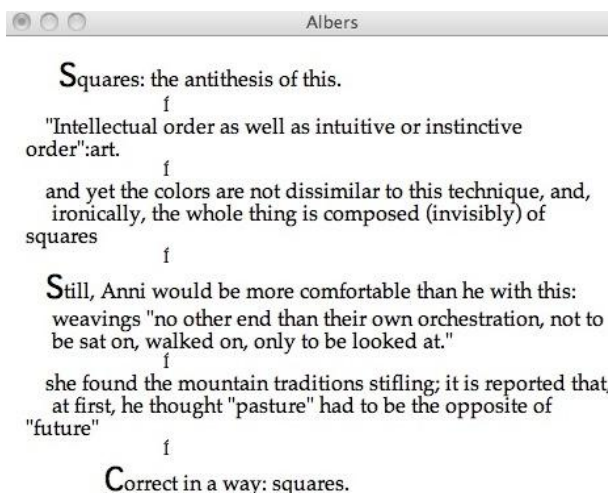


Figure 7: <Albers>



Once, for instance, he was camping alone in the Upper Peninsula when a group of forestry students from Purdue came to the National Forest campsite for a party. He harangued them for the noise, but they were too polite to bait him, and he retreated to his campsite until the music started up again through the pines.

Soon two of them set off to the outhouse along the path between their campsites, and he decided to stalk them.

<I got so close to them at one point I could feel the breeze from them as they passed, and they still didn't see me...>

He carried his rifle with him, although he did not load it. (He is shocked that I tell you this. <You use everything> he says. <You allow no experience to pass unnoted. Who then loves death?>)

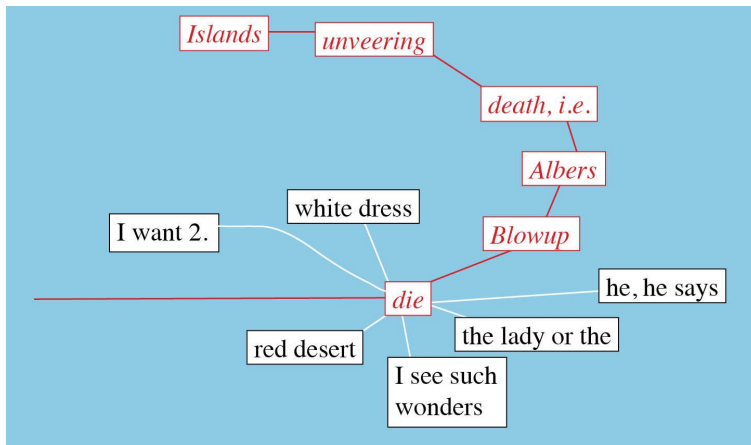
Figure 8: <death, i.e.>

Yet this preliminary understanding of <unveering> can be disrupted by two other windows which would seem to complete a sequence that is wholly unrelated to either Peter or Werther. Moving down the default path to <die>, we might there encounter <unveering> differently. I might encounter <unveering> at the end of the sequence above, of <Blowup>, <Albers>, and <death, i.e.>. In this case, the windows seem to push me toward establishing a person named Albers as the antecedent to the repeated masculine pronoun, rather than Werther or Peter. <Blowup>, after describing a bleak industrial landscape, refers to “Albers, say, or Werther” as having lives characterized as absent but “broken by occasional passion.” When I follow this new name to <Albers>, I am left with a window that might seem similar to <speaking memory>, but is in fact a general description of the work of artist and teacher, Josef Albers, a painter, first of the Bauhaus and then of the Black Mountain School. A diligent Googling of the phrases in quotes from this window reveals them all to be from a sort of biography of the Black Mountain School.<sup>32</sup> “Squares” refers to Albers’s series of paintings called “Homage to the

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<sup>32</sup>Martin Duberman, *Black Mountain: An Exploration in Community*, New York, W.W. Norton: 1993 (first published by Northwestern University Press, 1972). Pages 46, 44, 45, in order of Joyce’s use.

Square,” which Albers worked on from 1950-1976.<sup>33</sup> Since my understanding of both Peter and Werther leads me to distrust attaching the description in <unveering> to either of them, seeing this window alongside the two that follow would push me to attach Albers to the unclear pronouns that follow in <death, i.e.> and <unveering>.



Map 3: <unveering> new context

However, though <death, i.e.> coherently seems to precede <unveering>, it introduces more uncertainty about attaching either window to Albers. <death, i.e.> tells a narrative, split with a few sentences of dialogue, of a man

camping who is disturbed by some college students having a party, and so “stalk[s]” two of them as they walk to the outhouse. He carries an unloaded rifle. The unnamed man in <unveering> may carry a revolver. The link that leads from <death, i.e.> to <unveering> reads “Albers->unveering,” suggesting that this path is about Albers, as this is a basic pattern that *afternoon* uses when discussing characters like Lolly and Werther. Yet, as Douglas, Thomas, and Murray have all suggested, *afternoon* resists closure. And I am likewise resistant to tying these references convincingly to Albers. There is nothing in his history that suggests he “affects dangerousness” or carries guns. In fact, his flight from Nazi Germany to the Black Mountain School would tend to suggest a wariness of violence. Furthermore, there is a certain familiarity expressed between a narrator and another person in <death, i.e.>, within the parenthetical discussion that begins, “He

<sup>33</sup>Holland Cotter, “Harmony, Harder Than It Looks: ‘Josef Albers in America: Painting on Paper,’ at the Morgan.” *New York Times* 26 July, 2012. Web. Accessed 3 June 2013.

is shocked that I tell you this.” It suggests that the narrated story is known by both narrator and “he,” and that “he” is familiar enough with the narrator’s work to be shocked by the inclusion of this story. Who else do we know in the story that could interact in this way other than Werther and Peter?

I seem to have come to a point at which I cannot attach <unveering> and now also <death, i.e.> to Werther, Peter, or Albers. In fact, apart from the “dangerousness” that seems to link those two windows, doubt remains about their connection as well. Is a man who camps and threatens college students likely to wear handmade shoes and “Brooks-cut” suits? Is Peter stalking students who threaten his peace and quiet with a shotgun? More than lack of closure, these windows express Thomas’s concept of the “unmooring” of pieces of narrative (though Thomas focuses on dialogue, the idea is applicable throughout the work). While unmooring the narrative sections does not necessarily prevent stitching together a synthesis, the combination of the narrative shuffling with other interpretive issues does. The two contexts for <unveering> make establishing co-references (pronoun antecedents) impossible. Compounding this is the lack of circumstantial reference points in <death, i.e.> and <unveering>. In these two windows, a conversation seems to be taking place, a story being told. But not only do we not know where the story is being told (a psychiatrist’s couch, a diner, a sunlit bedroom?—just to take examples from *afternoon*), we do not know whether the stories are intended as fictional, as personal history, or as examples. This is particularly at issue in <death, i.e.>, which begins, “Once, for instance,” which seems to act as an example for a statement that is made somewhere else. But where, we cannot be sure. Although I have read extensively in this text, and though I have kept records, maps, images of windows, I simply cannot say who is speaking in <unveering>, nor can I establish who is being referred to.

<unveering> is representative of the process of trying to assemble a synthesis out of readings of *afternoon*. Especially as one begins to read *afternoon*, this need to arrange, rearrange, reassemble according to character reference is common. As I spent more time with the work, more and more of the references fit.<sup>34</sup> <unveering> became, to use Marie-Laure Ryan's analogy, part of a group of puzzle pieces that could not be connected to the larger group of pieces about an accident or the main characters' lives (Peter, Lisa, Lolly, Werther, Nausicaa, and Andy). In these cases, it is largely co-reference issues that make these windows hard to fit in. Since they do not refer to anyone in particular, since the changing sequence of windows prevents establishing narrative order, and since the circumstances of the utterances are unclear, I cannot fulfill the role of synthesizing participant-reader.

This is not the only barrier to cohesion and interpretation that appears in the work. Like <here>, a window that seemed to be a scrap of unattributed poetry, a loop starting with <snakes and crows> forms a figurative statement that has been separated from context and circumstance. Though <here> offered a possible explanation through resonances to the accident, and a possible connection to Peter's writing, <snakes and crows> seems to ask to be interpreted without offering any context within which to do so. It is a fabulistic story about why snakes are how they are. Being

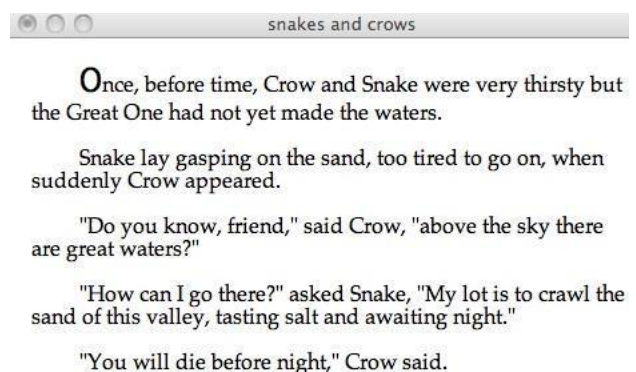


Figure 9: <snakes and crows>

<sup>34</sup> I know, for example, that Peter does see a car accident involving his wife and son, that he and Werther are both involved with Nausicaa, that Peter has an odd relationship with his therapist, Lolly. Details that surround some of these main narrative topics are possible to fit together, even lacking some of the contextual cues and pronoun reference.

fabulistic, it should have a clear meaning. Being a simple story embedded in a complex literary text, it should be an allegory for something else that happens in the work. It is neither.

<snakes and crows> is an option from the third window of the default path, <I want1>. It seems to proceed from the mention of those animals in <I want 1>, two of the imaginary beasts that Werther practices driving over. Otherwise, this is an odd thing to include here, and would seem to have very little relevance to the rest of the story. Its fabulistic qualities are immediately apparent in the opening words, “Once, before time.” From there, <snakes and crows> introduces a supreme deity, “the Great One” who “has not yet made the waters.” While *afternoon* invokes the supernatural via the constant specter of Andy’s death, the fabulistic vision of an active deity invading and creating the material world is quite out of step with the rest of the work.

The fable continues in two more aptly named windows, <just then> and <and so>. It is a very direct narrative trilogy: the scene is set with a thirsty snake and a helpful crow, the snake bites the crow and water (blood) comes to the desert, the Great One punishes the snake and the crow in ways that reflect their behavior. Or: introduction, climax, denouement. The structure of the fable is the opposite of the complicated, shifting structure of *afternoon*.

My instinct, given the resemblance of this story to a fable or legend, is to search for its reference. But I cannot find a source for this story. It bears some resemblance to the fable of the frog and the scorpion, a story that has many variations and is found widely distributed in various parts of the world. In quick summary, though the crow tries to help the snake, the snake can only be itself, and bites the crow even though it is bad for both of them. Despite this similarity, and phrase searches in various databases, no sources appear. Given the period during which Joyce was writing, and his correspondence with Natalie Dehn, who was at that time working with automatic story generators (Kirschenbaum 171), it is possible that this is a myth generated from

such a program. Its nearly rote qualities, but lack of distinct details or a distinct hero, seem to suggest this. Yet without a clear antecedent, and without any direct suggestion that this is a product of Yale's story generators, I cannot say anything for certain about who produced it.

However, some interpretive codes work with this story. The fabulistic register—talking animals expressing traits that we commonly associate with those animals—makes it very clear that it is meant figuratively. However, the allegorical referents of the story are unclear. Who, or what, does it describe? Should I conclude that Peter is the crow and Werther the snake (since Werther wants to sleep with Peter's ex-wife and he is unpleasant)? Is it a somehow technomедial fable, with the computer as the snake and the book as the crow? If the fable is computer-generated, would that suggest some sort of allegory between author and work or between computer and book? Sequentially, the self-contained, looping nature of the windows makes the influence of sequence simple: unless this fable is to relate to Peter and Werther (<snakes and crows> is an option extending from <I want 1>), then sequential context is meaningless.

This fable expresses a difficulty that is particularly problematic for literary scholars. The interpretation required to fit this fable to this text is less basic than the problems of co-reference I described above; it is simply the problem of locating a referent for the allegory that *may or may not be present*. If we can find a referent, it might come through sequence, or it might come through an offhand remark attaching crow-ness, or snake-ness, to a character. But in my many readings, it has not been resolved. And so it must remain either lost or *meaningless*.

This would be less of a problem if *afternoon* did not contain a fair amount of figurative language. <begin> includes this description of winter: “By five the sun sets and the afternoon melt freezes again across the blacktop into crystal octopi and palms of ice—rivers and continents beset by fear.” While the mention of “continents beset by fear” seems to reference the way that

Peter feels haunted by the accident, I have never been able to reconcile the tropical imagery. Like the fable of snakes and crows, its connections are unclear, in part because there are so many other connections to be made. I can piece together many details of Peter’s relationships, with Lolly, Nausicaa, Werther, Lisa, and Andy. However, the process of then attaching more figurative connections, of making sense of Joyce’s more dense and lyrical passages, his quotations or perhaps invented quotations, is seriously impeded.

## 5. An Expert System

```

expert system
(SETQ MIDDLE
 (APPLY 'APPEND
  (MAPCAR
   '(LAMBDA (STATE)
      (LIST (CAR STATE)
            (CONS 'COND
                  (APPEND
                   (MAPCAR
                    (LAMBDA (TRUTH)
                       (APPEND (LIST (CADR TRUTH))
                                (COND ((CDDDDR TRUTH)
                                       (LIST (LIST "GO (CDDDDR
                                             TRUTH))))
                                       (CRD STATE))
                                       '((T (GO
                                         LOSE))))))
                                BODY))))

```

Figure 10: <expert system>

At left is an image of one window from *afternoon*. It is not easily accessible; I found it only during a wandering, day-long reading. I was looking for new places and looking for new connections. If you are computationally inclined, you might guess, as I did, that this is some kind of computer code. You might notice the

repeated use of “state,” “truth,” “append,” and “go,” as well as the myriad parentheses. And then you might ask someone who knows what he is talking about. He would reveal that the window is written in the LiSP family of coding languages, and that “expert system” suggests that it might be used for AI applications, something Michael Joyce or J. David Bolter might have picked up during their time at Yale or through their contacts there. The poetic formatting, indented and

broken up like a William Carlos Williams poem, would not have affected the program's functioning, the location of the parentheses being all the formatting that matters.<sup>35</sup>

I include this window here as a figure for this work. It is, quite literally, uninterpretable through the tools of literary scholarship. Like *afternoon* itself, it requires a computer to be readable. And like *afternoon*, <expert system> is imbedded within a literary realm and styled with a literary sensibility.

As I have argued here, as a literary work, *afternoon* is resistant to basic interpretive methods that would make it accessible to readers. I have also argued that it is not hypertext technology that causes these issues, but a complex combination of authorial intent, influence of prevailing literary theories, and the way that Joyce attempted to realize Umberto Eco's work in movement. I have also returned to the idea that the reader's role in *afternoon* is to create the synthesis of multiple readings. In this assertion, I follow Joyce, Bolter, and Marie-Laure Ryan, diverging from Jane Yellowlees Douglas's long-influential model of readings that were imagined to be new in each permutation. I think that this model of reading may have untapped potential for the literary hypertext. But it is worth pointing out that it is not exactly new.

In fact, I find ultra-canonical literary precedents for both this kind of synthetic reading and for the difficulty of interpretation that partly results from it. As I worked through successive readings, trying to piece together who had done what, what relationships to connect, and how to fill out each character's backstory, I was reminded of Faulkner. Specifically, I recalled the summer that I first read *The Sound and the Fury*. Having only the introduction as a guide, I grasped the general structure of Benjy's portion of the novel, a jumble of recollections, moving *associatively* through Benjy's memories. However, I had no clear narrative and no temporal markers to place these memories, other than occasional comments tied to the ages of Benjy's

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<sup>35</sup> J. Sackett, personal correspondence, 29 March 2013.



siblings, which is itself complicated by the fact that there are two characters named Quentin. Yet, as I read the rest of the novel, the recollections of Benjy's section pieced themselves together, mostly falling into place within the framework established in the other parts of the book. In subsequent readings, the process has continued, or been refreshed. More so even than Cortázar's *Rayuela*, *The Sound and the Fury* is a clear precedent for some of the reading processes that Joyce seems to be working toward in *afternoon*.

In short, it is not a method of reading and of constructing a novel that is purely inspired by or purely confined to the hypertext medium. *afternoon* goes further than *The Sound and the Fury* in requiring the reader to participate in the ordering of the work through conscious choices, but ends up in a very similar place as far as the mental experience of following the story. Yet Joyce's hypertext is more multiple and harder to follow than similar experiments in print. His commitment to avoiding closure—through unmooring text, heavy use of pronouns rather than names, and guard fields—results in a literary puzzle with a great deal of unplaceable pieces. This result is counter not only to some of Joyce's stated goals but also to the history of hypertext technology. The result is a puzzle that cannot be wholly completed, a work that remains unfinished both for the author and for most readers.

As I will discuss in chapter 3, this results not in a failed work, but in a strikingly influential piece of literature. *afternoon, a story*, and the early criticism focused on it, sets up hypertext as the premier medium for experimental fiction. The particular combination of hypertext technology—and Joyce's particular version of that technology, Storyspace—with Eco's work in movement and a commitment to avoiding narrative closure lead to a work that reads as highly experimental. As the first major work in the genre, Joyce continues to influence how we see digital literature today, reinforcing the idea that the essence of hypertext is

decentered, experimental work that avoids narrative and resists interpretation. As I'll show in chapter 3, this blinds us to the possibility of other kinds of digital literature—ones that might satisfy other reader needs or social goals. If, as it often seems, more and more of our lives are transitioning to digital representation, then it is imperative that digital literature not be confined to a single style. It is imperative that we realize that digital literature, like other media, can develop and change.



## Chapter 2: Story Space: Digital Typesetting and the Renewal of Paratext

Two decades ago, almost every American publisher began using exclusively digital technologies to craft and design books. The broadly defined process by which a manuscript page becomes a book page (interior book design and compositing, also known as layout and paging) went from a time-consuming part-digital, part-photographic process to an entirely digital workflow. Yet among scholars of literature and media, the shift to digital typesetting, referred to popularly as “desktop publishing,” has gone almost entirely unnoticed.<sup>36</sup> This shift offers an opportunity to study the practical implications of digitization in literature.

We have come to expect drastic changes to accompany digitization, partly due to the changes that we can now perceive in our daily lives as a result of the proliferation of the Internet and ever more powerful smartphones. There is a tendency to see the recent past in time lapse—all at once leading inevitably to the present. In reality, graphical browsing of the Internet is now two decades old; it has been a decade since the introduction of the first BlackBerry smartphone and eight years since the unveiling of the iPhone. *Chat rooms* were an early mainstay of Internet activity. The power of these technologies makes them seem inevitable in retrospect, but they did not become widespread overnight and their value and uses changed over time.

Much previous scholarship on the intersection of literature and digital technology has considered the possibility of digitization as a positive force for remaking the novel.<sup>37</sup> Yet digital bookmaking suggests the need to take a more balanced position. As Lisa Gitelman and Geoffrey

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<sup>36</sup>N. Katherine Hayles makes two mentions of this fact in relation to an argument about digitally-based literary works: “In the contemporary era, both print and electronic texts are deeply interpenetrated by code. Digital technologies are now so thoroughly integrated with commercial printing processes that print is more properly considered a particular output form of electronic text than an entirely separate medium” (*Electronic Literature* 5, 43, 159-186). Richard Lanham makes a similar point in *The Economics of Attention* (80), though neither considers practical publishing outcomes. John B. Thompson’s *Merchants of Culture* spends time considering the “hidden revolution” that was the publishing industry’s digitization (321) but spends almost no time considering the role of digital layout in this revolution (see 328).

<sup>37</sup>This is especially apparent in some of the early hagiography of hypertext fiction. See Landow, Bolter, and Joyce.

Pingree argue, the adoption and use of new technologies is also influenced strongly by individual choices, and most developments in new media are driven by “existing habits of media use” and “shared desires for new uses” (xii). These habits and desires are aspects of a shared culture, economy, and everyday life. As much as new technologies shape our lives, the development of these technologies is shaped by human forces. Successful new technologies are not always apparent, nor are they easy to predict. Amazon’s Kindle ebook readers have succeeded and expanded, but at the time of release, the most similar product was the failed Sony E-Reader.<sup>38</sup>

The mass production of printed novels (not e-books) through various iterations of desktop publishing software has resulted in a constrained flourishing of paratextual elements, a subtle enhancement of the text’s “graphic surface.”<sup>39</sup> The visual aspects of text design that have long existed in the novel (special pages for new chapters, graphic frontispieces, ornaments to denote space breaks, and drop caps or large initials) have proliferated and become more thoughtfully integrated with what we usually consider the author’s text.<sup>40</sup> Desktop publishing software has resulted in new developments in these visual qualities of the text.

We have come to this point in the history of the novel looking for two new things out of innovations in book technology: a re-envisioning of the object and/or experimental disruptions of the classic form of the novel. With the coming of digital print, neither of these happened on any

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<sup>38</sup> The Sony device was the most popular and well-known device on the market when the first generation Kindle was introduced. In his review of the Kindle, David Pogue joked that the Sony product had made “literally dozens of sales.” David Pogue, “An E-Book Reader That Just May Catch On.” *New York Times* 22 Nov. 2007. Web. 7 Dec. 2011.

<sup>39</sup> Following Gerard Genette, “paratext” consists of all those aspects of a book that are *not* the author’s words, in the most exclusive sense (1). The typography (choice of font, space breaks, ornaments) is an integral part of the paratext because it exists in every book. No book can be without formatting entirely, as there must be decisions about type, space, and the like. Yet most often paratext has been considered through study of the texts that surround a book, for example, book reviews, blurbs, interviews with the author. “Graphic surface” is Glyn White’s term for the graphic qualities of the text page (5). As it is more specific to my project here, I will mainly use the term typographic paratext.

<sup>40</sup> Though the division is often elided, what we read in printed novels is not the author’s authoritative text (always a moving target), but text overlaid with visual meaning and refined by the work of various copyeditors, proofreaders, acquisitions editors, book designers, compositors, and printers.

significant scale. Instead, the economy and culture of U.S. publishing constrained the possibilities and time given to designers and authors to work on book design.<sup>41</sup> At the same time, the aesthetics of the novel moved away from disruption as a signal of high literary achievement. Instead of disrupting the traditional visual form of the book, digital book designs have increasingly used the freedom granted by digital technology to augment the author's words through a constrained flourishing of the paratext. The way that desktop publishing has been used suggests that there is no essentially predetermined way that digital technology and literature will interact. It will be negotiated.

Previous studies of the typeset page or graphic surface have concentrated on authors whose works contain pervasive type experiments clearly attributable to the author. Johanna Drucker discusses Mallarmé, Marinetti, Zdanevich, and Tzara, whose symbolist, futurist, and Dada poetic works are all sustained typographic experiments. These works were also understandable as part of coherent literary movements, often with stated philosophies about the author, page, and reader. Outside of such movements, Glyn White looks at Christine Brooke-Rose's *Thru*, a novel with a similar commitment to sustained typographic experiment, and the works of B. S. Johnson, who noted his commitment to typographic meaning in his second novel (84). Another strain of criticism considers works that include artworks by the author (for example, White discusses the elaborate and meaningful frontispieces of Alasdair Grey [160-204]), or are almost works of art in themselves, such as Mark Saporta's *Composition No. 1*, a boxed set of shuffle-able pages discussed by J. David Bolter (148-50).

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<sup>41</sup> Authors, publishers, editors and even an author's estate can all have constructive input on the work of a book designer. See Richard Hendel's *On Book Design* (2-3).

Other than Drucker, scholars have also tended to focus very clearly on edition histories when considering book design and formatting. Gerard Genette focuses on how changes in typesetting from edition to edition have changed the meanings of a particular book (33-4). Jerome McGann's emphasis is similar, being on the "complex (and open-ended) histories of textual change and variance" and his citation of novels with changing printing histories (9). Yet we could not apply such an approach to today's literature. Contemporary editions do not have much in the way of publication histories. Complicating the lack of history is the fact that photolithography made it easier to save editions of books on film, which could then be reproduced on demand for new print runs. These films and books were then often scanned or used as templates for new editions as publishing moved into the digital age. As a result, there is less and less change happening between editions going back to at least the 1980s. Yet the work of Drucker and White has clearly shown the possibilities for reading the significance of typesetting decisions. And there is ample evidence that new novels today are integrating more visual aspects of typesetting in a different way than before.

To explore the large-scale adoption of desktop publishing software, I want to move into more widely read novels where the ownership of textual decisions is less clear and only single editions are available, a more common situation.<sup>42</sup> In detail, I will explore typographic meaning in Mark Z. Danielewski's *House of Leaves*, Jennifer Egan's *A Visit from the Goon Squad*, and Junot Díaz's *The Brief Wondrous Life of Oscar Wao*, but the trend to more designed text is also

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<sup>42</sup> Marshall Lee describes the author's input into the design as minimal, "unless the book is strongly visual in nature" (287), but notes that authors will see first-pass page proofs, in which the manuscript has been set into the book design (289). However, Lee's book is very prescriptive about the nature of the publishing process. In Richard Hendel's more descriptive telling, culled from his experience and that of other book designers, the author's input is stronger, but amorphous. One designer says that many authors "have strong views" about the design (2); Humphrey Stone says that authors and editors often have "strong opinions" about the styling of extracts (180); and Virginia Tan, who designed *A Visit from the Goon Squad*, notes that authors and editors will sometimes demand a certain typeface for the whole novel (190). In my personal experience working in the production department of a large publishing house, it was clear that authors always saw page proofs, sometimes signed off on design samples, and occasionally asked for specific design elements or changes.

apparent in a wider array of texts from contemporary American literature, including the works of Jonathan Safran Foer, Jonathan Franzen, Gary Shteyngart, and Jodi Picoult.

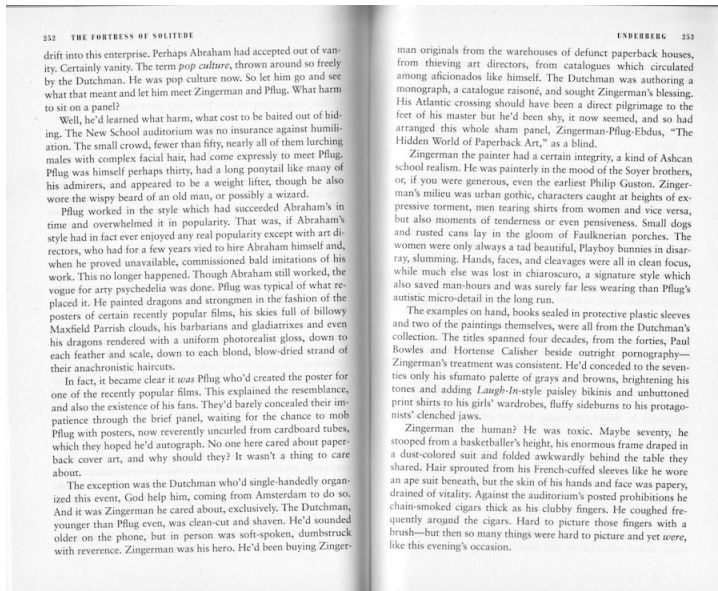


Figure 13: Lethem's Fortress of Solitude

the same way; instead it has widened the spectrum of possibilities. On one side of that spectrum is design that attempts to disappear—Beatrice Warde's model of design as a "crystal goblet," an invisible container of meaning (Lanham 80). While desktop publishing software has reinvigorated the paratext, some novels remain very simply typeset, such as Jonathan Franzen's *Freedom* and Jonathan Lethem's *Fortress of Solitude*. Digital design has also expanded textual possibility to include texts that are more inclusive of other media and contain type that calls attention to the page as a mediating filter, a "hypermediated" text, to use Bolter and Grusin's terms (12-14). Contemporary novels, such as Kathy Acker's *Pussy*,

The shift to digital print technologies (most major U.S. publishers made the switch in the early 1990s) has coincided with a renewed place for those aspects of the print book which are not quite illustration, but are not the text as we generally think of it. Digital production has not affected all American novels in the

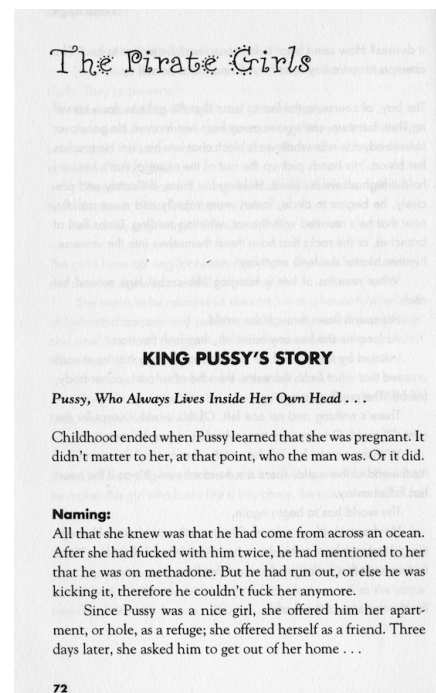


Figure 12: Acker's Pussy King of the Pirates



*King of the Pirates* and Gary Shteyngart's *Super Sad True Love Story* (below right), have used digital design in this way, using type to define who is speaking, marking out text coming from different sources, or challenging the authority of the page.

One of the defining aspects of this widening spectrum of textual possibility is its broadness. It is possible to have the vastly different text designs included in the books of Franzen, Acker, and Shteyngart. The use of digital design also extends into novels that would not usually be designated as literary, such as Jodi

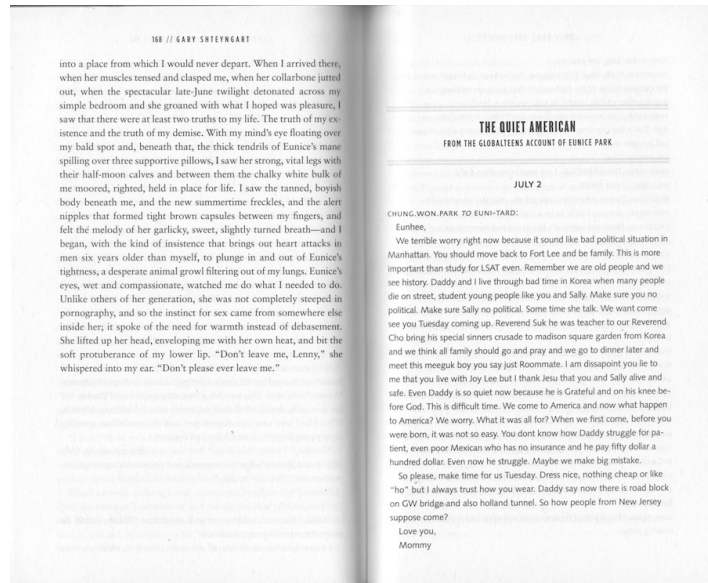


Figure 14: Shteyngart's *Super Sad True Love Story*

Picoult's use of multiple fonts to designate the multiple speakers in *My Sister's Keeper*. The overall picture of the literary novel in the age of digital print is one of expanded possibilities, rather than any single stylistic thrust. In contrast to the way that modern writers attacked the representational and mimetic properties of literature by embracing the text design of advertising (Drucker 49, 102-3), digital design has not yet yielded such a focused goal or strategy. Instead, desktop publishing has resulted in greater possibilities for creating meaningful paratext. The proliferation of marked text, creative typesetting, and various kinds of images and ornaments reveals the way that digital typesetting has allowed typography and visual design elements to assist the text in making meaning. As desktop publishing has expanded over the entire book market, the result has been a text that is more mediated, more apparently designed, more

obviously a material object than the classically unmarked text—something not altogether new, not altogether old.

### 1. Context, History, Technology

The use of desktop publishing software as a tool to enhance the typographical paratext can be partially traced to three factors in the publishing industry: the enhanced flexibility that the software gives book designers, the way that this software was understood by publishers, and the position of the author in the book design process. The software made new and more experimental book design quick and easy, but the state of the industry meant publishers were only interested in quickness. Because author approval is a small part of the design process, speed became the way that digital page processing made its largest mark on the book world.

The revolution in bookmaking that occurred around the 1990s was part of a larger computerization of the publishing industry. John B. Thompson refers to this as “the hidden revolution” (321), as it went generally unnoticed, but he concentrates on other aspects of the industry, giving little attention to desktop publishing (321-328). However, the change from photolithographic methods of creating pages to digital methods resulted in striking advances. Photographic methods required book designers to trace fonts for displays, hand-draw text boxes, and deliver samples, along with a marked-up manuscript, to a compositor/printer who would translate that information into printed pages. The gap between designing a book and seeing printed pages was often weeks (Lee 266-271). This process meant that designers needed to know which fonts they intended to use, and in what ways, before they ever saw anything in print. Since they had to be selected beforehand, the typefaces and page layouts were hard to change. And since they had to be translated for another person or organization, complicated layouts required significant extra labor and resulted in significantly more chances for error.

These issues disappeared with the arrival of the What-You-See-Is-What-You-Get (WYSIWIG) interface.<sup>43</sup> While there are many aspects of desktop publishing that differ from previous technologies, none is more apparent than the simple way that what a designer does on the computer is exactly translated to the screen and the printed page. If a designer wanted to see a different font size or a new font, to try ten different ornaments, or to see what a rule across the page would look like, she could do so. And in a second or less, the page would reflect the change.<sup>44</sup> A printout on a laser printer would show the design in a hard copy that could be distributed to editor and author.<sup>45</sup>

Despite increasing a designer's ability to experiment, digital typesetting was largely understood by publishers as a way to speed up the design and production process. Early trade publication reports about the technologies of desktop publishing were focused on speed,<sup>46</sup> with few mentions of added design flexibility. The reasons for this preference are more complex than it may initially seem. Publishers, like most companies engaged in global capitalism, are focused on cutting costs and selling more products (books), often at the expense of artistic or literary

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<sup>43</sup> The Graphical User Interface (GUI) and WYSIWIG concepts were both developed at the Xerox PARC research center, and were first used for consumers on the Apple Macintosh computer (Staples 19-20). Marshall Lee argues that it is the combination of the Macintosh computer, Adobe Postscript computer programming language, Aldus Pagemaker software, and the licensing of Allied Linotype's font library to Adobe that made the transition to digital book design possible (66). The combination of three technologies and the licensing of popular and well-made fonts made it possible to switch from phototypesetting in a way that was user-friendly and did not result in a drop in design quality.

<sup>44</sup> Early desktop publishing programs could be glitchy and laggy when making changes to large bodies of text, but experimentation could proceed easily working with a single page, or a few pages, of text as one would while preparing samples at the start of the design. Through the mid 2000s publishing companies also combated these tendencies by splitting larger books into multiple files (personal experience).

<sup>45</sup> Desktop publishing would eventually come to contain numerous features that aided the typesetting of books; text that could be added easily from word processing documents; text boxes that could easily be resized; the ability to create multiple "master pages" that could be easily applied to different kinds of pages (body text, part title, chapter opener, etc.); and character and paragraph styles that made formatting text more efficient. But the option to see the result of changes as they happened is the basis of what makes so many of the other features useful.

<sup>46</sup> Desktop publishing was "cheaper, as well as faster" (Hilts S3). An 800-page, full-color, American History textbook "took only three and a half months in production" ("Going to School" 34). An Addison-Wesley VP cited "shorter production schedules [and] shorter product life cycles" among the trends that digital technology should be used to address ("Desktop Today" 19-20).

innovation. However, there are aspects of the industry that have arisen since 1970 that have exacerbated the situation. During this period, the rise of ever larger booksellers (first mall stores, then superstores, then Amazon)<sup>47</sup> and ever more powerful agents<sup>48</sup> encouraged a tendency for publishers to focus energy and resources on titles that they hoped would be bestsellers. This resulted in gaps when titles failed to sell as expected. These gaps were filled with books that were pushed into the production schedule, and produced at high-speed, at the same time as the normally scheduled books. Thompson calls this “extreme publishing” (225), while more colloquially it is called “crashing” a book. Desktop publishing software arrived as superstores joined mall chains in pushing out independent booksellers and driving a more top-heavy bookselling market (Miller 2). The increased speed of setting a book digitally allowed publishers to adjust to the unreliable nature of these sales by crashing more books.

“Extreme publishing” meant that designers had less time to devote to regularly scheduled books and were more often burdened with rush projects. While this transition did not make it impossible for experimentally designed books to be made (as works like *Pussy, King of the Pirates* show), it has meant that designers have done their work more quickly on the whole. The way that publishers have focused on the speed of desktop publishing has meant that they have left less time for designers and authors to work together on book designs that might use the new possibilities that desktop publishing has opened up. It explains, to a degree, why this aspect of the “hidden revolution” has remained hidden and why experimental design has been constrained.

## 2. House of Leaves: The Openness of Digital Print

Mark Z. Danielewski’s *House of Leaves* is on the experimental side of the spectrum of digital print possibilities. He uses desktop publishing software to subvert the traditional aspects

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<sup>47</sup> Laura J. Miller focuses on the rise and fall of these retailers in *Reluctant Capitalists*.

<sup>48</sup> See John B. Thompson, *Merchants of Culture* (59-100).

and roles of the novel repeatedly and exuberantly. Yet he also uses the same technologies to enhance more traditional aspects of print, like mimetic representation and reader identification with characters. Many scholars have discussed the subversive aspects of one chapter in particular (chapter IX, or “The Labyrinth”), which uses desktop publishing to great disruptive effect. But Danielewski also employs digital technology to enhance traditional aspects of the novel, and it is this aspect of the novel that is more often repeated in other works.

*House of Leaves* is best described as a novel that occurs in layers, if those layers were interwoven and constantly moving in and out from underneath each other. A reader beginning the book first encounters editor Johnny Truant, who describes *House of Leaves* as a book written by a blind man, Zampanó, about a movie that does not exist. Johnny’s layer consists of occasional commentary on Zampanó’s text, but is more focused on the way that Zampanó’s manuscript disrupts his life, causing him crippling agoraphobia and other various terrors. Zampanó’s text consists of both the narration of the movie, *The Navidson Record*, and a large critical apparatus around it, including footnotes, citations, and digressions on related topics (echo, the uncanny, Henry Hudson). Along the way, Zampanó will narrate the entire plot of the movie,<sup>49</sup> and Johnny will repeatedly question the veracity of the movie and Zampanó’s authorship. At the same time, the book and its preparation will take over Johnny’s life, rendering him housebound, depressed, and sleep-deprived.

Danielewski uses desktop publishing software to allow these two layers to coexist on the same pages, and also to subvert that coexistence. Johnny’s text all occurs in the footnotes, below the line, in a courier font, while Zampanó’s occurs above and below the line in a Times font.

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<sup>49</sup> As quickly as possible, the movie goes like this: famous documentary photographer, his partner, and their two children move into a house in rural Virginia; inside it, a dark, cold hallway appears from nowhere; it grows to impossible proportions, taking days and weeks to explore amid constant shifting and growling; an explorer arrives to lead an expedition and goes insane, killing a member of his party and wounding another; the house eventually tries to swallow up everyone in it.

Separating speaker/writers from one another allows Danielewski to oscillate between pulp horror elements (retellings of *The Navidson Record* and Johnny’s stories) and more complex postmodern techniques and themes (typesetting experiments and Zampanó’s scholarly commentary). To use Richard Lanham’s concept, Danielewski is constantly flipping between directing the reader to see *through* the text and look *at* the text—to read for plot, then to think about meta-commentary and the nature of truth.<sup>50</sup> Desktop publishing is one of the tools that makes this possible.<sup>51</sup>

In chapter IX, titled “The Labyrinth,” Danielewski’s *text* becomes more like a thing, and less like a narrative. Much has been written about this chapter, and it has some of the more jarring pages ever printed in a novel. “The Labyrinth” has been described as causing motion sickness (Kröger 155). It has twice been compared to a digital novel at length (Chanen and Hayles in *Electronic Literature*). In great detail, Mark B. Hansen argued that the

chapter suggested the impossibility of

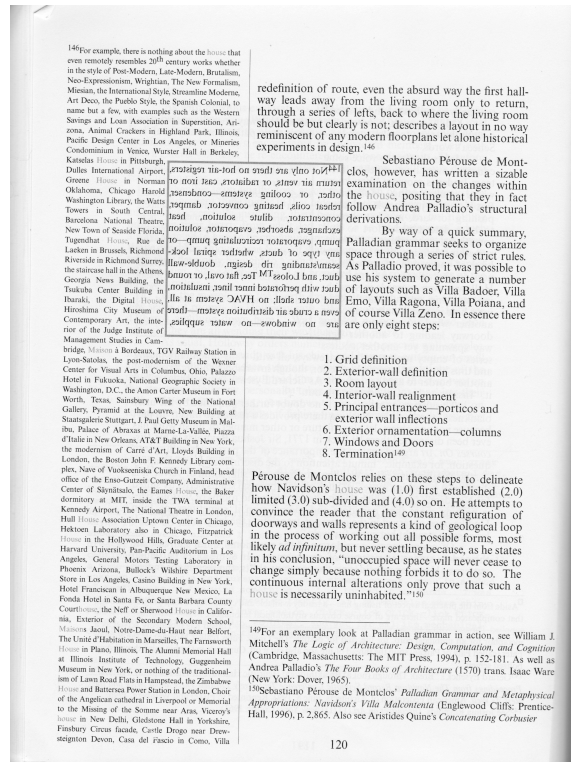


Figure 15: A page from "The Labyrinth"

<sup>50</sup> See Lanham’s *The Economics of Attention*, 115-116. Danielewski uses both digital typesetting and simple shift in narrative to accomplish the oscillation that Lanham describes. Johnny’s narrative is written in a kind of vernacular, with purposeful misspellings describing sometimes violent, sometimes sexual occasions. They are almost always direct first-person narration. Zampanó, meanwhile, constantly shifts between the suspenseful retelling of *The Navidson Record* and an extensive scholarly meta-commentary that ranges from Derrida and Heidegger to popular film reviews and invented histories.

<sup>51</sup> Reinforcing the role of desktop publishing in the novel is the fact that Danielewski says he did some of the more complicated typesetting himself and all of the indexing (McCaffery 118). Likewise, factors combined to make Danielewski a relatively powerful author with the time and resources to experiment: it was his debut novel and his sister was a well-known alternative rock musician whose album included a single with a reading from the novel (POE’s 2000 album, *Haunted*— the lead single, “Hey Pretty” contains Johnny’s passage about Kyrie, 88-89).

orthographic recording. In contrast to the explosion of experimental typesetting surrounding futurist, symbolist, and modern literature, *House of Leaves* is largely alone in how deeply it pursues disruptive, presentational goals.<sup>52</sup> Yet these are the aspects of *House of Leaves* that have received the most critical attention—typified by the scholarly focus on “The Labyrinth.”

Throughout the rest of the novel,<sup>53</sup> Danielewski engages with other possibilities of digital text design that have more narrative effects. These elements have received less critical attention, but have been more exemplary of the way that desktop publishing would come to be used as a tool for the enhancement of narrative and meaning.

On many occasions, Danielewski uses distinct and unique text design for mimetic purposes. These layouts break from novelistic tradition, but enhance aspects of realistic narrative rather than disrupting it. In its simplest form, mimetic typesetting is represented in Danielewski’s use of spacing and typography to mimic movement in the impossible hallway. The movement of the text creates a sense that the reader is following along with the characters, creating a greater sense of identification between reader and character.

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<sup>52</sup> There are some exceptions to this rule. Jonathan Safran Foer’s *Extremely Loud & Incredibly Close* involves a series of layouts that dabble in textual experiment: words circled in red, a letter in which the type slowly overlaps by decreasing the space between letters and words, and a passage encoded in the letters typed using the numbers on a phone pad.

<sup>53</sup> Here is an incomplete list of the deviations from normal typographic practice included in *House of Leaves*: chapters X, XII, and XX, move smaller blocks of text around the page to show the movement of characters through the hallway and the movement of the hallway around the characters; chapters X and XII space words and letters on separate pages; chapter XI is set first in two columns, then in transcript form, then centered on the page; chapter XII ends with a large black dot centered high on the page; chapter XIII contains subheadings set in all caps and surrounded by two thick black rules, and bracketed gaps of space, such as this one [     ], indicating the absence of information; chapter XIII contains a set of struck text about Navidson, King Minos and the minotaur set in an odd, cross-like shape; chapter XV contains a transcript set in clean sans-serif text with interviewed persons names set in bold; chapter XVI includes massive gaps of information (pages-long), this time represented as redacted with bold Xs, and a glossary; chapter XVII contains large text subheadings, a facsimile of a note set in the center of the page with very wide margins on all sides, struck text, and X-ed out text; chapter XX begins with an epigraph set in braille (un-raised dots in most editions, only the full color edition contains raised, readable/touchable Braille); chapter XX contains text that runs across the full-length of a spread page, text set in a spiral, musical notation, and some lines set as modern poetry and flanked by two large black dots; and chapter XXI is entirely set in Johnny’s font, without any main text from Zampánó.

Mimetic typesetting consistently appears when Navidson is exploring the hallway.<sup>54</sup> The pattern first appears in the tenth chapter, “The Rescue (Part One).” As the chapter begins, the text is sequestered on the upper half of the page (153-158). Below, there is only space, page

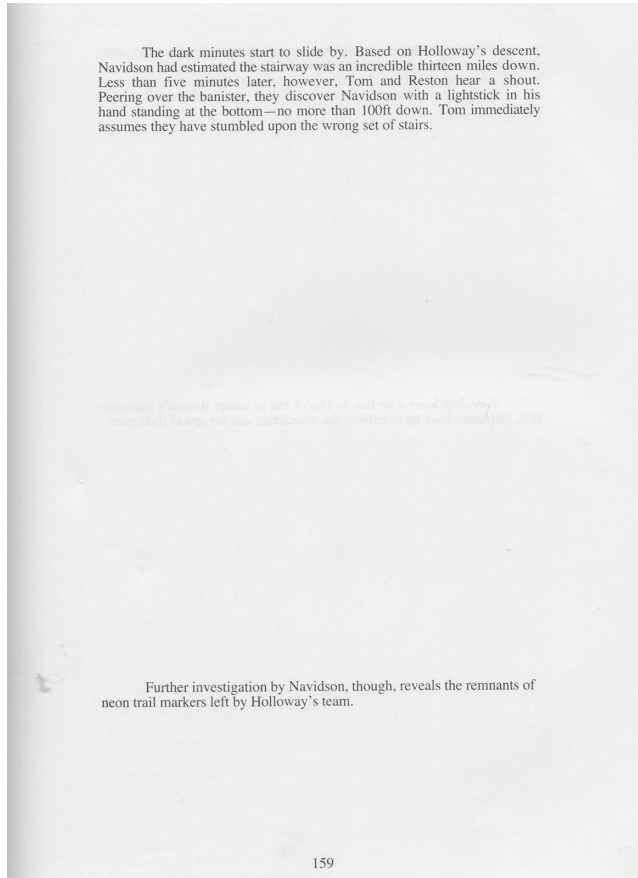


Figure 16: text position based on character location

numbers, and the occasional one- or two-line footnote. The role of the layout, as expression of the physical position of characters, is made clear when Navidson reaches the bottom of the Spiral Staircase, and text appears split on the page with his brother Tom and the wheelchair-bound engineer Reston at the top (of the page and the top of the staircase) and Navidson at the bottom (left, 159).

Two pages later, as the narrative leaves Tom at the top of the staircase and follows Navidson and Reston exclusively, the text settles firmly in the bottom quarter of

the page (162-63). Notably, when Zampanó breaks with his narration to consider the relation between the house's movements and the psychology of the explorers through various secondary texts, the text jumps back to the top of the page.<sup>55</sup> As Zampanó returns to narration of the rescue party, the text returns to the bottom of the page.

<sup>54</sup> Holloway's team is accompanied by patterned text and the labyrinths of chapter IX, but not with the mimetic spacing that is afforded to Navidson's expeditions.

<sup>55</sup> Whether this is meant to signify purely distance (Zampanó not being in the same place as Navidson) or a removed, higher perspective on the events is not clear.



Moments like this allow us to separate mimetic typesetting from what we can call filmic typesetting.<sup>56</sup> Certain points in the chapter, such as Jed’s shooting by his employer Holloway during their expedition into the hallway or Reston’s catapulting from the bottom of the stairs, feature words and phrases stretched out over pages. This spacing speeds up the page-turning experience, and also slows down the reading of the event itself. At other moments, this time-manipulation is secondary to the spatial nature of the typography, which puts the reader in the space of the movement occurring in the novel.

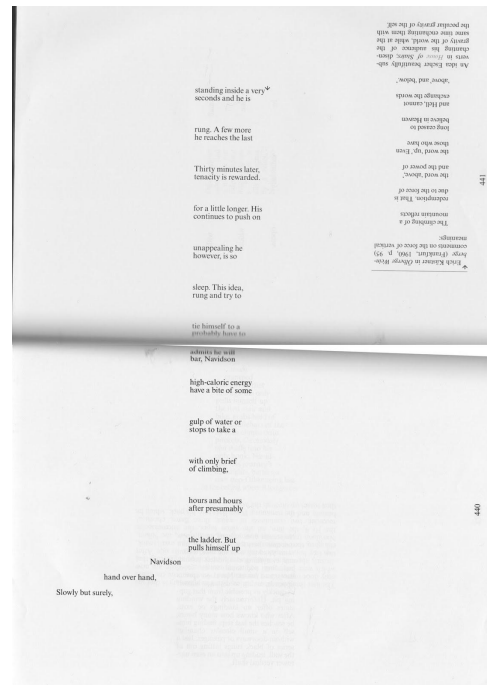
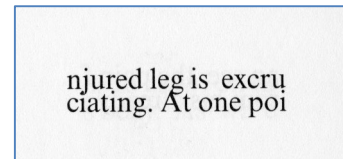


Figure 17: Text position mimics character movement

The spatial nature of the layout is more pronounced in Navidson’s last voyage into the hallway, in which the continually shifting space is reflected over and over in the text—both as shifting and disassociated (432) and as expressive of the space around Navidson and his movement through that space (440-441, above right). The reader’s identification with Navidson’s journey becomes more charged with emotion as the chapter continues. In a series of pages (443-458), Danielewski compresses the text box more and more, reflecting Navidson’s movement down a hallway that gets smaller, “the futher he goes” (sic 445). To express the claustrophobia of Navidson’s experience, the text box shrinks and shrinks. Words are broken without hyphenation, forcing a disruption of the normal reading process. The final squeezing of

<sup>56</sup> Typography that is used to stretch or condense a moment, in a way that is both filmic and reminiscent of Bob Brown’s “Readies,” one of the automated reading technologies discussed in Michael North’s *Camera Works* (75-80). Hayles, partly in conversation with Danielewski, sides with the remediation of film over mimesis (“Saving the Subject” 796).

the corridor is expressed by lowering the leading (the space between lines) so much that the ascenders of the bottom line connect with the descenders of the top in a way prohibited by any traditional standard of typesetting. The compression of the two lines, until they are touching, drives home the sense of being pressed between floor and ceiling. Readers, viscerally feeling the squeezing of the corridor as the design disrupts the reading process, are led to identify their own movement through the text page with Navidson's movement through the labyrinth.



*Figure 18: Disrupting typesetting rules*

The same connection between reader and character is reinforced as Navidson takes his last steps through the labyrinth. He climbs through a window (the only of its kind that he has seen) to find himself on “an ashblack slab” (464). He turns back to find only a blank wall behind him, and nothingness in all other directions. Navidson is trapped on a precipice, with nowhere to turn, that doesn't result in emptiness.

The image below reflects the same dilemma for the reader. Trapped on the corner of the verso page, the reader can only move to the emptiness in the gutter. She turns the book around, to read from the bottom corner of the recto page, which only ends in the same empty space. To move onto the next page is both to engage with the traditional rules of the book and to violate them. A line of text traditionally ends at the bottom of the recto page, leading the reader to its reverse. Here, the movement of the text, of the reader's eye, is always back to the center. To flip the page and continue is to obey the logic of the book but to violate the logic of the narrative and page, which give the reader nowhere to turn but into the abyss.

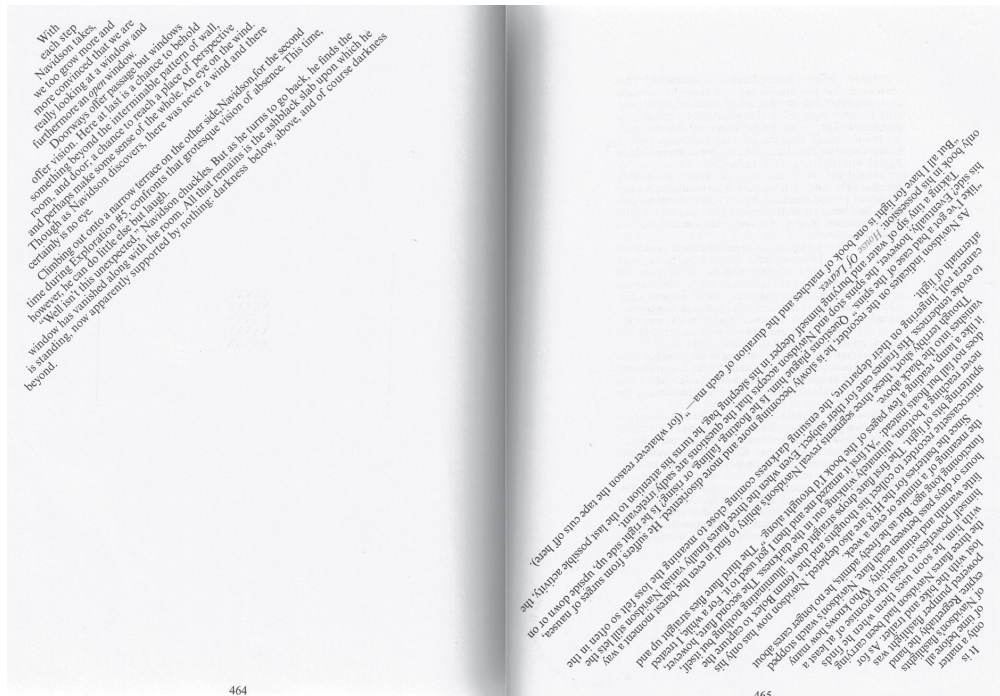


Figure 19: No place for reader or character to turn

Danielewski's use of the text to mimic the motion of characters is a somewhat direct example of the way that he uses type to increase the visceral experience of reading *House of Leaves* in general. As Lisa Kröger has pointed out, this tendency extends to the twisting and turning of the labyrinth chapter: “The ‘multiprocessing’ required by the reader creates a feeling of sea-sickness as one reads the book” (155). This sea-sickness is the same experience that Reston has during the rescue mission into the house (163-164). The experience that is recounted by Kröger is based in a disruption of normal reading practices—the looping and hard to follow labyrinth chapter. Yet the same experience is also present in a much more accessible form in the claustrophobic typesetting of Navidson's last journey and in the variously expressed rhythms of distress in chapter VIII.

Chapter VIII follows Navidson and Reston as they learn of the tragedy that has enveloped the expedition into the hallway led by the explorer Holloway Roberts (that the hallway has left Holloway dangerously unhinged and he has shot his expedition-mate Wax). It opens with an

epigraph, the *Oxford English Dictionary* definition of “SOS,” followed by a specific sequence of dots, dashes and dots, approximately: ••• - - - · · · (97). These dots and dashes are interspersed throughout the chapter, both as whole sections (as above) and in single characters, set between paragraphs. Paragraph length varies significantly. It is clear from the start of the chapter that the type will be significant, but not what that significance is. The meaning appears to be revealed at the end of Zampanó’s text, when Navidson’s film is described as being cut so that it “alternates between three shots with short durations and three shots with longer durations” (102). The film’s rhythm replicates the Morse code signal for SOS, and as Zampanó relates, this makes the film its own cry for help. It also makes the watcher of the film the receiver of two separate cries for help, one in content, one in form.

To the reader, it seems to become clear that Danielewski has been playing the same trick. Jarring paragraph breaks seem to break up nicely into similar patterns of short and long (for example, the top half of 101). During a long digression broken up into many short paragraphs (100), Johnny relates that the only way he can leave his apartment is by saying: “Fuck. Fuck. Fuck. Fuck you. Fuck me. Fuck this. Fuck. Fuck. Fuck.” This is another SOS—three one-word sentences, three two-word sentences, and three one-word sentences. The typography and the text, then, are also cries for help, but from Johnny or Zampanó. For the reader, this realization is unsettling because of the initial disruption of normal reading practice but also because

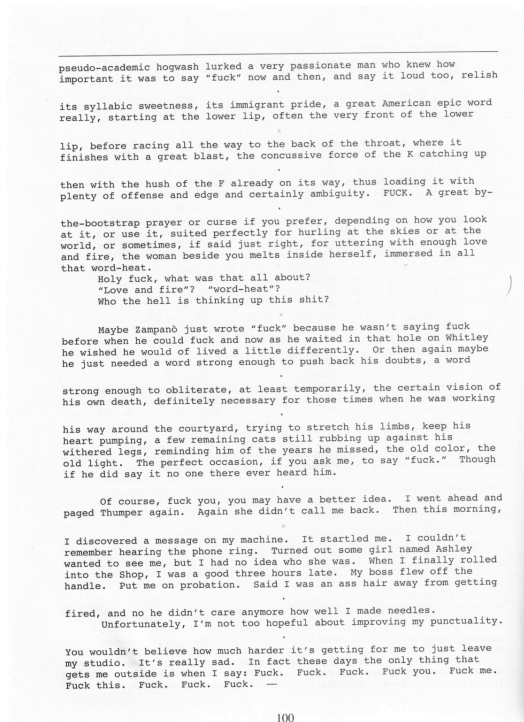


Figure 20: Odd spacing patterns and dots

of the sense of a meaning hidden where there was not supposed to be one—of secret channels of communication running beneath the surface.

As usual in this novel, the message runs one level deeper than that. Zampanó reveals, at the end of the chapter, that Navidson's final message is not SOS, but SO (103). It is the first hint that something is wrong with the coded message. The same turns out to be true about the paragraph structure which does not resolve into a consistent pattern, despite being broken up without regard to sentence structure or content (98-99). The interspersed dot pattern on one page is actually · ° · · ° · · · · ° · · (100). Neither pattern resolves neatly into any short/long/short or dot-dash-dot pattern.

The explanation for this discrepancy comes in the middle of the next chapter, revealed by a critic of the *Navidson Record*, quoted on a complicated page including four separate text boxes. He notices that Jed's knocking on the floor of the hallway "does not even remotely resemble the three short – three long – three short SOS signal heard by the Navidsons" (128). The only explanation, the critic suggests, is that the hallway transfigures Jed's knocking into the SOS, transmitting it to the rest of the house. This sets up a strange confluence. Jed knocks without pattern, and the house refigures the message into a call for help. The previous chapter contains text that appears to be in an SOS pattern, but is only resolved as such by the reader interpreting it as such. In both situations, the message is recoded, once by the terrible house, and once by the reader.

The SOS chapter places the reader actively into two textual roles: recoder/transmitter and receiver. By replicating the message and the uncertainty through the typesetting, Danielewski creates a visceral experience of anxiety, suspense, and surprise, similar to that of Reston, Navidson, and Karen as they wait for news of Holloway's party. By making that message an

actual message of distress, but one that is coded incorrectly, Danielewski also draws a strange connection between the reader and house. To read, as has been theorized especially by scholars of new media, is both to receive and to transfigure. By forcing us to do so, to interpret a code so that its meaning is both more and less correct, Danielewski reinforces the active, risky role that a reader plays. It is not something that requires the intercession of digital typesetting—but this is the tool that Danielewski uses. He does so in this chapter simply by using line breaks and a few special glyphs to create a bodily sense of anxiety and worry, and a code that must be reconfigured.

Because of the particular position and goals of the major publishers in the first two decades of digital print, not many novels went to press featuring the kind of experimental typography we see in *House of Leaves*. At the same time, American literature was in the midst of a slow drift away from postmodern literary style and values. Some aspects of the style were incorporated into what became a new kind of mainstream literary fiction while others faded out.<sup>57</sup> Around and after *House of Leaves*, the focus on truly disruptive literary structures faded. In a typographic sense, many novels of this period were defined by the refinement and growth of more traditional novelistic paratext. In a narrative sense, the same period saw a return to narratives with defined story-lines and characters approximating traditional subjects, rather than postmodern flatness or lack of agency. In many ways, *House of Leaves* can be included on the postmodern side of these little narratives about the direction of literary fiction. It is highly

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<sup>57</sup> Recent fiction has seen a fading in the use of complicated literary structures as an expression of Lyotard's distrust of metanarratives and instead a turn toward more specific or smaller narratives, as in *The Brief Wondrous Life of Oscar Wao* and Jeffrey Eugenides's *Middlesex*, novels that have long historical arcs, but are focused also on small groups and personal histories that retain a distrust of official historical narratives. As Andrew Hoberek recounts in the introduction to *Twentieth Century Literature's* special issue on what comes after postmodernism, other stylistic qualities of postmodernism experienced similar mutations, for example the blurring of high/low culture progressing from Pynchon's and Barth's use of science fictional elements to the use of popular genres as complete frames, as in Chabon's or Lethem's novels (238-239). Likewise, in the same volume Paul Giles argues that David Foster Wallace blends the postmodern flatness of DeLillo's characters with "more traditional investment in human emotion and sentiment" (330).

suspicious of narrative closure and the authority of authorship, and its typographic choices break many of the standards of traditional novelistic practice in a direct and determined way. But the novel's sustained focus on more traditional aspects of narrative is clear evidence that *House of Leaves* is not just a classic work of postmodern literary design, but a work that points the way toward text design that bolsters aspects of the book rather than tears them down.

### 3. *A Visit From the Goon Squad*: Remediation in Service of Narrative

Jennifer Egan's 2010 novel, *A Visit from the Goon Squad*, is structured as a series of interconnected stories, wrapped around a small group of people and a central interest in exploring the ravages and gifts of time. Each chapter is narrated by, or closely follows, a single character. And so the novel tells the story of Sasha, assistant to Bennie, the record executive who married Stephanie, the PR freelancer whose brother Jules was imprisoned for the attempted rape of Kitty Jackson, a celebrity he was writing about whose career was later resurrected by Stephanie's old boss, La Doll/Dolly whose daughter eventually comes to work for Bennie—and so on, outward and onward. Unlike *House of Leaves*, no consistent change in typography marks the different speakers. Neither do characters speak simultaneously. The plot of *Goon Squad* moves ahead through the reappearance of characters at different times, places, and in stories told by or through other people.

In terms of type and layout, most of *Goon Squad* is rather simply designed. The book designer, Virginia Tan, uses a sans serif display font for running heads, chapter numbers, and chapter titles. A serif font is used for the body text. Occasionally, the text is broken by numbered space breaks (chapter 7) and headlines in small, bold capitals (chapter 8). Chapter 9 is set in a thinner column and presented as a magazine gossip column submitted from prison. Then, at the point when the novel's present moves past the 2010 publication date, the layout shifts entirely

into a horizontally presented “slide journal” (chapter 12) made up of digital presentation slides. *A Visit From the Goon Squad* has the trappings of an experimental novel (shifting viewpoints, typographic experiment, a dystopic future), but the way that these aspects are executed makes the novel relatively easy to follow, character-driven, and explicitly concerned with endings. *A Visit from the Goon Squad* is a bit down the spectrum of digital print possibilities from *House of Leaves*. It repeats two threads from *House of Leaves*: the use of visually striking remediated<sup>58</sup> typographical elements and a strong narrative drive. Yet *Goon Squad* abandons other aspects of Danielewski’s style: his avoidance of endings, his use of complex type design to create multiple reading paths, and his mixing of real and invented source material. Egan’s novel uses the new possibilities of digital type almost exclusively for narrative ends.

Chapter 12, “Great Rock and Roll Pauses,” is where *A Visit from the Goon Squad* becomes most interesting typographically. It is the last chapter featuring Sasha, at this point married to Drew, a doctor, and with two children, Allison and Lincoln. They live in a house in the desert, in a near future touched by scarcity and climate change. The chapter is represented as one of the slide journals that Allison makes for school and for fun. The journal mainly describes internal conflicts between Allison and Sasha, and Lincoln and Drew.<sup>59</sup> The slides themselves mix text, shape, and space, yet even the least textual pages are emphatically concerned with narrative and character. These moments of extra-ordinary typography make clear how *Goon*

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<sup>58</sup> I am using here Bolter and Grusin’s term for the double logic surrounding the inclusion of one medium within another. They theorize that remediation (and media in general) tends toward either immediacy (the search for an unmediated media experience) or hypermediacy (the medial framing experience enhanced, made present, enjoyed) (5-11).

<sup>59</sup> Despite the focus on Allison’s family, the chapter is a central point in the novel. Sasha is one of two central characters and the subject of the opening chapter. Drew appears in chapter 10 as Sasha’s college boyfriend, though the chapter is focused on Rob, who drowns in the East River while Drew tries to save him. In chapter 12 Allison finds the book that Jules Jones writes about the former Conduits guitarist, Bosco—a band that Bennie (Sasha’s longtime boss) had signed and produced (and his greatest success). The deal to write the book completes a kind of comeback for both Bosco and Jules, who has recently been released from a sentence for his attempted rape of celebrity Kitty Jackson in chapter 9.



*Squad* moves forward with the use of digital print technology—by turning it almost completely toward a development of the paratext that serves character and narrative.

Egan’s use of digital print technologies in her “PowerPoint” chapter has become an instant reference to what can be done with digital print. Egan has discussed the role of the construction technology, Microsoft PowerPoint, in a web video produced by Microsoft. In it, she emphasizes the iconic nature of the technology, the different structural possibilities of the visual slide, the polysemic possibilities of a slide, and the central role of the chapter in the novel.<sup>60</sup> In many ways, the slide journal is a product of PowerPoint technology, a striking example of the influence of production technique on final novel product. Yet her use of the technology bears little of the hallmarks of what Edward Tufte called the “cognitive style characteristic of the default [PowerPoint] presentation”: a shallow consideration of topics built on bulleted lists and careless ornamentation.<sup>61</sup> Egan makes clear in the same interview that her experience with PowerPoint prior to writing this chapter was *zero*, evidence that she took the software in a new direction.

This chapter is strangely double in its relationship with book tradition and experiment. Egan’s use of color, shape, and white and black negative space is formally unprecedented in the novel.<sup>62</sup> Compared even to Danielewski’s use of the page, chapter 12 contains an explosion of meaning that is conveyed through shape or a combination of shape and text. Verbal meaning is reinforced by the spacing of the text on the page and by shapes that interact with the text. On two pages, shape and space convey meaning without any text (302, 304), depending on the context generated by other slides to allow the reader to interpret the wordless slides. These slides are

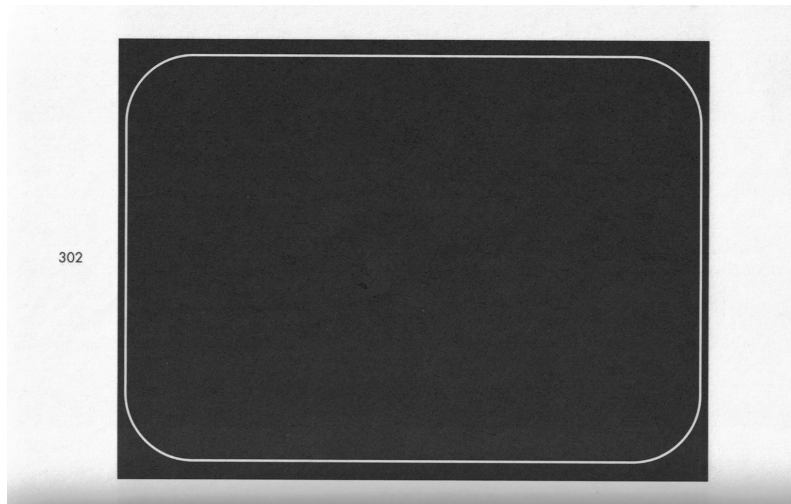
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<sup>60</sup>See “The Office Show—PowerPoint with Jennifer Egan” <https://www.youtube.com/watch?v=tpLOg4aUiEY> accessed 3 April 2014. Taking into account her discussion of how she developed the slides and used the technology, it is reasonable to assume that Egan was responsible for the use of space, shape, and text in this chapter.

<sup>61</sup> See Edward R. Tufte, *The Cognitive Style of PowerPoint: Pitching Out Corrupts Within* (4-5).

<sup>62</sup>Shaded boxes filled with text, at least, are common in textbooks and non-fiction.

exemplary of the way that visual meaning is created in ways that have been little explored elsewhere in print. A detailed reading shows that this use of the visual medium is used to reflect back on the rest of the narrative, rather than to challenge and disrupt it.



*Figure 21: First wordless slide, a pause*

Two wordless slides are the best examples of how visual meaning circles back to the narrative. The first is a completely inked-in box, with only the outline of a white, rounded rectangle inside it (302, left). This slide represents a pause; in the context of the

chapter, it is a pause of silence between Drew (father) and Lincoln (son). Allison and Drew suspect that Lincoln is mildly autistic, partially because of the obsession he has developed about pauses in music. Lincoln's obsession with the pauses is distressing for Drew, who pushes his son to engage with his peers and the world. The role of the inked-in slide in the conflict between Lincoln's obsession and his father's worry is made clear by the two slides that surround it. In the context of these two slides, the blank slide is simply a very pregnant pause in the conversation, between Drew saying, "What does that sound like to you?" (301) and Lincoln's response, "Okay. I know" (303). It is not, though, a symbol of emptiness, of the falseness of language or the subject, of a center that cannot hold. It is symbolic, oddly, of understanding, of a father trying to engage with a son with whom he has trouble connecting. This slide simply represents space, silence, and a human interaction with the space and silence of a dark wordless page.

The second wordless slide (304) is informed by a slide that comes long before it (236). It is a slightly smaller version of the third slide in the chapter, which introduces the family as a divided whole, but with all the words removed:

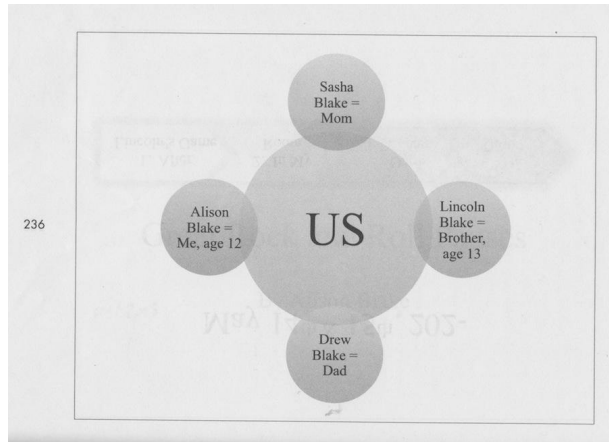


Figure 23: Slide portraying the family

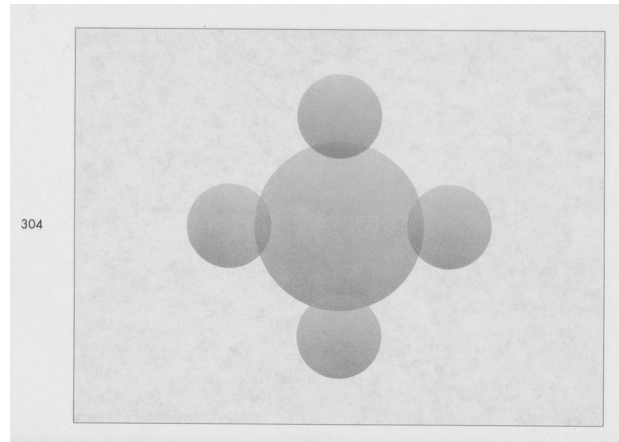


Figure 22: With words removed

The implication in the first slide is largely the story of this chapter: the family members are connected to each other only by their connection to the family as group. Like the novel itself, the parts are connected in relation to the unit as a whole. Text functions as a way to define which spaces are which—introducing the family and reinforcing its atomization. The second image comes directly after two moments of reconciliation. The slide is only interpretable in the context of the first, as a second representation of the family. Interpreted in this way, there are no words to define the shapes as family members or not. There is a kind of effacing of the separation and tangential quality that is apparent in the prior slide. While the image, being image, lacks a certainty of meaning, context suggests strongly that this is representative of the easing tensions in the family, the blurring of divisions between the members (288, 299, 301, 305-308). As a comment on the novel, the slide suggests the way that the separate stories eventually come together.

These two slides are the emptiest, and the most similar to elements designed to disrupt reading and the novel as they are traditionally understood. And yet both are easily integrated into the narrative of the chapter. Egan’s most interesting and telling combinations of text and image in the chapter follow the same tendency. The combination of shape, space, and text allows her to reinforce meaning already present in the text, or to approach meaning visually that is otherwise hard to show textually.

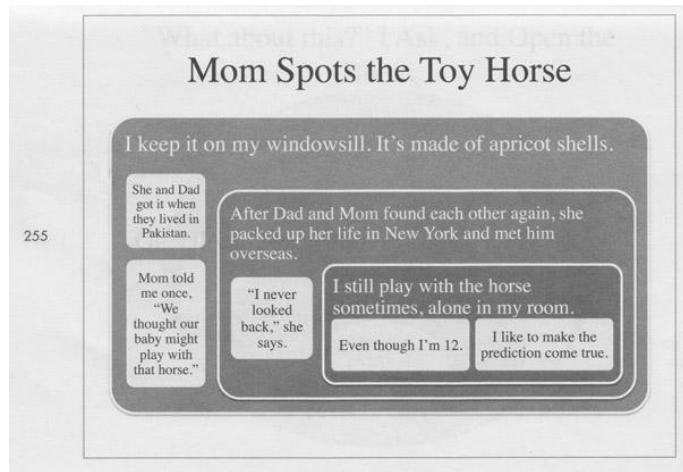


Figure 24: Layered structure, toy horse

The combination of visual and textual meaning works especially well in three slides that play with nested shapes. Two of these slides work with the same basic visual palette, a series of text boxes set within and next to one another. In these two slides (255 and 299), the nested boxes add to a sense of discovery, of the peeling back of layers. In the first slide, each successive box reveals more and more layers of information about a toy horse made of apricot shells and about Drew and Sasha’s history together, about Allison’s role in that history. The toy’s construction, from “apricot shells,” reveals a textual echo of the visual and structural logic of the slide—the shell of the pit, inside the fruit, inside the skin. Text and shape create a visual layout that highlights the way that histories and stories nest within one another, how they are revealed and developed successively. The slide is narratively constructed—the images reflect the process of learning about the item that is described.

Egan also uses a nested image as a representation of narrative threads coming together in the novel. The page at right follows a discovery that Allison makes about her mother’s past (one

of a few). Allison first discovers a mysterious book, then where it comes from, then what it's about, and finally that her mother is pictured in the middle. The image mirrors a series of slides in which Allison describes the process of trying to access her mother's past.

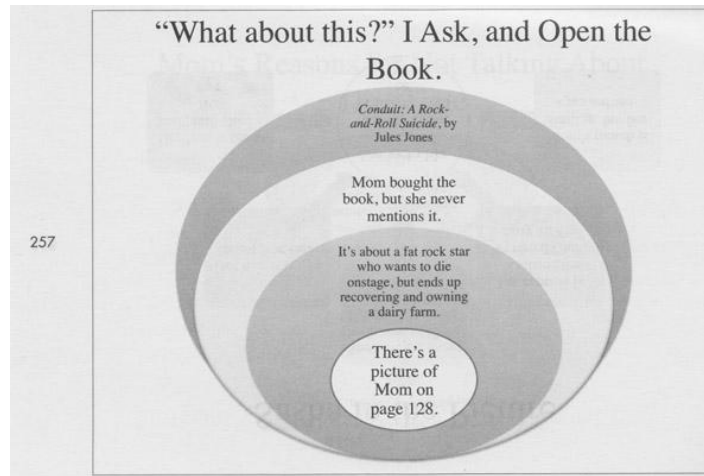


Figure 25: Layered structure, Sasha's past

To Allison's frustration, Sasha consistently rebuffs her requests for information, so Allison finds things out piecemeal through the course of the chapter. In addition to the discovery of her mother in Jules's book,<sup>63</sup> she recounts that both her parents had a friend (Rob) who drowned despite Drew's attempt to save him (272-3) and a conversation in which Sasha reveals unnamed struggles (259). As in the images of these slides, there are layers of information that Allison attempts to dig through, seeking to know "every bad thing" her mother has ever done (261).

This slide also reflects the way that the nested structure is echoed by the experience of reading the novel. As Egan notes in an interview, chapter 12 forms a kind of microcosm for the rest of the text ("The Office Show"). Allison's search to connect with her mother's past, the way that it succeeds and fails, is exemplary of how this works. Allison's search focuses on three areas (her mother's bad deeds, the *Conduit* book, and Rob's death), topics that connect this chapter directly to events in the rest of the novel. As readers, we can connect each of the dots in a way that Allison cannot: Sasha's "bad" deeds are outlined in chapters 1 and 11; Jules's *Conduit* book

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<sup>63</sup> Jules is Stephanie's (Bennie's wife) brother, and his book is about the Conduits, a band that Bennie produced, and Sasha, as his assistant, is pictured with the band. Jules's own chapter recounts his interview and attempted rape of Kitty Jackson (chapter 9), and the writing of this book is set up as a hopeful redemption for him after he is released from prison (chapter 7).

and Sasha's place in it are explored directly in chapter 7 and indirectly in chapter 9; Rob's death and Sasha's and Drew's roles in it are the subject of chapter 10. The connective, searching impulse that is expressed in Allison's preteen inquisition is also expressive of the logic that connects the book. The nesting logic of the slides that are represented in Allison's personal diary is representative of the way that the narratives of the novel reveal themselves, layer by layer.

This tendency is also expressed in the way that the text seems to crave narrative closure, rather than avoid it. Chapter 12 is a place where narratives come together, meeting in Allison's searching after her mother's past. Egan also repeatedly gestures outside the smaller narratives of the novel, shifting the tense of the narrative toward the far future to offer closure to the stories of some chapters. At the end of chapter 4, Egan interrupts the narrative of Bennie's mentor Lou and his then girlfriend Mindy to narrate the rest of Mindy's life: "marrying Lou and having two daughters . . . begin[ning] her academic career at forty-five, spending long periods of the next thirty years doing social structures fieldwork in the Brazilian rainforest" (81-2). Egan even relates that Lou and Mindy's youngest daughter will inherit his business. Despite the fact that Lou and Mindy are ancillary characters, outside Bennie and Sasha's immediate circle, Egan plays their lives out to the end (Lou's story also continues into chapter 5). The tendency appears throughout the novel. After completing Dolly/La Doll's story of redemption managing a South American general's image through a connection with Kitty Jackson, Egan relates that she opens a gourmet shop, catering to weekend New Yorkers, and often eats star fruit with her daughter Lulu, recalling their visit to the general (165). After Ted locates his niece, Sasha, in Naples, his story is spun forward, to relate that he will visit Sasha twenty years in the future with her family in the desert, when he is "long divorced—a grandfather" (233). Like the slide journal, the structure of the novel should push narrative away, avoiding closure by shifting from story to

story. Instead, Egan includes narrations of the future that actively move toward connections—explaining Dolly’s move out of the city, Ted’s return to visit Sasha—and also toward narrative closure.

*A Visit from the Goon Squad*, considered as a whole, is indicative of the way that desktop publishing has been used to enhance narrative through the paratext. The novel-wide structure and the use of a technological, visual medium for one of the chapters are noteworthy for the way that they outwardly suggest the kind of experimental project exemplified by Danielewski’s labyrinth chapter. Shifting narrators, techno/medial remediation, and a narrative that shifts back and forth through time have tended to move a novel away from narrative development and closure. Yet this is not true in *Goon Squad*. Experimental techniques (including the shifting narrators, a more dispersed version of a more modern technique) are used to build narratives rather than to destroy, disrupt, and sow suspicion of them.

#### 4. The Brief Wondrous Life of Oscar Wao and the Present of Digital Print

Junot Díaz’s *The Brief Wondrous Life of Oscar Wao* is more exemplary than *House of Leaves* or *A Visit from the Goon Squad* of the enhanced typography of most contemporary novels. It uses the typographic paratext for the purpose of enhancing meaning and story in a more subtle fashion. Visually, the novel has a remarkably consistent graphic style. The book designer uses the same shifted rectangles to border the title on the title page, part title numbers, and chapter numbers (below left). Díaz uses numerous section heads, each set in widely spaced display font capitals. The text that follows each section head features a double-height, gray initial capital (below right). The title page and part titles each have a large, outlined, speckled-gray graphic. Díaz’s novel is not a work that is explicitly concerned with the visual, with the border between language, image, and memory, like Jonathan Safran Foer’s *Extremely Loud &*

*Incredibly Close*. It is not a book that uses photographs as chapter openers that record events considered elsewhere in the text, like Don DeLillo's *Mao II*. *The Brief Wondrous Life of Oscar Wao* is a thoroughly popular literary novel, a bestseller, a Pulitzer Prize winner, and a debut novel from an author of a critically acclaimed short story collection. There is no indication that Díaz had more than the usual input on the visual design of the novel. In other words, *Oscar Wao* is a novel with a great many visual and typographic elements that is also genuinely representative of a significant portion of literary novels today. Even so, the surface of the page can reveal important resonances within the text.

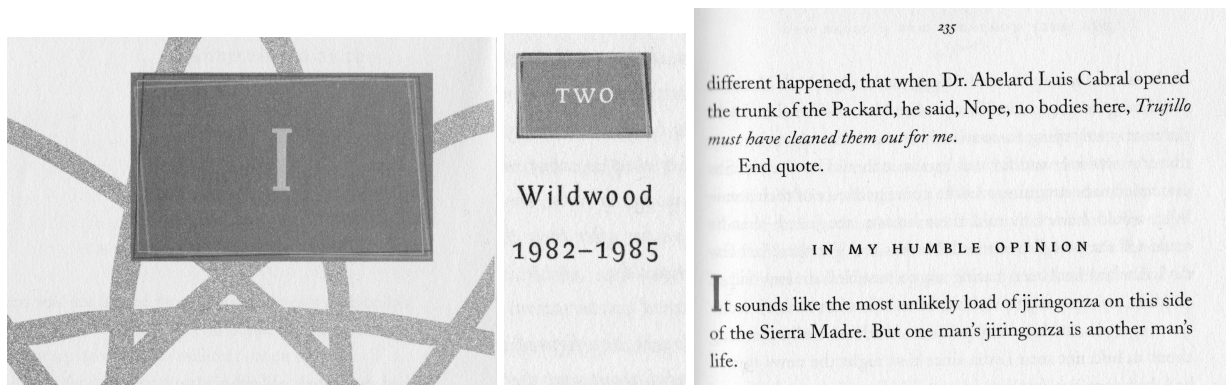


Figure 26: Design features of *Oscar Wao*, part number, chapter number, and initial capital

Díaz's novel follows the story of Oscar Cabral and his family: his grandparents' fall under the autocratic Trujillo regime in the Dominican Republic, his mother's escape from poverty and servitude in the countryside, and the ill-fated love affair that led her to flee to New York and New Jersey. Oscar's story begins after this, partly made up of his search for a love that will be requited, and partly of his attempt to fit in with his contemporaries as a Dominican-American, overweight, sci-fi/fantasy nerd. The novel moves back and forth in time around the Cabral family history. The novel also speaks for short portions in Oscar's sister Lola's voice; otherwise it is largely narrated by Yuniór, friend of Oscar and off-and-on romantic partner to



Lola.<sup>64</sup> But it is not an experimental novel. It has internalized and incorporated the tools of modernist and postmodernist experiment into a narrative and readable form.<sup>65</sup> While it changes narrators and time periods, each narrator consciously tells stories. *The Brief Wondrous Life of Oscar Wao* moves along as if it is being *told* by its protagonists.

As a particularly good example of the direction of digital print, *The Brief Wondrous Life of Oscar Wao* also shows how graphic elements have come to be used by book designers and sometimes authors to augment the meaning of a book. *Oscar Wao*'s large title page and part-title graphics draw the reader's attention to an historical context and significance that may otherwise fall behind in this reference-rich text—the overwhelming fear of nuclear annihilation that characterized Cold War life in the United States.

At many points during this text, Oscar notes his fears of apocalypse, or his complementary fantasies of post-apocalyptic romantic heroics.<sup>66</sup> Many of Oscar's science fiction points of reference are either symbolically or directly related to nuclear war, such as *Akira* and *Watchmen*. Yet when considered among the other major themes and characteristics of the novel (say, the Dominican-American slang and the science fiction/genre references, or the detailed and personal histories of the Dominican dictatorship and U.S. involvement in that history), Díaz's artful deployment of atomic apocalypse and the historical use of U.S. atomic weaponry can get lost.

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<sup>64</sup> Yuniór also appears as the central character in Díaz's two short story collections, *Drown* and *This Is How You Lose Her*.

<sup>65</sup> Díaz employs techniques such as extensive footnotes that are historical, unreliable, and digressive; intertextual echoes across literatures, including comic books, post colonial theory, and critically acclaimed Latin American fiction; and Yuniór as unreliable though well-informed narrator.

<sup>66</sup> See, for example, his fantasies of saving Maritza after "the nuclear bombs fell (or the plague broke out or the Tripods invaded)" (27).

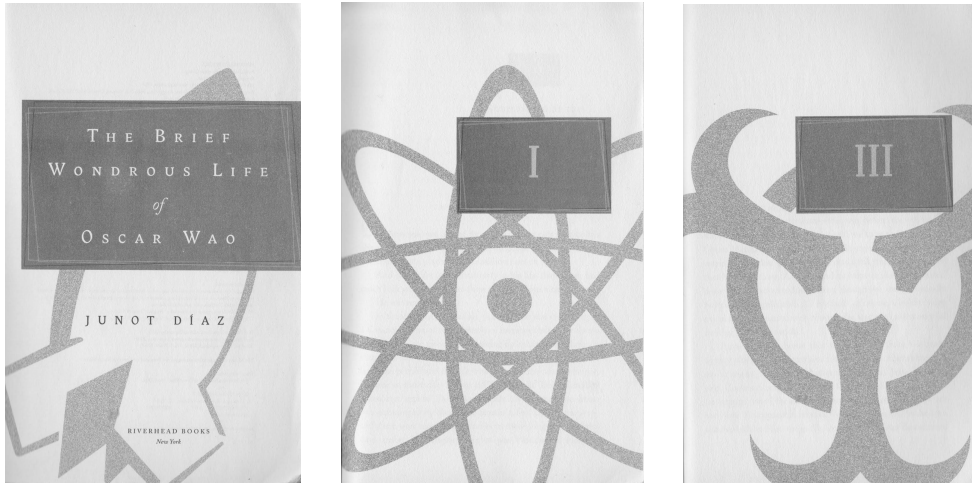


Figure 27: Graphic Symbols in frontispiece, and part opening pages

As simple symbols, the image of a bomb on the title page (though no bombing occurs in the plot<sup>67</sup>) of an atom for the first part title (9) and a biohazard symbol for the third and final part (309) all work to hint at this point of historical reference. Furthermore, the large circular images of the atom and the biohazard symbol also call to mind the clock that begins each chapter of *Watchmen*, which counted down to nuclear apocalypse.<sup>68</sup> The atomic fears that permeate *Watchmen* are part of the semantic weight of the graphic novel in *The Brief Wondrous Life of Oscar Wao*, but this point of reference is made more accessible by the echoes between graphic symbols and textual meanings.

The presence of these symbols serves to cement the importance of this otherwise less apparent context.<sup>69</sup> Atomic symbolism and imagery is conspicuously prevalent at the more significant points in the Cabral family's tragic history, beginning with Oscar's famed

<sup>67</sup> As I will note below, Díaz will reference the atomic bombings of Hiroshima and Nagasaki, but as a kind of historical referent—placing a moment in time. There are no bombs that fall in Santo Domingo nor in New Jersey. None of the characters experiences any kind of bombing.

<sup>68</sup> The clock in the graphic novel itself is a reference to the “doomsday clock” that the Bulletin of Atomic Scientists maintains, which shows how close humanity is to self-destruction. *Watchmen* has an important place in the text. It is mentioned three times (45, 277, 331), the final time noting that Oscar has circled one of the final panels, the only time he ever wrote in a book. The moment he circles highlights the book's profoundly ambivalent, post-attack conclusion and Dr. Manhattan's refusal of both endings and moral judgment.

<sup>69</sup> Suffice to say, Díaz makes more direct references to the *Lord of the Rings* than he does to nuclear war, for example: Atomic(2): 24, 236; nuclear (3): 27, 42, 258 vs. Sauron (4): 2, 156, 173, 217.

grandfather, the doctor and scholar Abelard. Abelard is eventually captured by the Trujillo regime for either making a joke about the dictator's murderous tendencies or refusing to bring his attractive teenage daughter within the lecherous dictator's reach. When Abelard is captured, the event is conflated temporally and symbolically with the United States' bombing of Hiroshima and Nagasaki. Díaz moves from a happy moment between Abelard and his mistress to the revelation that "[t]he next week two atomic eyes opened over civilian centers in Japan and, even though no one knew it yet, the world was remade. . . . and already we're heading to Victory in the Pacific and for three Secret Police officers in their shiny Chevrolet winding up the road to Abelard's house" (236-7). The temporal coincidence Díaz draws between capture and bombing underscores a symbolic relationship that he continues with Abelard's youngest and only surviving daughter, Oscar's mother, Beli.

Abelard's capture leads to his torture and death, and also to the deaths of his wife and their two older daughters (though all appear accidental). Beli is orphaned and disappears to distant relatives in a rural, poor part of the country. During her time with those relatives, Beli's back is terribly burnt, leaving a scar that Díaz describes as "[a] bomb crater, a world-scar like those of a hibakusha" (257).<sup>70</sup> Díaz reinforces Beli's status as symbolic atomic bomb survivor by later positioning her as "the daughter of the fall, recipient of its heaviest *radiation*, [she] loved *atomically*" (126, my italics). This love will require her to emigrate to the U.S. to escape the wrath of the Trujillo regime. This same tendency to love "atomically" will also eventually cause Oscar's own death. The fall of the Cabral family, Abelard's torture, and Beli's sisters' deaths are symbolically tied to the atomic bombings of Hiroshima and Nagasaki, and many of the tragedies that befall Beli, Oscar, and Lola become the immediate and long-term consequences of Abelard's fall.

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<sup>70</sup> The Japanese term for injured/wounded survivors of the atomic blasts at Hiroshima and Nagasaki.

Oscar's first chapter, titled "Ghetto Nerd at the End of the World 1974-1987," begins to make clear the significance of atomic apocalypse to Oscar specifically. Like so many things in this novel, the atomic point of reference can be traced back to fukú—Díaz's term for the curse brought to the world by Columbus's arrival on Hispaniola (1). If not for Abelard's fall and Beli's inheritance of its radiations, the Cabral family would never have emigrated. Furthermore, if fukú as a concept is related to events of great and tragic historical importance that are both evidence of the curse and reinforce the curse—for example JFK's attempted assassination of Trujillo—then the U.S. bombings of the civilian centers of Hiroshima and Nagasaki would be similar events. To paraphrase Díaz, what more fukú than unleashing the threat of global annihilation?

The Cold War context of the novel, and the Cold War as the cursed aftermath of bombing Hiroshima and Nagasaki, is highlighted through the use of these graphics. Oscar's story runs from 1974-1995, almost entirely within the second half of the Cold War—a period of the conflict characterized by Mutually Assured Destruction and American support for authoritarian dictatorships in Latin America. Díaz integrates this context subtly (symbolic resonance to the family's fall, its echoes evident in Oscar's dreams of apocalyptic heroics and his taste in science fiction), as if emphasizing the way that the Cold War was a pervasive influence on the everyday lives of Americans during this period, but also an abstract threat that did not usually impact day to day life in perceptible ways.

Reinforcing the Cold War context also makes clear the way that the book is often read tightly within other interpretive frames: as a consideration of intertextual reference points (comic books, *The Lord of the Rings*, science fiction, and Latin American fiction); a consideration of the history of colonialism and the Dominican Republic/Caribbean; or a discussion of Yuniór's role

as an author figure.<sup>71</sup> While all of these readings are fruitful, they make less space for the text to gesture at the geopolitical context of the late twentieth century. The interplay of the textual references and frontispiece graphics helps to bring this aspect of the novel out of the shadows.

*The Brief Wondrous Life of Oscar Wao* shows both the visual qualities of digital print and the shift toward using such technology to augment textual meanings or echoes rather than to disrupt the traditions of the novel and the book. It takes the tools of digital bookmaking and puts them directly in service of social and historical arguments. Rather than a particular moment of expression, an anomaly, *The Brief Wondrous Life of Oscar Wao* is evidence of a movement toward this use of desktop publishing software. Alongside novels such as Gary Shteyngart's *Super Sad True Love Story* and Michael Chabon's *Telegraph Avenue*, *The Brief Wondrous Life of Oscar Wao* subtly infuses the spaces around the text and the text formatting itself with meaning. The work of authors and book designers and the nature of the American publishing industry influenced the way that desktop publishing technologies could be used. In turn, desktop publishing software now influences both the surface texture and the meaningful direction of literature today.

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The two decades (around 1990-2010) of digital print are an important meeting place. The introduction of this technology drastically changed parts of the printing process that had changed little in a hundred years. The technology was introduced at the beginning of a period of increasing computerization in many aspects of life. As I discussed in chapter 1, the first Storyspace hypertext was introduced two years after the technologies that made digital

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<sup>71</sup> For intertextual frames, see the articles by T.S. Miller, Anne Garland Mahler, Rune Grauland, Victor Figueroa, Monica Hanna, Sean P. O'Brien, Daniel Bautista, and Joshua Jelly-Schapiro. For history, see articles by Tim Lanzendörfer and José David Saldívar. For Yuniors, see articles by Katherine Weese, Jennifer Harford Vargas, and Elena Machado Sáez.

typesetting possible first converged. During this period the personal computer quickly became a necessary aspect of daily life for middle- and upper-class Americans. Almost as quickly, critics became concerned with the fate of reading and the fate of the book in a marketplace of entertainment and ideas becoming crowded by television, the Internet, film, and music.<sup>72</sup>

Digital print as a concept and in practice should play an important part in discussions of the fate or future of the novel and the book. As it went largely unnoticed by those outside the publishing industry, it was allowed to develop mostly out of the public eye. What publishers and authors did with this technology was, in some small way, authentic to their particular goals and situations. Within the bounds of my study here, the development and use of digital print technology was clearly shaped by the economic forces surrounding the publishing industry and the fading power of postmodern literary style. Under the influence of these two significant forces, digital print developed a visual language that eschewed the highly disrupted layouts of the most well-known and studied parts of *House of Leaves*. Slowly, more and more novels came to resemble the ornamented text of *The Brief Wondrous Life of Oscar Wao*. The way that Jennifer Egan and Mark Z. Danielewski turned typography toward a more narrative role is an example of how desktop publishing expanded the possibilities of the printed page. So with the fading of the postmodern paradigm as the major way of reading and crafting text has come a new way to engage with the visual possibilities of text.

This added richness in the paratext has allowed authors new ways of addressing difficult narrative possibilities. But it is within reason to think that there must be other possibilities to which this technology will be turned. These possibilities will be defined not simply by a

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<sup>72</sup> See Alvin Kernan's *The Death of Literature* (1990) and the NEA's report *Who Reads Literature?: The Future of the United States as a Nation of Readers* (1989/1990).

technological change, or an abstract vision of technology, but by the interplay of contextual forces, actors, and publics.

The interactions of print technology and print literature should also remind us that technologies are not monolithic. The technology of desktop publishing had the capability *totally* to reshape the novel—and it did not. The role of publishing companies restricted that capability, as did a general loss of cultural interest in the task. With the fading power of both high postmodern and high modern literary style, there seemed to be no compelling reason to reshape or destroy the novel. Instead authors moved to use the powerful new technology to explore new ways of creating narratives and new ways of expressing ideas, events, experiences, and time. Desktop publishing, or another powerful technology, could very well reshape the novel in the future if it becomes an overriding cultural or economic goal. But, in keeping with Gitelman and Pingree's model for the introduction of past new media, it is unlikely that we will see a reshaped novel without a compelling public, critical, or literary interest in that goal.

For a long time it was popular to think that the media of the computer and the Internet would bring about a great mash-up of media, and to some degree this has been true, but some lines seem to have held. Though there have been numerous works that have included more visual material, in both the novel and in the literary book as a whole,<sup>73</sup> eighty-some years of visually enhanced print literature has not made the practice common or necessary. The novel has remained a *mostly* textual form despite occasional remediation of other media, and despite the arrival of film, photography, television, and the super-medium of the Internet.<sup>74</sup>

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<sup>73</sup>For example, drawings in Kurt Vonnegut's *Slaughterhouse-five*, and Paul Auster's *New York Trilogy*; photographs in William Morris's *Home Place*, James Agee and Walker Evans' *Let Us Now Praise Famous Men*, and Don DeLillo's *Mao II*; and both drawings and photos in Jonathan Safran Foer's *Extremely Loud & Incredibly Close*.

<sup>74</sup>We could juxtapose Gary Shteyngart's futuristic email epistolary novel *Super Sad True Love Story* with Jeffrey Eugenides' *The Marriage Plot*. The former is highly typographical, attempting to remediate Internet

Instead, what the era of digital print has resulted in is a renewed interest in the visual possibilities of print. The formatting of text, in terms of both what is included and how it is placed, is newly open to reshaping in ways that have just begun to be considered by the authors of the contemporary period. Given the dramatic increase in the role of the Internet in our everyday lives, it is likely that the visual possibilities of print text will be more and more fully developed as long as we continue to use print texts. The nature of such experiments as the novel begins to move off the page and into digital formats will be the subject of my next chapter.

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communication and text forms, while the latter is a modern, somewhat theoretically informed take on the marriage plot, using very traditional forms of narrative and typography.



### Chapter 3: Remediating the Novel: Neal Stephenson's *Young Lady's Illustrated Primer*

Today, there is not consensus on what the digital medium can do for novels. A revolution in display technologies—the advent of e-readers and tablet computers—has yet to yield significant literary work designed for the digital medium. Print novels translated to digital displays have come with only minor enhancements like author interviews, maps, and audio recordings of authors reading their texts. We are in an incunabular period, a moment in which authors and publishers figure out how to use a new medium, how to stretch the rules of genre and the possibilities of technology.

For most of this incunabular period, scholars have suggested that digital environments will lead literature in a wholly new direction. Digital literature has long been positioned as a kind of anti-narrative or anti-novel, an essentially experimental form. Michael Joyce, J. David Bolter, and George Landow argued early and repeatedly that the hypertext medium would free the reader from the control of the author and of narrative.<sup>75</sup> As I discussed in chapter 1, Joyce's hypertext novel, *afternoon*, a story plays a large role in this argument. In a lengthy discussion intended to “survey systematically the entire field of electronic literature,” N. Katherine Hayles notes about twenty works with no words at all (4), VR works “reminiscent of digital art works,” and a series of works that cite William Burroughs's cut-ups as ways to free language from “linear syntax and coherent narrative” (20). More recently, Jessica Pressman has argued that the future of digital literary collaboration is in the experimental web literature and art-like flash text animations of writer-artists like Young Hae Chang Heavy Industries (257-58). Whether due to lack of examples, or to scholarly preference, there has been little attention paid to what digital

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<sup>75</sup> See Bolter's *Writing Space* (168), Joyce's *Of Two Minds* (11, 13), and Landow's *Hypertext* (90).

literature can bring to more linear or even realistic narrative works. And it is very unlikely that digital literature, if it is to speak to large numbers of readers, will take such radical shapes.

The idea that the essence of digital literature is in wholly experimental works, whatever the reason, blinds literary scholars to the possibilities of more traditional narratives in digital form. Yet there have been few examples of narrative digital fiction for scholars to point to. Most authors of contemporary literary fiction either have not had the interest or the technical skill to render literary narratives in digital environments more complex than a digital representation of the print page.<sup>76</sup> However, a fully realized plan for a narrative work of digital literature has been proposed by Neal Stephenson in *The Diamond Age or, A Young Lady's Illustrated Primer*. The eponymous Primer, a fully described digital book immersed in a complex world, suggests a model for digital narrative based in the genre and the contextual history of the novel.

Within the novel, the Primer is developed as a teaching device as well as a storytelling medium.<sup>77</sup> It has many of the qualities we seek, or once sought, in the digital book: interactivity, read/write capability, sound, video, games and puzzles, virtual worlds, and the ability to evolve and react to the reader. Since Stephenson places the Primer in a complex world, a study of the Primer allows us to consider both the technological and literary aspects of a digital book, and how such a book might function within a society.

More to the point, Stephenson's fictional Primer makes the gap between narrative traditions and the scholarly vision of digital literature apparent. The Primer is a somewhat marvelous digital book that responds to the actions and feelings of its reader/user. Out of that information, the Primer creates stories, games, and puzzles to educate and challenge its reader,

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<sup>76</sup> Jennifer Egan's short story "Black Box" written for Twitter, Iain Pears's new novel and app novel *Arcadia*, Mark Z. Danielewski's *Fifty Year Sword*, and Chris Ware's iPad comic book *Touch Sensitive* are so far the most promising possibilities suggesting that this may be changing.

<sup>77</sup> For clarity, I will refer to the novel as *Diamond Age* and the digital book within the novel as "the Primer."

originally intended to be a young, aristocratic girl. The Primer is interactive, narrative, and didactic. Despite these traditional goals, the Primer is also a sophisticated technological object, made of many pages of flexible, touch-sensitive, screen-like paper, with a binding made up of powerful, microscopic computers that process what is happening on the pages and what is happening in the outside world. Even though it is marvelous, the Primer is not an aberration; it is an expansion and combination of the available consumer technologies portrayed in the novel: interactive video games, passive visual narratives, “smart paper,” and microscopic microphones and computers. The Primer is a combination of available technologies, put toward a narrative purpose, deeply situated in a cultural context.

*Diamond Age* is set in a near future, some 40-60 years after Stephenson’s previous novel, *Snow Crash*. In the years between the novels, science and industry have learned to control molecular structures—to build complex atoms out of hydrogen and oxygen, to create both microscopic military technologies and chopsticks that show tiny animated advertisements (70). This has resulted not in peace and abundance, but a series of wars, a breakdown of geographic states, and new ways of differentiating between rich and poor. *Diamond Age*’s world is organized into non-contiguous states based on various qualities: former geographic space and/or race (Han Chinese, Heartland Americans, Boers), Moral and Political philosophies (First Distributed Republic, Neo-Victorians, and Sendero), with not always clear lines between what are philosophical and what are formerly national or racial differences. These new states are called “phyles,” and those without a phyle are called “thetes.” In the novel, thetes are a kind of caricature of poor westerners, and they have little power in the world. The Primer is developed partly because of the need to ensure the continued existence and dominance of the Neo-Victorian phyle in an ever-unstable world.

Once the Primer escapes into the world in various forms (one to a thete girl, one to a Neo-Victorian engineer's daughter, and an edited version to 250,000 Chinese orphans), it begins to bear striking resemblances to the novel, especially in the early British context. The Primer is a digital book that guides an illiterate thete girl to become an unbound individual who can leave her mother's home and strike out on her own, like a hero in Dickens's or Defoe's novels. It gives her the cultural competencies to fit in with the aristocratic/bourgeois society of the Neo-Victorians (like a servant reading *Pamela*), as well as the skills to ply a trade, as a storyteller and coder. The Primer is a realistic and immersive experience, creating stories out of real life experience, just as Ian Watt argued was a defining aspect of the early British novel (13). The Primer is intended to care for the long-term health of the post-nation state of New Atlantis, and ends up helping to form a new phyle, playing a similar role to the one that Benedict Anderson proposed for print media. The author, rather than being displaced from the digital space, is retained in the form of the coder/designer of the Primer, a voice/interactive actor, and the reader/user. However, the Primer is not simple allegory for the development and purpose of the novel; it is an example of how the novel and other media adapt previous forms to suit their cultural contexts.<sup>78</sup>

The Primer, in other words, *remediates* the novel, as do hypertext and other forms of digital literature. Bolter and Grusin argue that this is always the case with a new medium, that new media always present “themselves as refashioned and improved versions of other media” (14-15). This exemplifies a more general trend of seeing each new medium as being “justified

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<sup>78</sup> There is no evidence that Stephenson intended the Primer to be a representation of the novel itself, exactly. Instead, what I will argue is that there is a great deal of circumstantial evidence linking the Primer to various theories of the novel. Whether this was Stephenson's intention or not is not my focus here; instead it is the way that the Primer is an example of a digital book that bears striking similarities to the novel as conceived of by Ian Watt, Michael McKeon, Benedict Anderson, Nancy Armstrong, and James Wood—in terms of both mimesis and cultural role.

because it fills a lack or repairs a fault in its predecessor, because it fulfills the unkept promise of an older medium” (60). The Primer suggests how this way of seeing media is problematic when applied to the novel and the transition to the digital novel. Though Bolter and Grusin do acknowledge the social aspects of remediation (69-73), few discussions of the digital novel seem to consider the social role that the novel plays and how this might translate to digital literature. Remediation, as it is often understood, is too concerned with technical mediation and the essence of media, causing a blind spot when it comes to the practical and social roles of technologies.

### 1. Seeking Her Fortune

The Primer is designed by a nanotech engineer named John Percival Hackworth, at the behest of an equity lord, a kind of aristocrat/political official/business owner at the top echelon of Hackworth’s Neo-Victorian phyle.<sup>79</sup> The equity lord, Lord Alexander Chung-Sik-Finkle-McGraw, is of the generation that founded the phyle, based on a rejection of the relativist values of the mid 1990s (as defined or caricatured by Stephenson’s characters). Finkle-McGraw is first-generation Neo-Victorian and Hackworth is a convert. Both have noticed that children brought up in the phyle lack a certain “subversiveness” (72). Brought up to obey a complicated system of rules, the next generation follows these rules without thought. Both Hackworth and Finkle-McGraw believe this puts the next generation of Neo-Victorians, and the phyle as a whole, at risk of stagnation and eventual destruction.<sup>80</sup> The Primer is a book designed to rectify this situation, specifically for Finkle-McGraw’s granddaughter, Elizabeth. But the plot of the novel

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<sup>79</sup> After a cataclysm resulting from the invention of nanotech (hinted at in various parts of the novel), the long awaited end of nation-states has come. Instead, the world is now organized into “phyles,” groups of people organized for common defense and economic activity, and determined by various kinds of affinities: political (Sendero is a post-North Korean communist phyle), cultural (the New Atlantans/Neo-Victorians are mainly Euroamerican people organized around a return to the social and ethical mores of the Victorians and the First Distributed Republic are libertarians), and current or past national identity (Boers, Celestial Kingdom/China, and Heartlanders/middle Americans). Movement between phyles is allowed, depending on the phyle.

<sup>80</sup> See Rubin for a longer discussion of technology and the problem of perpetuating non-national societies in the novel.

largely follows another copy of the book that ends up in the hands of a thete (phyle-less) girl, Nell, whose brother mugs Hackworth for the copy that he illicitly made for his own daughter, Fiona. As a result of these two thefts, three Primers eventually come to be in circulation, owned by Elizabeth, Fiona, and Nell. Of the three copies of the Primer that eventually are created, Nell's copy is the only one that is featured regularly in the novel, including excerpts and great detail about the working of the book. It is, mostly, by following Nell's Primer that we can see how the digital book engages in a complex remediation of the novel and its contexts.

Nell is a thete, a class of people who are a kind of caricature of impoverished twentieth-century Americans. Thetes live partly via the free food and free products available through nanotech matter compilers and the raw atomic materials of the feed. Nell's mother, Tequila, works as a maid for a Neo-Victorian family, though she insults and resents Victorians in general (168). Tequila and Nell's brother, Harv, both occasionally blame their poverty on "Hindustanis" and "Chinese" (38, 47). Tequila picks up a drug habit, has boyfriends that pass through for periods of time, three of whom are criminals—Nell's father, Bud, is executed early in the novel; Rog is escorted away by police; and Tony is killed by police in Nell's kitchen after shooting a police officer and digging at his own arm with a kitchen knife trying to remove a nanotech projectile, after which Nell is left to "clean up the blood in the kitchen and the living room" (167). Nell's life before the Primer is violent, bleak, and without education or much supervision.

After Harv steals the Primer, Nell begins her education and a Dickensian journey out of poverty toward middle-class individuality.<sup>81</sup> When Nell receives the Primer from Harv, she does

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<sup>81</sup> Johnston (229) and Rubin (136) also point out parallels between Dickens's plots and *Diamond Age*. Nell's name corresponds with the main character, Little Nell, from Dickens's *The Olde Curiosity Shoppe*. Apart from the name, their general poverty, and perhaps being without parental care, Stephenson does not seem to have drawn deeper parallels between the two characters. Instead, Nell's name is part of a larger group of Victorian/Early British novel signifiers in *Diamond Age*, such as the chapter titles—"Particulars of Nell & Harv's domestic situation; Harv brings back a wonder" (46)—and Hackworth's descriptive last name.

not know what it is or how to open it. She has, quite clearly, never seen a book or book-ish thing before. Though the Primer is designed for Elizabeth, it adapts quickly to Nell's educational needs. Nell's education begins when the Primer starts reading stories to her. Notably, the book teaches skills and cultural expectations from the start. As the Primer observes Nell putting her stuffed animal "children" to bed, the book opens and says to her, "Nell was putting her children to bed and decided to read them some stories . . . for some time Nell had been putting them to bed without reading to them" (84). The Primer begins by reinforcing the cultural importance of reading to children, though it is clear that no one reads to Nell or Harv; in fact, it seems that thetes may have abandoned alphabetic writing entirely for "mediaglyphics" (38), a written language based on simple visual icons. Nell learns to read in the Primer through a recognizable modern strategy, showing large letters, and then reading sentences to Nell that utilize words starting with that letter, for example, "Nell Runs on the Red Rug" (85). As time goes on, the book adapts to Nell's skill level, letting her read the words she knows and filling in her questions or reading to her when she gets tired.

In addition to reading, Nell has more immediate educational needs, especially after she begins to spend much of her time in a playroom with other, larger children. The Primer begins to teach her simple self-defense and martial arts, specifically for defending herself against larger attackers. The skills are taught through a combination of storytelling—the Primer tells a long story about how Dinosaur (a T-Rex based on one of her stuffed animal children) survives after an asteroid kills all the other dinosaurs. In the end of the story, Dinosaur begins to learn martial arts from a small mouse, who then shows Nell specific skills (166, 169) and the importance of discipline and humility (145). She immediately makes use of these skills to defend herself from a larger bully in the playroom (168-69), reinforcing her ability to protect and control her own body

and personal space. The lessons are taught both through a story that demonstrates the power of martial arts to defeat the larger, slower Dinosaur and through interactive games that demonstrate somersaults and other maneuvers (165-166).

It is also the Primer that, in essence, frees Nell to become her own actor, a free individual seeking her fortune in the world. Ian Watt figures the escape from family as a distinct part of Defoe's contribution to the novel: "leaving home, improving on the lot one was born to is a vital feature of the individualist pattern of life" (65). When Tequila's current boyfriend beats Nell and Harv savagely (to the extent that one of Harv's eyes swells shut and Nell sees blood in her urine), the Primer prepares her to escape her family. Prior to this beating, the Primer includes a story about a dark queen with a series of visitors, all of whom leave her, that seems to comment on Nell's mother's experience as a woman trapped "in a prison of her own making" (179). Something in the Primer understands that Burt, Tequila's latest boyfriend, is more dangerous than the others. Even before the terrible beating, the Primer has Burt figured as an evil Baron, who Dinosaur says is "purely evil and must be fought to the death" (180). After her beating, the Primer impels Nell to leave her house with an harrowing re-telling of the story of Odysseus and the Cyclops (184), a tale designed to be similar enough to Nell's circumstances to convince her to flee the apartment and possibly to kill Burt. Nell follows the general arc of the story, creating a screwdriver in the matter compiler and attempting to stab Burt in the eye with it. She falters, leaving him merely injured and enraged, but in the meantime the Primer has spoken to Harv, and they successfully flee the apartment.

Nell's training with the Primer allows her to move successfully out of her apartment and between spheres in the world, evoking the "fluid model of social identity" that Michael McKeon finds elaborated by the novel (xxiii). Something in the Primer has prepared Nell for looking for



refuge outside her home, as she knows that the Sendero phyle, suggested to be an outgrowth of North Korean communism, will take away any books brought there (212-13). The original purpose of the Primer suggests that Nell's true place is with the Neo-Victorians, whom they generally refer to derogatorily as "Vickys." When Nell and Harv reach Dovetail, an associated phyle, Nell uses the speech patterns she has learned in the Primer, addressing the constable with "Pardon me, sir . . . we're not here for work or to get free things, but to find someone who belongs to this phyle." Being able to talk "like a Vicky," even though she "look[s] like a thete," is the key required to get Nell and Harv into Dovetail (214). Once in Dovetail, Lord Chung-Sik-Finkle-McGraw, client for the design of the Primer, becomes aware that Nell has a copy of the Primer. Taking an interest in how the book functions in the world, Finkle-McGraw becomes a kind of benefactor for Nell, allowing her to stay in Dovetail, and securing her a place in a school (238-39). Finkle-McGraw's role in watching over Nell, and to some extent Hackworth's daughter, Fiona, is akin to that of Pip's secret benefactor in *Great Expectations*, as Finkle-McGraw never reveals his plans to Nell or Fiona, and remains mostly a rich man pulling strings in the background.

The Primer continues to help Nell form a fluid social identity, and the skills to support it, once she leaves Dovetail and the Neo-Victorians. The skills she employs once she leaves the phyle "to seek [her] fortune" are essentially a fluidity of identity (changing clothes from her Victorian dress to a one-piece "coverall with SHIT HAPPENS in pulsating orange letters") and storytelling skills (she becomes a writer of sex fantasies using her knowledge of Neo-Victorian culture) (324, 341). In both these cases, the way that Nell learns these skills is by reading the Primer in a larger sense. Like readers of the novel who learned to write letters, or think of

themselves as citizens, Nell is learning from exposure to the form in general, not just from the didactic games included within it.

Nell's development through the course of the novel clearly follows a rise from the lower classes to the middle classes and from lack of knowledge about the self to a clearly defined subject. To paraphrase Nancy Armstrong's description of *Pamela*, Nell is transformed from the object of violence into a subject capable of acting in the world through literacy (5). Once she has learned to read, defend herself, and behave like a Neo-Victorian, Nell sets out away from her family, roughly paralleling Robinson Crusoe's journey from the bosom of his family to seek his fortune at sea.<sup>82</sup> When she leaves Dovetail and the Neo-Victorians, Nell frames the move in the same way. In doing so, Nell re-enacts the novel's influence on the individual subject and the rise of a middle class.<sup>83</sup> As McKeon suggests, the novel conducts an "experimental inquiry into the implications of contemporary social change" (xxiii) from birth-based status (rank) to class-based status (wealth). We can see Nell's movement as conducting a similar experiment in this post-national world. Nell's journey, and that of Fiona and Elizabeth, investigates the question of what happens when one can choose one's citizenship based on a number of models. In fact, moving from phyle to phyle is a rather common plot point in *Diamond Age*: Carl Hollywood, Hackworth, Finkle-McGraw, Nell, Fiona, and Elizabeth all have their shifts from one phyle to another narrated. Bud, Nell's father, is captured and sentenced to death partly because he cannot find a phyle to protect him.

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<sup>82</sup> Leaving one's family, or lacking a family, is a major feature of Defoe's work, as Watt points out: "Defoe's heroes either have no family, like Moll Flanders, Colonel Jacque and Captain Singleton, or leave it at an early age never to return, like Roxana and Robinson Crusoe" (65). Nell would fall into the latter category.

<sup>83</sup> This is one of the major points agreed upon in criticism on the rise of the British novel. As James Wood writes, "In the novel we can see the self better than any literary form has yet allowed" (148). Armstrong argues "that the history of the novel and the history of the modern subject are, quite literally, one and the same" (3). Watt notes the combination of individualism and bourgeois capitalism: "leaving home, improving on the lot one was born to, is a natural feature of the individualist pattern of life" (65).

Nell's journey from phyle to phyle is enacted through the Primer, and the journey of *Diamond Age* is partly focused on the way that this plays out in Stephenson's vision of the future. Rather than discarding citizenship with the end of nation-states, Stephenson realizes that associating within states and granting or denying citizenship are important social features of states. Even in a technologized future, he argues, people will still gather for protection, and states and individuals will still threaten and take advantage of those people who have no citizenship.

## 2. Truth through Virtual Reality

Nell's journey to individuality is not enacted through the dry didactic experience that the word "primer" suggests, but through an engrossing and immersive experience. Despite the preferences of many novel readers, an immersive reading experience is often considered negatively by critics. J. David Bolter, an early proponent of hypertext, prominent theorist of new media, and co-developer of Storyspace, remarked in *Writing Space* that "losing oneself in a fictional world is the goal of the naïve reader or one who reads as entertainment" (155, qtd. in Ryan 11). This is, of course, a major feature of the novel, if one that was conflicted from the start. As Watt notes, the novel was already associated with "a rapid, inattentive, almost unconscious type of reading" in the eighteenth century (48-9). Rather than move away from immersive, narrative reading, the Primer carries on this long tradition in new ways.

Part of the reason that immersive reading has remained so controversial is that it is often considered to be a sign of titillating or simplistic fictions. Marie-Laure Ryan, however, defines immersion in reading as "the experience through which a fictional world acquires the presence of autonomous reality" (14). Immersion, for both Ryan and Janet Murray, is a key component of digital literature and digital art, especially in virtual reality applications, which both Ryan and Murray define as an interactive and immersive environment (Ryan 12, Murray 71). However, as

Ryan discusses in *Narrative as Virtual Reality* and I suggest above, the influence of early hypertext literature and theory has pushed digital literature away from immersive experiences and toward more experimental texts meant to subvert or comment on immersion. The Primer works in both the VR and literary realms, showing how immersion can work alongside interactivity in VR and text-based digital literature.

The tendency of the Primer to be immersive is not necessarily figured as positive. The first time Nell's Primer leaves her home, she is pictured reading it in the courtroom where Harv is being tried for robbing Hackworth. Nell is visibly lost behind the book, turning pages and talking to it (90). When the first of the altered Primers is presented to one of the 250,000 orphan girls, Judge Fang watches as the book begins to talk to her: "to Judge Fang the voice sounded a bit dull, the rhythm of the speech not exactly right. But the girl didn't care. The girl was hooked" (223). The same language of addiction is used to describe Fiona's and Elizabeth's use of their Primers: "[Fiona] lives in a fantasy and is happy there. . . . We can't let [Elizabeth] spend her life between the covers of your magical book" (263, 265). Whatever the actual experience of reading and interacting with the Primer, Stephenson is clearly placing it within the realm of pulp fiction and video games—media that are absorbing, immersive, and often criticized for it.

Yet Stephenson is likely playing with the moral crises that circulate around immersive media, as Nell's experience with her Primer is far from simple. At the start, the Primer mirrors *textual* immersion. Nell's reading is related in the novel through long passages of narrative, ostensibly the same text that is first read to Nell, and that she then reads herself. On two occasions, passages from the Primer are included in *Diamond Age* as long narratives (136-145, 200-206). The first of these long passages is titled "Dinosaur's Tale." It is presented as a comforting presence, since it is the passage that Nell reads when she retreats to the corner after

being bullied by other kids (135). In this sense, it acts in a naïve way—Nell loses herself in the text and forgets her troubles. But the text, like many novels that a reader can get lost in, has meaning and purpose. Dinosaur's tale is grim (137), meant partly to reflect Nell's grim youth (167). Dinosaur's tale is also a lesson about cleverness, akin to various stories about a hero who must complete a series of impossible tasks, such as the ten labors of Heracles in Greek mythology. Though Dinosaur is a T-Rex, large and violent, he completes all his challenges through cleverness, like Odysseus, Coyote, or Peter Rabbit.<sup>84</sup> In this way, Dinosaur becomes complex; he learns a lesson about humility and grows throughout the tale. This development, in Ryan's terms, renders the fantastical reality more real, allowing Nell to immerse herself fully in this textual journey.

This sense of the text as a real experience that Nell is immersed in is reinforced by the way that Stephenson phrases Nell's resolution to leave her family's apartment. Rather than resolve the story of Baron Burt in the usual way, with Dinosaur or one of her other night friends taking the lead and telling the story, this story ends abruptly with the rising of the sun. Baron Burt is left, in the Primer, unhurt, just drunk and asleep, though Dinosaur has seemed ready to step in and kill him. The abrupt ending seems to reinforce the identification between Nell and her avatar, Princess Nell. Thinking of how, once Baron Burt awakes and realizes he's been tricked, "they'd be stuck in the Dark Castle forever," Nell transitions from thinking of the Primer characters as fictional to seeing them as deeply involved in her real situation. She says, "Nell was tired of being in the Dark Castle. She knew it was time to get out" (185). Reading (as she still is

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<sup>84</sup> Dinosaur has three tests to complete. For the Queen of the Ants, he must capture the King of the Roaches, which he does by luring all the other cockroaches into the sea with honey from the Kingdom of the Bees, which draws out the King (141-42). For the King of the Birds, Dinosaur has to retrieve a feather from the midst of a river of lava, a task clearly meant to reward flight, but Dinosaur uses his tail to cause an avalanche from nearby mountains, which solidifies the lava and creates a path to the feather (142-43). For the King of the Shrews, he must wait for someone named Dojo and then defeat him in single combat. Dinosaur realizes that Dojo, a mouse, has somehow defeated all three other dinosaurs, and challenges Dojo to tic-tac-toe, which he wins (143-45).

at this point in the novel), the characters come to express fully her real situation. Nell herself is in the dark castle, and she must get out.

At this point in the novel, the relationship between Nell and Princess Nell is a simple allegory. Things that happen to Princess Nell are representative of what is happening to Nell in real life: Nell lives in an apartment building with an inattentive and fickle mother and her boyfriends while Princess Nell is imprisoned in a Dark Castle by her evil stepmother (and so on). The immersive qualities of the stories are representative, then, of how real, how representative are Princess Nell's experiences to Nell—in essence, the Primer embodies Watt's "primary criterion" for the novel, "truth to individual experience" (13). This relationship becomes muddier, however, as Princess Nell ceases to be an allegory and becomes an avatar.

The shift from allegory to avatar is a gradual process. Nell begins to find interactive elements in her Primer early on but they are interspersed moments meant to teach skills. By the time that Nell runs away from home and begins living in Dovetail, the Primer is "getting more like a ractive and less like a story" (233-34).<sup>85</sup> The movement from story to interactive games shows the difference between immersive texts and immersive VR environments. At first, Nell experiences character identification in just the same way as with the story. Failing a number of times in an interactive scenario, Nell says, "she felt she was trapped now, just like Princess Nell in the book" (206). But as the interactive scenarios get more common and more involved, Nell relates different kinds of effects. She notes that "by the end of each [interactive] chapter she was exhausted from all the cleverness she had expended" (234), relating a bodily or mental experience of effort not often associated with novelistic immersion. The reason that Nell is

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<sup>85</sup> "Ractive" is one of a few neologisms created by Stephenson for the novel to describe interactive entertainments. Ractive is the term for a unit of interactive media—including an interactive movie and a short interactive game within the text of the Primer. Professionals acting in ractives are called "ractors." Visual entertainments that are not interactive, like a television serial or movie, are called "passives."

experiencing immersion in the VR scenario in a more bodily way is that this new experience of the Primer requires significantly more effort. In the city of King Magpie, Nell must execute a plan that “failed the first time” but, when revised and executed again and again, “the sixth or seventh time . . . worked perfectly” (234). This process is notable because it is an extension of the way that many video games work. In order to beat a level, or a boss, the user develops a strategy (attack the boss’s head, get this item not that one, hide in the corner during the attack, etc.) and then tries to execute that strategy in a way that satisfies the goal. In some situations, this is easy; in other situations, the scenario is played over and over again, until the strategy is executed well or the player comes up with a new strategy. This is immersion through problem solving—the VR world becomes real to Nell as the rest of reality is blocked out by her focus on a complex task.

Rather than experiencing the text as allegorical or representative of real experience, VR lets Nell experience the Primer as an autonomous reality—she lives and acts in another world for a while. At first, like many of the video games that we know today, this is because she is absorbed in a task. As the Primer develops in complexity, and Nell develops with it, the Primer takes on more aspects of an inhabitable world. Partly, this is through the way that Nell is able to look at the world of the Primer. In the midst of a journey across a navigable interactive landscape, Nell gazes at a detailed landscape: “She spent a long time doing that, because there were dozens of castles at the very least, and she got the feeling that if she kept looking and counting, she might look forever” (278). Gazing across this landscape, seeing details within details, makes the vision seem real. Like the Primer, like a real landscape, it is “anfractuous” (312): the closer one looks, the more detail it has. Critically, Nell is able to explore this

landscape and visit the castles. In that way, it is an autonomous world with many of the characteristics of Nell's world.

Stephenson's *Primer* also allows Nell to "live" in it. There is no other way to put this. On two occasions *Diamond Age* describes Nell living and working in a city in the *Primer* for a long period of what I must assume is game time.<sup>86</sup> On the first occasion, Nell undertakes a long-term plan that requires her "to live in the city around the palace for a couple of years and make many treks into the desert in search of magic lanterns, rings, secret caverns, and the like" (280). The scenario is repeated at another point, in Nell's journey through one of the Turing-based cities. There, Nell must "apprentice herself to a master cipherer and learn everything there was to know" (354), work as a cipherer and attain prosperity, acquire a ciphering key and her own business, and then shrewdly acquire all the other ciphering businesses and keys through commerce. Rather than puzzle solving or questing, both these examples are defined by living in a role for an extended period of time. In essence, Nell lives out a period of life in another culture, in someone else's shoes.

The *Primer*, in its VR mode, is working within a number of video-game contexts. Nell's mode of navigation (278) bears resemblances to text adventure/interactive fiction games. Role-playing video games offer some of the same experiences of being immersed in a world, albeit generally one with clearer quest-based goals. Toward the most open end of the spectrum, sandboxing games like *Minecraft* offer a world with rules and little external goals other than survival (finding food, farming, building shelter, defending your avatar from monsters). But at the same time, these games and the *Primer* both accomplish traditional novelistic goals. As Nell works as a cipherer and lives in the desert city, she inhabits someone else's world, what Wood

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<sup>86</sup> In other words, Princess Nell lives somewhere for an allotted amount of time, but this does not correspond with the real time that Nell spends reading/playing the *Primer*. Stephenson doesn't make clear how long Nell spends playing these long-term scenarios, but the wording suggests it is longer than usual.



suggests is a key aspect of the novel (178-79). Nell is as much lost in the VR world as she is lost in the textual world of the early Primer. Both worlds seem to have an autonomous reality that Nell can inhabit and think about critically. While the way that Nell interacts with the Primer's world changes, the shift from a text-based world to a VR world does not change the immersive nature of this digital book.

### 3. A Digital Book for Synthetic States

Nell's immersive journeys into different worlds are part of what allows her to become a free individual. By experiencing a world wholly unlike her own, Nell is able to learn how to move freely between very different kinds of people and cultures. Such skills allow Nell to make a personal choice between phyles, something Stephenson figures as a key aspect of individuality in the *Diamond Age* world.

Phyles do not have to be contiguous, and one does not have to be born into them. While some phyles, like the Boers, require a racial background and religious conversion, others, like Sendero, require only expressed loyalty to a political philosophy. None require their citizens to be born in a specific place. Phyles also, as Charles T. Rubin argues, must perpetuate themselves, in light of both outside pressures and technological advancements (137). Future existence is not assured in the same way that we presently consider the future existence of France, England, Mexico, or the U.S. to be assured. The Primer is created partly to ensure the perpetuation of the Neo-Victorians, but from what it teaches Nell, it seems much more concerned with creating citizens who can function in the special kind of post-national world of *Diamond Age*.

In this, the Primer remediates one of the sociopolitical roles ascribed to the novel. Jürgen Habermas and Benedict Anderson consider the novel to be important in the formation of national communities. Habermas notes that private letter writing and the epistolary novel aided the

creation of a public sphere where arts, morals, and new formations of citizens and subjects could be debated (50-51). Anderson argues that the novel and the newspaper “provided the technical means for ‘re-presenting’ the *kind* of imagined community that is the nation” (25). In this way, the novel aided in the creation of spaces where the state could be debated, and created a media that could be used to solidify and define national belonging.

Phyles and nations are not the same thing, though they are clearly similar. A phyle is generally not geographically contiguous. There are branches of New Atlantis in Seattle, Shanghai, Vancouver, and London, and Bud’s frantic search for protection after assaulting an Ashanti family reveals that Shanghai also has branches of Boer, Parsi, Jewish, Mormon, and Sendero phyles. A phyle can be, as Bud relates, “racially oriented” or synthetic, with no particular history, instead based on “some shared skill or weird idea or ritual” (25). Often these lines are not especially clear, as the Neo-Victorians have no defined racial preferences, as Greta Aiyu Niu suggests (77), but the phyle is largely composed of Anglos of various kinds. Meanwhile, the Sendero phyle is based in a kind of communist ideology derived at least partially from Maoism, with mostly either “Incan or Korean” members, who nonetheless will accept “anyone” (26). All the above phyles are, to some degree, historical, in that they have a distinct antecedent in the present or past. The most detailed examples of truly synthetic phyles given in the novel are the First Distributed Republic (FDR) and the Reformed Distributed Republic (RDR). The FDR was started by people who were “very nearly anarchists” (342), which has led to factionalization and discord. The RDR is an offshoot, which makes up for the factionalizing of the FDR by instituting a series of rituals in which each member must depend on another person to save his or her own life, without being able to verify it—“an artificial absolute” that solidifies a group of people who do not believe in any absolutes (343). Whatever the reason for the initial

organization, it is clear in *Diamond Age* that the phyle organizes in some ways like a nation (for mutual defense and around a central idea or ideas), but in other ways is very different (not contiguous and based on a wide variety of ideologies).

In simplistic ways, the Primer shows clear examples of being involved in the formation and perpetuation of phyles. Part of Finkle-McGraw's goal in developing the Primer is to patch a hole in Neo-Victorian society: the lack of creative, subversive personalities (72, 331-32). As Finkle-McGraw describes it, New Atlantis "shines in the fields of commerce and science," but "wants more artists" (331). As Eileen McGinnis puts it, the Primer is not designed to create subversives just for the individual's sake, "but ultimately in service of the social good of New Atlantis" (484). Nell's story, in broad strokes, bears this out. When Harv and Nell arrive in Dovetail, it is Nell's mastery of Victorian manners, pronunciation and diction that grants them admission. This admission allows the rest of Nell's journey in the phyle. The Primer was originally intended to make Elizabeth and Fiona subversive, creative, and independent members of Neo-Victorian society, helping the phyle to perpetuate and prosper, but it also helps Nell to fit in and bring new experience and skills to the phyle.

In this conception, shared by McGinnis, the Primer functions much like the novel. It reinforces and enforces the societal norms that define a state—it serves "the ideological interests of New Atlantis" (McGinnis 485). However, this reading of the Primer as a didactic tool enforcing Neo-Victorian norms is betrayed by the eventual choices that the three Primer-raised girls make. Fiona joins CryptNet, an Anonymous-like technology collective, determined to bring down the medianet/economic system (331). Elizabeth joins a mildly scandalous avant-garde theater troupe called *Dramatis Personae* that doesn't seem affiliated with a phyle (392). Nell

decides not to take the Oath and join the Neo-Victorians, but to remain a thete (324).<sup>87</sup> The Neo-Victorian phyle may be well served by these desertions, if, as Finkle-McGraw suggests, the girls eventually decide to return to the phyle (332). However, it is more likely that the Primer, a tool for mediating a new world, does not function in the simply nationalist terms that McGinnis suggests.

In a world where citizenship is not largely determined by birth or blood relations, the ideal relationship between person and state is, Stephenson repeatedly suggests, one of choice. Hackworth, a model Neo-Victorian hacker/engineer, chooses to join the phyle (19). Carl Hollywood, owner of Miranda's (Nell's main ractor) respectable theater troupe and a bit of a cyberpunk/hacker/ cowboy, joins the phyle of his own volition as well (330). Those characters who stay in the same phyle they are born into, for example Finkle-McGraw's children and Gwendolyn Hackworth, are presented as rather flat secondary characters, seemingly lacking the agency to be important characters in the novel. Nell's finishing school teacher, Miss Matheson and her guardian in Dovetail, Constable Moore, essentially suggest as much to Nell, marking her as "one of those rare people who transcends tribes" (321). It marks her as one who should be able to exist without a phyle long enough to choose one that suits her.

The national moment that surrounded the solidifying of the novel form was a period of solidifying boundaries and defining difference. The process of creating imagined communities, as Anderson suggests, is one of defining what makes one belong to one nation and not another—

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<sup>87</sup> I would be remiss not to mention here that Nell also becomes the ruler of her own phyle, made up of the 250,000 Primer-raised, orphaned Chinese girls—known in the Primer as the Mouse Army. Greta Aiyu Niu makes a compelling argument that this is part of a larger issue with "techno-orientalism" in the novel, "a practice of ascribing, erasing and/or disavowing relationships between technology and Asian peoples and subjects" (74). The Mouse Army, she argues, consists of "unindividuated cyborgs, whose value lies primarily in their immense numbers and their fanatical devotion to their primers" (80). Certainly, Niu is accurate that the portrait of China in *Diamond Age* often borders on orientalist fantasy and the Mouse Army is one major reason for this. For this reason, and because the Mouse Army phyle is very vaguely described in the novel, it does not factor into my discussion of the Primer as mediating the shift from nations to phyles.

to the United States rather than England, to Argentina rather than Chile or Spain. Stephenson is describing a moment of fluctuation between the national imagination and a different kind of world. In the world defined by the boundaries between phyles, there is both more and less defining what makes a person a member of an imagined community. By recognizing that phyles are not simply geographic but ideological entities, the *Diamond Age* makes it possible for individual actors to benefit from switching between phyles.

While it is technically possible to treat the current world in this way, switching from nation to nation depending on ideological fit and opportunity for improving one's situation, most nation-states require a significant effort to gain citizenship if one is not born into them. The open nature of many phyles makes it possible to switch from group to group with significantly more ease—after all, Bud plans to gain immediate Sendero citizenship by walking into the Phyle and pledging his allegiance while fleeing punishment for robbery. Some phyles are racially distinctive, but many others are not, and there is no punishment noted in the book for defection from a phyle. The ideal position, in such a world, is someone who makes an informed choice about what phyle to choose. And the Primer is the medium that allows three characters to navigate that situation, and educates them with the skills and knowledge to make that choice. It remediates the relationship between the novel and the nation for a new social and political reality.

#### 4. Complicating and Expanding Authorship

Integral to the way that the Primer achieves its social and political roles is the complex and collaborative way that it is authored. Nell, Hackworth, and Miranda Redpath, the interactive actor (“ractor”) who reads to Nell and acts in the interactive portions, all have influence over the direction of the Primer. Hackworth contributes a general focus on issues of citizenship and

subversion. Miranda contributes a human voice to the stories and the interactive sections, enhancing Nell's experience of the Primer as a real space. Nell's life, passively, and the questions and actions she takes actively both provide tone, content, and plot direction to the Primer. The flexibility contributed by structuring authorship in these three parts is a large part of the reason that the Primer is able act as a builder of individuals ready to act in a post-national world.

Early conceptions of hypertext fiction were based on the idea that the navigable hypertext could even the score between author and reader, giving over much of the author's power to the reader. In a nod to Roland Barthes, author-theorist Michael Joyce figures the role of hypertext as the surrender of the writer to the reader (13). Robert Coover argues that hypertext "free[s] the reader from domination by the author" (Coover, n.p.). George Landow likewise sees the hierarchy between author and reader softening, noting how "the functions of reader and writer become more deeply entwined with each other than ever before" (90). For each of these critics, hypertext is a technology that breaks down the hierarchy of author over reader.

It is probably more likely that digital technology will make the role of author and reader more complicated, rather than simply giving the reader more control. The first two of Janet Murray's "four essential properties" of digital environments are more descriptive of *how* digital texts can change the nature of authorship. Murray argues that digital environments are essentially procedural and participatory. Rather than figure the author and reader in a battle for control, Murray suggests that digital environments lend themselves to new kinds of creator/user or author/reader relationships. Taking advantage of the procedural nature of digital environments, the author/creator of a digital environment "script[s] the interactor," setting up a series of rules, roles, and actions that users can perform (79). This role is most like that of the traditional author,

laying out the plot, style, and other structural aspects of the text. Murray also argues that digital environments are participatory—“they are responsive to our input” (74). The procedural nature of digital environments allows the creator/author to script possible actions from which the user/reader can choose. Rather than a simple leveling of the reader/user relationship, Murray’s conception of interactivity (a combination of the procedural and the participatory) allows for many possible author/reader relationships, based on how the procedural script is built and what the user chooses to do given those options.

The Primer combines this conception of the digital author with more novelistic aspects of the author’s role. If the author is a figure with creative control over a significant aspect of the text, then the Primer has three authors. Hackworth, designer of the Primer, sets up the procedural aspects of the book, defining the database of texts that the Primer uses to create stories and scenarios. He is the closest thing the Primer has to a simplistic author/creator. However, we can just as easily credit Nell (in her role as reader) with providing much of the raw material for the book. Nell’s emotions, actions, words, and environment all contribute to the direction of the Primer’s stories. Nell’s life also influences the content, structure, and development of the text by way of the Primer’s constant surveillance. Finally, Miranda (in her capacity as reader and interactive actor) acts as the voice of the Primer, contributing a difficult to define but key presence. Each of these qualities is mirrored in the traditional novel, yet the combination of them in this way results in something new, a new division of labor and a new kind of individualized, collaborative digital book.

Hackworth’s role as the designer of the Primer is the easiest to understand as authorship. Most digital scholars, as suggested above, consider the programmer who structures the digital text to be the author. Hackworth sets up the procedural rules to the Primer: how it reacts to Nell,

what she is able to do and unable to do, how one thing affects the next. Hackworth develops the capabilities of the digital text: “it sees and hears everything in its vicinity”; it bonds with its user and attempts to educate and protect her intellectually and emotionally; and it achieves these goals by telling stories and generating gamic scenarios (94-95). Hackworth develops a database of literature, folklore, tropes, characters, and archetypes—of “universals . . . a catalogue of the collective unconscious” that the Primer can draw on to create stories and scenarios (95). And Hackworth points all the powers of the Primer to the end goal of an education that includes the quality of “subversiveness” (72). Hackworth is the closest thing we have both to a traditional organizing author and to the framing, selecting, composing “cyberbard” envisioned by Janet Murray (208).

This sets up a distinct problem for defining authorship. As James Wood notes, part of an author’s style and quality is based in what the author notices in life, and how he or she chooses to pass on various observations and details to the reader (66). As an example of the author’s selecting role, Watt quotes Henry James citing Jane Austen and other women’s contributions to the novel stemming from “delicate and patient” observations of “the texture of life” (James, qtd. in Watt 298). Despite the gendered nature of James’s and Watt’s praise, the focus on observation and selection of details as a major component of the author’s work is clear. However, the procedural nature of the Primer confuses the situation. Since it is such a powerful computer, Hackworth sets up the procedural rules, but the Primer itself does all the observing and selecting without him. When describing the paper in the Primer, Hackworth tells Finkle-McGraw that if the owner were to write in it “this input would be thrown into the hopper with everything else” (96). Being procedural, in other words, the Primer is the noticing agent. Though it functions along the procedural rules that Hackworth sets up, there is a space opened between the outcome



and the procedural author. Into this space comes the Primer's owner, who becomes a driving force in the collection and selection of details. The reader/user, a single bonded user, is the one who drives much of the content that the Primer produces.

It is Nell's life experience, questions, and choices that drive many other aspects of the Primer that we would usually attribute to the author. In fact, Nell's first experiences with the Primer show the shift that occurs between a story intended for Finkle-McGraw's granddaughter and the story that is generated by Nell's living situation. When she first opens the book, it begins to read her a story of Elizabeth, "who liked to sit in the bower in her grandfather's garden and read story-books" (83). Nell, who cannot read and doesn't know what a "bower" is, shuts the Primer and doesn't open it until the next day. Nell's story, begun a day later, starts with a princess "who was imprisoned in a tall dark castle on an island in the middle of a great sea, with a little boy named Harv, who was her friend and protector" (85). Nell's life and surroundings have totally changed the nature of the text, shifting it from manicured garden idyll to grim fairy tale. This pattern is repeated again and again: Nell's experience being kicked out of her apartment into the halls generates a story about Princess Nell getting lost in the corridors of the Dark Castle (134); the violence of Nell's living situation (166) is reflected in Dinosaur's tale (137); and Nell's experiences in the playroom (135) leads to the Primer teaching her martial arts and self-defense skills (165-66, 168-9). Though Nell is not making conscious choices about the direction of the Primer in these cases, it is her life and her experiences that drive the direction and content of the book. In another person's hands, it would be a different book.

Nell also has direct control over the Primer in ways that were championed by scholars of hypertext. However, Nell's control over the Primer goes far past what was once considered so revolutionary. Nell can direct the Primer by asking questions or directing her interactive

character to act, and make choices and navigate the Primer's interactive world (279). As Marie-Laure Ryan notes, the Primer "offers both the selective and the productive type of interactivity" (336), meaning that Nell is able to make choices with predictable outcomes that leave a "durable mark on the textual world" (205). The productive quality of Nell's interactions is what allows her to contribute to the authoring of the Primer. Nell chooses what quests to pursue, but also what stories to hear in depth. Because of the power of the Primer, any and all choices that Nell makes are "thrown into the hopper," changing the direction and behavior of the Primer as she goes along. Each choice that she makes is both a *direction* and *information* that the Primer considers as it builds Nell's text. Rather than just offer a choice, a possible reading or plotline, Nell's interactions and participation in the text generate an entirely singular version of the Primer. She offers up the details to the Primer that become her story, and acts as a participant who can drive plot and content as she reads.

The third and final aspect of the Primer's authoring is contributed by Miranda. Miranda is the interactive actor ("ractor") who voices and acts in most of Nell's interactions with her Primer. Focusing on the quality of (literal) voice generation, Hackworth does not create a contained artificial voice for the Primer. The completely open-ended nature of the Primer also prevents Hackworth from employing the system currently used in video games, in which voice actors record all possible dialogue. Instead, Hackworth uses *Diamond Age's* media network, a system that makes available "tens of millions of professional ractors in their stages all over the world, in every time zone, ready to take on this kind of work" (96). While the Primer seems like the kind of technology that would be so powerful as to render human influence meaningless, Stephenson suggests that the choice of ractors, the choice of voice, is highly important.

Eileen McGinnis argues strongly that Miranda's work is at the center of the Primer's success, and at the center of Stephenson's failure to redeem cyberpunk as a genre. McGinnis argues that Miranda not only voices the Primer's scripts but also does "articulation work" (487), coordinating the technological work of the Primer with Nell's real life (487-488). Rather than simply providing a voice for the words, McGinnis argues, Miranda plays an "affective role," guiding Nell through the Primer in a remediation of the role of the maternal reader (489).<sup>88</sup> Both roles are difficult to define, but Miranda's role is given a causal role in the novel.

The Primer is set up by Hackworth to take advantage of the vast medianet of available ractors. However, Miranda nearly becomes Nell's only interactor, doing "at least nine-tenths of the racting associated with that copy" (333). Miranda is the voice and the main actor of Nell's Primer. Of the three copies of the Primer that are produced, only Elizabeth's functions as Hackworth seems to have intended. The racting for Finkle-McGraw's granddaughter is "done by hundreds of different performers" (333). Fiona's Primer is mostly racted by her father, Hackworth, while he is serving out his punishment for stealing the Primer in the orgiastic dream-state world of the drummers, a phyle that acts as a kind of organic computer, passing data through sexual exchange of bodily fluids.<sup>89</sup> It turns out these differences are important.

The difference between the three ractors used in each copy of the Primer is figured by Stephenson as the causal difference between outcomes for Fiona, Nell, and Elizabeth. Finkle McGraw's synopsis describes the three users as follows: "Elizabeth is rebellious and high-spirited and lost interest in the Primer several years ago. Fiona is bright but depressed, a classic

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<sup>88</sup> The novel's failure to redeem cyberpunk, McGinnis argues, is the way that Stephenson erases Miranda's work (488).

<sup>89</sup> Hackworth is sentenced to ten years of living among the Drummers by Judge Fang for his theft of the Primer. Fang, or more likely higher officials in the Celestial Kingdom/Mainland Chinese phyle, hope that introducing Hackworth into the organic computer of the Drummers will allow him/them to create a nanotech compiler that is not beholden to Western feed-technology. It is not exactly clear how his actions become racting in the Primer, but the fantastical nature of Fiona's Primer is often attributed to his semi-conscious state.

manic-depressive artist. Nell, on the other hand, is a most promising young lady” (333). Finkle-McGraw believes that the main ractor (or lack thereof) “is a central part of what is going on here” (333). It would seem to follow that the lack of one clear voice leads to Elizabeth losing interest in her Primer and possibly to her rebelliousness in general; that Hackworth’s semi-conscious state contributes to Fiona’s artistic instability; and that Nell’s single, caring, educated voice leads to her success. The end-outcomes for each reader reinforce the idea that the ractor is key: Elizabeth defects to CryptNet (331), Nell leads the Mouse Army (437), and Fiona defects to join the avant-garde theater group *Dramatis Personae* (392). The voice that acts in the scenarios and reads the text that the Primer creates has a hard to quantify yet dramatic effect.

Nell, near to finishing her journey with the Primer, goes slightly deeper into the effect that the ractor has on her. By this point in the novel, Nell understands what the Primer is, and is beginning to understand how it works, having fixed a number of complex Turing machines in the last of a series of VR regions, King Coyote’s kingdom. In one sense, Nell understands the Primer to be “a parallel computer of enormous size and power, carefully programmed to understand the human mind and give it what it needed” (366). But Nell, like Finkle-McGraw, sees something else at work as well—“some essence in the book, something that understood her and even loved her” (366). That essence, that love, is of course Miranda.

James Wood characterizes the novelist as working with three languages: the author’s, the character’s, and the world’s (34-35). In Wood’s view, good use of free indirect discourse makes for a good novelist, and free indirect discourse is dependent on the language of the novelist becoming the language of the character (33). Miranda’s role in the Primer is not dissimilar: she is the translator, speaking the words of an author, making them the words of a character.

Because Miranda's work is largely hidden from view, as McGinnis argues, we must infer her participation in the Primer from other descriptions of her racting. The most detailed description of professional racting involves Miranda's interview for a cheap acting company likely focused on pornographic scenarios. Miranda stands in a "body stage" (80) a small person-sized cubicle, in front of a full-length screen. Sensors follows the movements of Miranda's face, body, and vocal chords by receiving information from a grid of nanosites (microscopic computers) she has had tattooed into her skin. These movements are then projected onto a divided screen in front of her. If she is playing a character, her actions are translated to those of the character, with affect, vocal tone, and various other aspects of the character being changed automatically. The screen is broken into panes: one pane shows the character doing whatever Miranda does, one pane shows the interactive scenario in its entirety, one shows a map of the interactive space, and one shows prompts and cues. Miranda follows the cues, and watches how the interactive program renders her behavior into action and sound.

For simple programs (often pornographic), Miranda's actions are heavily edited. The scenario she runs through in the interview "isn't really even that ractive, it's just a plot tree." Her voice is pitched so that it sounds "squeaky and breathy." Even her facial expressions are hewed to the character, "what looked like guarded skepticism on Miranda came across as bubble-brained innocence" (80). If this were the extent of Miranda's work in the Primer, it would be hard to argue that she embodies anything like voice or tone in the print novel. But just as simple interactive programs translate the ractor's behaviors within stricter constraints, more complex interactive programs allow Miranda great lengths of artistic freedom.

Miranda's re-introduction as a quality ractor, now working for Carl Hollywood at the Theater Parnasse, offers some key examples of this freedom. By this point, Miranda has

transitioned to learning roles well, like a film or stage actor, rather than working from a prompter, like a news anchor (105). Her roles are also fully interactive. Stephenson quickly describes a common role that she plays, that of Ilse in a mystery set on a train in Nazi-occupied France. In the program, some characters have added hidden qualities—one is an Allied spy, another a secret SS colonel, and another secretly Jewish. Miranda, in this scenario, is secretly Jewish. Her first actions are to strip her room and her possessions of anything that would reveal this, as “there was nothing to prevent other characters from breaking into her coach and going through her possessions” (108). Furthermore, it turns out that there is nothing to prevent the person playing the secret SS colonel from spending the whole time out of character trying to seduce Ilse/Miranda, and nothing preventing Miranda from luring him into the kitchen and stabbing him with a butcher knife. The more complex and fully interactive scenarios that Miranda eventually begins working with offer her much more in terms of possible actions and skillful portrayal.

This gives us a clear picture of Miranda’s abilities within the more fully interactive world that the Primer eventually becomes. In addition to broad behavioral choices, Stephenson suggests that the interactive system offers Miranda subtler control over her actions. This is demonstrated when Miranda begins to practice her role as Kate in the interactive *Taming of the Shrew*. Miranda is practicing the role in order to improve her use of Kate’s eyes. Miranda’s real eyes are “large bunny eyes” while her character has “cat eyes” (106). Miranda is practicing because Carl Hollywood has sat in on her performances and noticed that she is wearing her eyes poorly, so to speak. Essentially, Kate’s eyes are part of Miranda’s virtual costume, and “cat eyes were used differently from bunny eyes, especially when delivering a slashing witticism” (106). Miranda’s skill as a ractor, and the subtlety of the interactive performance medium of the novel (and thus

the Primer), are made clear by this example. The actor's skill extends to the way that she wears and uses different kinds of virtual eyes.

Stephenson makes clear that Miranda would use these skills to educate Nell out of both professional interest and personal feeling. Miranda has an interest in children's education stemming back to her days working as a governess (76-77) and extending to short children's book roles she picks up in between her other acting (109). Miranda is very upset by Nell and Harv's injuries at the hands of Burt, causing Nell to perceive a change in the reading voice of the Primer: "the lovely voice of the Vicky woman who told the story sounded thick and hoarse all of a sudden and would stumble in the middle of sentences" (183). Her response to the event is to consider finding Nell and adopting her, but also to use her skills as a actor to help convince Nell to flee. Miranda is described as she "looked deep into Princess Nell's eyes and sold the line with every scrap of talent and technique that she had" (184). Miranda is shown having the skill and the motivation to imbue her very person into her work with Nell, such that it makes a significant contribution to the experience of the Primer.

While Miranda's influence is rarely available in the descriptions of the Primer, the way that she is able to interact with ractives in general makes clear the latitude that is available to her within the Primer. This reinforces the nature of the articulation work that McGinnis claims for Miranda. Though usually following cues or reading out loud, Miranda's every action uses the skillful tools that she brings to all her acting and is imbued with the strong maternal feelings that Miranda has for Nell (e.g., 247-8). Within the framework of these kinds of additions, we can see how Miranda provides a voice for the Primer, an "essence" that provides love, affection, and a connected human presence (366). Just as Wood describes literary voice as capturing "the

waywardness and roominess of actual thinking” (198*n*), Miranda’s racting and reading to Nell provides the warmth and essence of human interaction in a virtual space.

Miranda is the final piece of the three-part authoring that drives the creation and continuing development of the Primer. The remediation of the novel by digital literature will entail a *rethinking* of the author rather than a simplistic shift to a more reader-driven work, as has been suggested in more essentialist visions of digital literature. The Primer shows one way of doing this, with the programmer setting up a complex procedural device with a clear purpose but an open structure. Because of this set-up, both the end-user and the reader/ractor can contribute to the continually developing experience of reading the Primer. The point is not that all digital novels will be collaborative, but that the procedural author (if you will) has the ability to script many possible author/reader relationships.

## 5. The Novel Made New

Looking broadly now at the way that the modern novel and the Primer mediate their worlds, and what those worlds are, we can see how the Primer offers a possible evolution of the novel and avenue for digital literature. The main technological advances that the Primer offers can be effectively reduced to multimedia, interactivity, and virtual reality immersion. The main cultural challenge that the Primer mediates is the shift from nations to phyles. While the Primer is not designed to mediate this shift (it is designed to propagate and improve the Neo-Victorian phyle), the qualities of interactivity and immersion are what enable it to mediate this shift for the characters that are raised with it.

If both the novel and the Primer build up the individual into a functioning subject, it is important to consider what kind of subject that is. Watt notes that *Pamela* modeled a feminine heroine that was not only a literate, bourgeois subject but was “so delicate in physical and mental



constitution that she faints at any sexual advance; essentially passive, she is devoid of any feelings towards her admirer until the marriage knot is tied” (161). Likewise, Armstrong finds that the Victorian novel does not define an individual on the strength of his or her desires, as Watt suggests of Defoe’s protagonists (65-66), but on how “he or she chooses to displace what is fundamentally asocial desires onto a socially appropriate object” (8). The contrast between these descriptions of a subject and those of *Diamond Age* is significant. Rather than being designed to engender appropriate desire, the Primer is designed to encourage subversiveness. Elizabeth’s experience with the Primer is described by her parents as “like a little interactive empire, with Elizabeth the Empress, issuing all sorts of perfectly bloodcurdling decrees to her obedient subjects” (265). One of Nell’s major battles in her Primer is with an “old Faery Queen who had seen through every trick that Nell could think up and fought off every assault” (280)—the tactic she needs to be encouraged to employ in this instance is not immediately to choose assault and trickery. The Queen gives up the key when Nell asks for her help and tells her story.

The novel appeared during the rise of the English bourgeoisie and the eventual triumph of Victorian social and sexual mores, while the Primer appears during a continuing transition to disconnected states and human control over the building blocks of physical reality. That these two contexts should require different kinds of individuals should not be surprising. Building a different kind of individual and mediating the transition to a different kind of world requires a different kind of book. This is the tacit argument of *Diamond Age*, and part of N. Katherine Hayles’s argument for digital literature in the present.<sup>90</sup> Despite the presence of electronic newspapers, virtual and real theater (including Shakespeare), and the Primer itself, there are no novels mentioned in *Diamond Age*. The work of mediating the present that belonged to the novel

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<sup>90</sup> Specifically, Hayles argues that digital literature “can be understood as the practice that mediates between human and machine cognition” (x).

has been abdicated, realizing the fears of those who worry about the end of literature. The Primer is figured as stepping in to fill this role.

Fitting in to the world of phyles and more open states means being a more independent and more global individual. This is one of Bud's major failings as a human being in the world, one that leads to his death. Since Bud cannot identify the Ashanti family as being of a distinct, powerful tribe, seeing only their blackness and their apparent wealth (23-24), he does not know that robbing them will invite prosecution. And since he does not know enough about anyone else to find a new tribe, no one can protect him (25-27). Bud's failure is that he is as ignorant about other people as he is about his own position in relation to them. He lacks the empathy to see himself in someone else's shoes and the independence and imagination to envision a different kind of life for himself outside the ways of his tribe.

The Primer is at pains to solve these problems. The complicated interactive nature of the Primer means that Nell must constantly find her way out of dire situations like the one in which Bud finds himself. Over the course of the Primer each of her four night friends disappears and the last, Purple, is killed in battle. Nell's journey includes loss and the exhaustive cleverness that is needed to escape puzzles and win battles. The interactive scenarios require cleverness and changes of strategy. What works in one situation often does not work in the next, reinforcing the lesson that existing in the world requires using a variety of tools rather than always proceeding in the same way—a flexible problem-solving strategy. This is the strategy she must adopt in Castle Turing—using mathematical code-breaking to open the lock on her cell (317), and poetry to ascertain that the Duke is not a man but a machine (318). In addition to flexible problem-solving, the degree of control Nell has over her experience, and the complexity of her tasks, reinforces a robust individuality. Nell's real-world behavior makes this clear when, for example, she designs

a knife with a nanotech chainsaw blade and uses it to escape handcuffs and kill one of her captors (430).

The Primer also offers the ability to test out a kind of living—to immerse oneself in another way of life. It is this aspect of the Primer that connects so strongly to the kind of life that Stephenson describes in *Diamond Age*, to the necessity of considering which phyle is best and what life is like for people in other phyles. There are two main examples of this in the Primer. At one point in the novel, Nell lives in the desert near a Djinn’s treasury, using it as a base camp for various quests (280). Again, near the close of the Primer, Nell must apprentice herself to a cipherer, “learn everything there was to know about codes and the keys that unlocked them” (354). Only then does she get a job enciphering and deciphering the code-books that run King Coyote’s castle, only after working in this manner for a while is she able to branch out to her own business, and only after running that business well is she able to accumulate all the eleven keys that she is searching for and move on. Living as a cipherer or in the desert near the Djinn’s treasury, Nell must lay low, and complete tasks and quests. Both of these things require learning about the people who live there. How else will she blend in? How else will she learn how to decode the codebooks and how profitably to run a coding business? The immersive aspects of the Primer replicate what the novel is sometimes able to do—give a person a window into the way that someone else thinks and lives. The Primer offers Nell the virtual experience of living another way of life for long stretches at a time.

Martha Nussbaum has argued that the novel offers readers and students a way to understand the other and to function well in a globalized world (88-89). The Primer functions similarly, but allows Nell to do so as an avatar of herself. This is the functional difference between the globalized present that the novel should help us to mediate (finding common ground

with the other) and a world in which many other nations are available if we choose them. In other words, Nell's education is aided not by understanding the other but by the realization that there are certain kinds of others that she may join, may become, if she chooses.

## 6. Selective Remediation and the Future of Digital Literature

Remediation, as conceived by Bolter and Grusin, is a compelling way to understand new technological developments. It is both historically sound and a stunningly common-sense argument—what has come before influences what comes after, and what comes after influences what already exists. However, in terms of digital literature, remediation seems to have been oddly applied. For recent scholars such as N. Katherine Hayles and Jessica Pressman, remediation works in ways that bypass the narrative imagination. When print is remediated by digital literature, the through line is often “the printed page and the literary canon” (Pressman 257), rather than a more nuanced understanding of the role of the novel and narrative in everyday life. In arguing for seeing the work of Young Hae Chang Heavy Industries (YHCHI) as a sign of things to come, Pressman notes its font choice, musical accompaniment, the speed of text movement, flash-based coding, and lack of interactivity (257-258). But it is striking that Pressman never describes a story or summarizes the plot of any of the many available texts on the YHCHI website. She does not even broadly suggest what the works are about.

Pressman also seems to hint that YHCHI is part of a new future of networked, shareable content. In this sense, YHCHI's work would adopt the social role of a YouTube video, as content to be shared for amusement or as social capital. Indeed, it is otherwise difficult to locate the social role for digital literature such as the kind made by YHCHI. Most digital literature, at least the kind that so far seems to be considered by scholars, has abandoned not only the narrative strategies of the novel but also the social roles and contexts that come with it. Instead, Pressman

and Hayles figure digital literature as a place to explore the particular relationships between literature and the digital. Even if we expand our consideration of what digital literature can do to include Hayles's position that digital literature comments on our increasingly digital everyday life, this seems a constriction from the breadth of topics that have been considered and explored by the novel.

It is unclear, moreover, why digital literature should develop in such a way. The tradition of the print novel is of a medium that is concerned with the everyday life of regular people, as Watt argued. As such, the novel has the possibility of speaking to great numbers of people about a great breadth of topics. My discussion of the Primer—and to some degree this whole project—suggests that there is little reason to believe that digital literature will not remediate the novel as much as the novel continues to remediate digital culture. The Primer suggests that digital literature can and should speak about the everyday life of people dealing with a newly technologized future. Rather than narrowing the scope of literature down to digital and medial concerns, the interactive *and* immersive possibilities of digital technology can function as a broadening influence. The Primer, and the history of the confluence of digital technology and the novel, points toward this broadening of influence and power—to an expansion of the novel and other literary forms through remediation.

## Conclusion: Whither Digital Narrative?

There are two large stories imbedded in the preceding pages. One, as my introduction describes, is about the dangers associated with essentializing particular forms of digital and analog narrative. The other concerns narrative, and the ongoing question of the nature of its role in literature, politics, and everyday life.

With the influence of Lyotard's and Barthes's resistance to narratives and metanarratives largely fading in the literary realm,<sup>91</sup> we should reassess the state of narrative in contemporary and especially digital literature. As I discussed in chapters 1 and 3, digital literature has become a space for literature that is particularly resistant to or combative with narrative. Looking at digital literature more broadly, considering not only *afternoon, a story* or *Dakota* by Young Hae Chang Heavy Industries, but also digitally produced print, Neal Stephenson's *Primer*, and the popularity of romance and genre fiction on e-reading devices, suggests that the resistance to narrative is not a technological inevitability, but a kind of social movement or scholarly consensus.

In the case of hypertext, and many other digital fictions influenced by it, interactivity is the tool that authors and programmers use to break down and explode narrative expectations and function. *afternoon* takes advantage of this twice, using interactivity to move the reader around an exploded narrative, but frustrating expectations of control at the same time. Other common interactive narrative devices at use in hypertext are switching between narrative threads, as in Stuart Moulthrop's *Victory Garden*; and approaching a narrative through different modes, as in Shelley Jackson's *Patchwork Girl*. Other than *afternoon*, these tactics have print predecessors in novels like Faulkner's *As I Lay Dying* and *The Sound and the Fury*, Julio Cortázar's *Hopscotch*,

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<sup>91</sup> See Hoberek and others in *Twentieth Century Literature*'s special issue on what comes after postmodernism, *Twentieth Century Literature* 3 (2007): 233-247.

and even choose-your-own-adventure books. These digital works are also not very interactive, allowing only for simple choices, and sometimes frustrating such choices.

Interactivity as it has so far been used in digital literature, then, has only been effective for breaking up or complicating storytelling. But the breakup of the postmodern consensus against narrative raises two possibilities for the future of digital literature: that interactivity is being used in a particularly anti-narrative way, or that interactivity itself is hostile to narrative.

Both Marie-Laure Ryan and Janet Murray explore the relationship between interactivity, digital narrative, and immersion, the kind of digital polar opposite often opposed to interactivity.<sup>92</sup> Video games often solve the problem of interactivity by framing user choices within both a distinct set of constraints and a strong narrative. Up through the current crop of very open, very interactive games like *Minecraft*, most video games included a distinct story. Even real time strategy games like the *Warcraft* and *Starcraft* series included distinct stories that explained why the warring factions of Orcs, Humans, Elves, and Zorg were warring, and structured a single-player campaign around a story that built to a conclusion. Most popular video games, it is fair to say, include a story. They are interactive narratives.

Video games solve the interactive narrative issue through immersion within a world and a story.<sup>93</sup> Print literature has often balanced immersion alongside interpretive difficulty. Digital literature craves its own balance point—neither so interactive that it cannot tell a story, nor so immersive that it falls short of being called *literary*, as one could argue that much of the genre fiction currently popular for reading on e-readers is.

If digital literature is to become an effective storytelling genre, like print literature, this balance needs to be found. Pure interactivity is *narrative*, but it is not *storytelling*. It is story

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<sup>92</sup> For instance, J. David Bolter, who champions interactivity, figures immersion as “the goal of the naïve reader or one who reads for entertainment” (qtd. in Ryan 11).

<sup>93</sup> Along with, it should be said, goal fulfillment and other addictive strategies.

making. The readerly text, as Barthes put it, is one that frees the reader from the control of the author. It is also one that frees the text from storytelling and places that impetus on the reader. That this is a reversal of print literature is, of course, the whole point. However, as I have argued, it is not an inevitable feature of digital literature.

Neither, of course, is immersion destined to be the true mode of digital literature. Pure immersion, too, as a concept lacks storytelling power. As Ryan puts it, immersion places us in a world, and gives us the sense of “being-in-the-world” (14). Examples of pure immersion usually tend toward exploratory virtual reality scenarios. The newly resurgent (possibly) medium of virtual reality headsets, like the Oculus Rift or various VR apps for smartphones, promises to surround the viewer fully with the world—to give a near literal sense of being in the world. In a textual sense, immersion is often related to getting lost in the plot, as Bolter suggests. But considering immersion as a concept separate from story or narrative, as Ryan does, suggests that we can pinpoint immersive aspects of text within larger narratives. In that case, the immersive aspects of the textual narrative are those that set the reader within the textual world. These are the same aspects that make the world *realistic* or *believable*, the aspects that let the reader know the rules of the textual universe. Immersion, like voice or tone, is wrapped into other features of a text, making it hard to separate fully, but integral to the experience of reading.

The balance between interactivity and immersion in a video game moves across a spectrum including fighting games and racing games, which are generally narratively very light, and allow interactivity within very specific constraints—i.e., the series of attacking and defensive maneuvers that the avatar is programmed to perform when controller buttons are pushed. Oftentimes, there is little being in the world in such a game and few interactive possibilities. On the other end of the spectrum is a game like *Minecraft*, in which there is both



very free user control and a clear sense of being in the world. In such a game, interactivity helps to create a sense of being in the world, as the player can explore and manipulate the interactive world, giving it a sense of heightened realness, even as it is made of pixelated blocks.

Of course, both of these are kind of limit cases. MMORPGs like *World of Warcraft* offer interactivity, immersion, and narratives of quests and warfare. Precursors to such games, single-player RPGs, like the *Final Fantasy* series, often had elaborate and immersive narrative worlds with significant interactive possibilities, such as the ability to choose a character and thus a narrative or side narrative, to manipulate character attributes and equipment, and to proceed toward the end goal at one's chosen pace. Classic side-scrolling games like the *Super Mario* Series almost always had a quest—a search for a predetermined ending to the narrative—and allowed some interactivity within a programmed series of moves and levels. In video games, there is a wide spectrum of possibilities for combining immersion, narrative, and interactivity. But rarely do video games offer an ideal of a fully interactive world without at least an immersive space, such as in *Minecraft*, or a deeply involving narrative, such as in the *Final Fantasy* series. Video games offer a built in constriction to interactive possibilities through the pre-programming of actions, something Murray has suggested makes for successful digital narratives (71). Video games offer lessons for digital literature in terms of what makes for a successful interactive entertainment experience. But these can only go so far, because popular digital literature, in order not to be confused with video games, will likely be largely textual.

As video games become more complex and thoughtful—and I think that the release this year of *1979 Revolution*, a game that allows one to play through the Iranian revolution as a

*journalist*, makes a strong argument for that<sup>94</sup>—digital literature will have to retain its *textual* nature in order to exist as a separate genre. In some sense, this is an argument against the broadening work done by N. Katherine Hayles, and the electronic literature organization, who seeks in *Electronic Literature* to broaden the definition of the literary to include largely non-textual works that might also be described as digital art (4-5). In another sense, this is merely a recognition that as literature becomes more digital and video games become a broader medium, there will be issues with definitions that will keep the large number of digital literary works (not all) largely textual (though of course not wholly textual).

Any dreams, then, of interactive and playable novels, whether they are adapted versions of novels or video games with novelistic plots, like *1979 Revolution*, are destined to fit into the video game genre, rather than to become a model for digital literature. This is partly a recognition that if Neal Stephenson's *Primer* is a model for digital literature, that model extends up to the point where the book becomes almost entirely "ractive." However, the *Primer* does offer one very powerful mode that blends interactivity and immersion in text form. At one point in Nell's journey, the *Primer* generally describes "a three-day journey through the land of King Magpie, and all of the tricks it contained." Stephenson then relates that Nell "could go back and ask questions about these things later and spend many hours reading about this part of the adventure" (203). She can hear specific stories of adventures, and also inquire about why things happen and who people are. While the concept of expanding text goes all the way back to Ted Nelson's concept of "Stretchtext™" and a kind of slider that would increase or decrease

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<sup>94</sup> *1979 Revolution* "follows a character named Reza, a young photojournalist living in Tehran during the tumultuous days of the Iranian revolution," and was developed by Navid Khonsari, who also worked on the *Grand Theft Auto* series. See Simon Parkin, "A Truly Revolutionary Video Game," *New Yorker* 11 December 2013. Web.

explanatory detail in a non-fiction work (315), it is not a concept that has been used to any great degree in digital literature.<sup>95</sup>

Rather than a slider or a magnifying glass that offers more detail, or explanatory, encyclopedic information, an expanding narrative would offer a series of other narratives that could further immerse the reader in the world. Stephenson's example shows how the interactive ability to hear more about a story can further set Nell within the specific narrative space of that moment in the Primer. That is, hearing stories about all the adventures Princess Nell and her night friends have in the land of King Magpie gives Nell an idea of what it is like to live there. It gives her details about how this world works, who lives there, and what they're like. Such an application of digital technology is useful anywhere that a reader might like to hear more about a character or a place—in terms of remediated print narratives, a digitized version of Tolkien's *Lord of the Rings* could use the materials in the encyclopedic *Silmarillion* to give backstories for some of the regions, characters, and races of the novel. The reader could learn Gandalf's long history, how the elves came to Lothlorien, and the whole theology of the world. A digital version of *The Brief Wondrous Life of Oscar Wao* could contain *even more* history of the Dominican Republic, written in Yunior's voice. An expanding text, the ability to dive deep into a story or a place, is not a catchall solution for mending the balance between interactivity and immersion in digital literature, just one option for an interactive textual mode that could serve immersion through narrative.

While digital space has long been proposed as the place for making a new multimedia literature, digitally produced print can offer many of those possibilities (aside from video and

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<sup>95</sup> It was proposed again by Robert Darnton as an effective tool for scholarly work (61-2). Florentina Armaselu has also proposed building a text reading and writing program, based on the primer as an "anfractuous book," that will allow the reader to zoom in and out on details (93-5). Armaselu's proposal is the closest to what I describe, but more focused on *details* than on expanding the number of stories themselves.

sound). And as I've suggested above, there is only so much intermedia material that literature can absorb before it becomes something else—actually succumbing to Kittler's deterministic assumption that digital transmission will standardize media (1-2). But it is also easy to see the development of narrative digital literature that is *mostly* text but includes videos and sound the way that a novel like Rachel Kushner's *The Flamethrowers* incorporates still images. There is one example of this extant, an introductory video/teaser produced for Chuck Klosterman's otherwise entirely textual novel, *A Visible Man*.<sup>96</sup> I focus here on the possibilities of extensible narrative text partly because such materials are rather simply remediations of other media into the novel, whereas even the simple switching between narratives, shifting perspectives sometimes employed in hypertext novels, and the automatic reading in Young Hae Chang Heavy Industries are at least textual responses to the question of digital literature. For it is hard to believe, given the immense computing power we are now in possession of, that we cannot find new textual possibilities for fiction in the digital space.

Literature is not entirely an educational medium. The novel is certainly a form that encompasses edifying, interesting, thrilling, salacious, and possibly even harmful works. It certainly has historically been seen this way, from concerns over women's reading habits that stretch from Fielding and Richardson to William Dean Howells to the *Twilight* and *Fifty Shades* novels. Literary fiction has always included storytelling for edification or entertainment. Even as general trends of postmodernity called for the end of grand narratives, storytelling in literary novels remained. A popular postmodern writer, like Pynchon, tells stories—they just never cohere into something like a traditional narrative; they run in paranoid circles, desperately searching for some kind of narrative certainty, challenging the reader not to care. As high

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<sup>96</sup> Simon & Schuster Books. *The Visible Man* Trailer. Online Video Clip. *YouTube*. 5 October 2011. Web. 3 June 2016.

postmodern literary style has faded, novelists have returned to telling stories. Grand narratives have returned as well, in works like Chabon's *The Amazing Adventures of Kavalier and Clay*, Díaz's *Brief Wondrous Life of Oscar Wao*, and Eugenides's *Middlesex*. Yet in the digital sphere, in the works that have been critically noticed—which is really all we have to go on given the youth of the genre—that entertainment value, that interest in telling stories, has been ignored, if not actively discouraged. How else can you describe the seminal work in the genre, *afternoon*, which tries actively to divert the reader from narrative satisfaction, frustrating interactivity, narrative sense, and even identification of speakers?

Essentialism and the avoidance of narrative go hand in hand. If we essentialize the digital genre as a post-structural educational session, it cannot become a narrative medium. If we argue that media determine our situation, that hypertext embodies the readerly text and the centerless universe, that digital literature is a fundamentally experimental space, we are defining these technologies for others, and arguing that we do not have the agency to define, refine, and use digital literary technology for other purposes.

In 1995, Janet Murray called for the appearance of a digital bard who would connect some of the many possibilities and characteristics that she saw in works as disparate as Multi-User Dungeons, hyperfictions, chat bots, and video games (208-13). Fundamental to the idea that one day someone will develop a new kind of digital literary genre is the idea that media are *flexible*, can be shaped by authors and the publics who would read them. Without a sense that digital literary technologies are narrative technologies, and that these technologies are not determined but undefined, it is unlikely that we will ever truly see the development of a truly digital novel—at once something new, and recognizable as an extension of a previous form; at

once responding to changes in the world of media and technology, and responsive to the interests and feelings of reading publics.

## Bibliography

- Aarseth, Espen. *Cybertext: Perspectives on Ergodic Literature*. Baltimore, MD: Johns Hopkins University Press, 1997. Print.
- . “Non-linearity and Literary Theory.” Landow, *Hyper/Text/Theory*. 51–86.
- Acker, Kathy. *Pussy, King of the Pirates*. New York: Grove Press, 1996. Print.
- Agee, James and Walker Evans. *Let Us Now Praise Famous Men*. New York: Mariner Books, 2001. Print.
- Anderson, Benedict. *Imagined Communities: Reflections on the Origin and Spread of Nationalism*. New York: Verso, 2006. Print.
- Armaselu, Florentina. “The Book Under a Magnifying Glass: New Forms of Electronic Textuality.” *International Journal of the Book* 3.1 (2005/2006): 91-98. *Humanities Source*. Web. 6 Jan. 2015.
- Armstrong, Nancy. *How Novels Think: The Limits of Individualism from 1719-1900*. New York: Columbia University Press, 2005. Print.
- Auster, Paul. *The New York Trilogy*. New York: Penguin, 1990. Print.
- Bautista, Daniel. “Comic Book Realism: Form and Genre in Junot Díaz’s *The Brief Wondrous Life of Oscar Wao*.” *Journal of the Fantastic in the Arts* 21.1 (2010): 41-53. *Humanities Source*. Web. 4 September 2015.
- Birkerts, Sven. *Changing the Subject: Art and Attention in the Internet Age*. St. Paul, MN: Graywolf Press, 2015. eBook.
- . *The Gutenberg Elegies: The Fate of Reading in an Electronic Age*. Boston, MA: Faber and Faber, 1994. Print.
- Bloom, Allan David. *The Closing of the American Mind*. New York: Simon and Schuster, 1987. Print.
- Bolter, J. David. *Writing Space: Computers, Hypertext and the Remediation of Print*. Mahwah, NJ: Lawrence Erlbaum Associates, 2001. Print.
- Bolter, J. David, and Joyce, Michael. “Creative Writing and Hypertext.” *Hypertext '87: Proceedings of the ACM Conference on Hypertext*. New York: ACM, 1987. 41-50.
- Bolter, J. David, and Richard Grusin. *Remediation: Understanding New Media*. Cambridge, MA: MIT Press, 2000. Print.
- Bush, Vannevar. “As We May Think.” 1945. Wardrip-Fruin and Montfort 35-48.

- Carr, Nicholas G. *The Shallows: What the Internet Is Doing to Our Brains*. New York: W.W. Norton, 2010. Print.
- Chabon, Michael. *Telegraph Avenue*. New York: HarperCollins, 2012. Print.
- Chanen, Brian. "Surfing the Text: The Digital Environment in Mark Z. Danielewski's *House of Leaves*." *European Journal of English Studies* 11.2 (2007): 163-176. EBSCO. Web. 3 January 2012.
- Coover, Robert. "The End of Books." *New York Times* 21 June 1992. Web. Accessed 28 December 2015.
- Cotter, Holland. "Harmony, Harder Than It Looks: 'Josef Albers in America: Painting on Paper,' at the Morgan." *New York Times*, 26 July, 2012. Web. Accessed 3 June 2013.
- Danielewski, Mark Z. *House of Leaves*. New York: Pantheon, 2001. Print.
- Darnton, Robert. *The Case for Books: Past, Present, and Future*. New York: Public Affairs, 2009. Print.
- DeLillo, Don. *Mao II*. New York: Penguin, 1991. Print.
- Díaz, Junot. *The Brief Wondrous Life of Oscar Wao*. New York: Riverhead Books, 2007. Print.
- . *Drown*. New York: Riverhead Books, 1996. Print.
- . *This Is How You Lose Her*. New York: Riverhead Books, 2012. Print.
- Douglas, Jane Yellowlees. "How Do I Stop This Thing?" Landow, *Hyper/Text/Theory*. 159–188.
- . "Where the Senses Become a Stage and Reading Is Direction: Performing the Texts of Virtual Reality and Interactive Fiction." *Drama Review* 37.4 (1993): 18-37. JSTOR. Web. 26 March 2013.
- Drucker, Joanna. *The Visible Word: Experimental Typography and Modern Art, 1909-1923*. Chicago, IL: University of Chicago Press, 1994. Print.
- Duberman, Martin. *Black Mountain: An Exploration in Community*, New York, W.W. Norton: 1993. Print.
- "E-book Fiction, *New York Times* Bestsellers" *New York Times*. 13 March 2016. Web. Accessed 24 March 2016.
- Eco, Umberto. *The Role of the Reader*. Bloomington, IN: Indiana University Press, 1979.
- Egan, Jennifer, *A Visit from the Goon Squad*. New York: Anchor Books, 2010. Print.
- Englebart, Douglas. From *Augmenting Human Intellect: A Conceptual Framework*. 1962. Wardrip-Fruin and Montfort 93-108.



- Eugenides, Jeffrey. *The Marriage Plot*. New York: Farrar, Straus and Giroux, 2011.
- Figueroa, Victor. "Disseminating 'El Chivo': Junot Díaz's Response to Mario Vargas Llosa in *The Brief Wondrous Life of Oscar Wao*." *Chasqui* 42.1 (2013): 95-108. *Academic Search Complete*. Web. 4 September 2015.
- Franzen, Jonathan. *Freedom*. New York: Picador, 2010. Print.
- Genette, Gérard. *Paratexts: Thresholds of Interpretation*. New York: Cambridge University Press, 1997. Print.
- Giles, Paul. "Sentimental Posthumanism: David Foster Wallace." *Twentieth Century Literature* 3 (2007): 327-344. *Literature Resource Center*. Web. 28 September 2015.
- Gitelman, Lisa. *Always Already New: Media, History, and the Data of Culture*. Cambridge, MA: MIT Press, 2008. Print.
- Gitelman, Lisa and Geoffrey Pingree, eds. *New Media 1740-1915*. Cambridge, MA: MIT Press, 2003. Print.
- Grauland, Rune. "Generous Exclusion: Register and Readership in Junot Díaz's *The Brief Wondrous Life of Oscar Wao*." *MELUS: Multi-Ethnic Literature of the U.S.*, 39.3 (2014): 31-48. *Project Muse*. Web. 29 December 2014.
- Habermas, Jürgen. *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society*. Cambridge, MA: MIT Press, 1991. Print.
- Hanna, Monica. "'Reassembling the Fragments': Battling Historiographies, Caribbean Discourse, and Nerd Genres in Junot Díaz's *The Brief Wondrous Life of Oscar Wao*." *Callaloo*, 33.2 (2010): 498-520. *Project Muse*. Web. 29 December 2014.
- Hansen. "The Digital Topography of Mark Z. Danielewski's *House of Leaves*." *Contemporary Literature* 45.4 (2004): 597-636. *EBSCO*. Web. 3 January 2012.
- Harpold, Terence. "Conclusions." Landow, *Hyper/Text/Theory*. 189-224.
- Hayles, N. Katherine. *Electronic Literature: New Horizons for the Literary*. Notre Dame, IN: University of Notre Dame Press, 2008. Print.
- . "Saving the Subject: Remediation in *House of Leaves*." *American Literature* 74.4 (2002): 779-806. *EBSCO*. Web. 3 January 2012.
- Hendel, Richard. *On Book Design*. New Haven, CT: Yale University Press, 1998. Print.
- Hilts, Len. "Avoiding Potholes in the Desktop Publishing Road." *Publishers Weekly* 18 October 1991: 34-37. *Academic OneFile*. Web. 24 June 2012.
- Hoberek, Andrew. Introduction: "After Postmodernism." *Twentieth Century Literature* 3 (2007): 233-247. *Literature Resource Center*. Web. 28 September 2015.

- Jelly-Schapiro, Joshua. "Ground Zero(es) of the New World: Geographies of Violence in Junot Díaz and Edwidge Danticat." *Transforming Anthropology*, 21.2 (2013): 169-186. *SocINDEX with Full Text*. Web. 4 September 2015.
- Joyce, Michael. *afternoon, a story*. Watertown, MA: Eastgate Publishing, 1992. CD ROM.
- . *Of Two Minds: Hypertext Pedagogy and Poetics*. Ann Arbor, MI: University of Michigan Press, 1995. Print.
- Kernan, Alvin B. *The Death of Literature*. New Haven: Yale University Press, 1990. Print.
- Kirschenbaum, Matthew. *Mechanisms: New Media and the Forensic Imagination*. Cambridge, MA: MIT Press, 2008.
- Kittler, Friedrich A. *Gramophone, Film, Typewriter*. Trans. Geoffrey Winthrop and Michael Wutz. Stanford, CA: Stanford University Press, 1999. Print.
- Kröger, Lisa. "House Of Leaves: A Postmodern Retelling Of Shirley Jackson's *The Haunting Of Hill House*." *Journal Of The Georgia Philological Association* December 2009: 149-156. *Humanities Source*. Web. 4 September 2015.
- Landow, George. *Hypertext 2.0*. Baltimore, MD: Johns Hopkins University Press, 1997. Print.
- . *Hypertext 3.0*. Baltimore, MD: John Hopkins University Press, 2006. Print.
- Landow, George, ed. *Hyper/Text/Theory*. Baltimore, MD: Johns Hopkins University Press, 1994. Print.
- Lanham, Richard. *The Economics of Attention: Style and Substance in the Age of Information*. Chicago, IL: University of Chicago Press, 2007. Print.
- Lanier, Jaron. *You Are Not a Gadget*. New York: Vintage Books, 2011. Print.
- Lanzendörfer, Tim. "The Marvelous History of the Dominican Republic in Junot Díaz's *The Brief Wondrous Life of Oscar Wao*." *MELUS* 38.2 (2013): 127-157. *Project MUSE*. Web. 4 September 2015.
- Lee, Marshall. *Bookmaking: Editing/Design/Production*. New York: W.W. Norton, 2004. Print.
- Levine, Lawrence W. *The Opening of the American Mind: Canons, Culture, and History*. Boston: Beacon Press, 1996.
- Lethem, Jonathan. *The Fortress of Solitude*. New York: Vintage Books, 2004. Print.
- Lynley, Matthew. "Why the Web Is Freaking Out Over Instagram's New Terms of Service." *Wall Street Journal Digits Blog*. 18 December 2012. Web. Accessed 22 March 2016.

- Mahler, Anne Garland. "The Writer as Superhero: Fighting the Colonial Curse in Junot Díaz's *The Brief Wondrous Life of Oscar Wao*." *Journal of Latin American Cultural Studies*, 98.2 (2010): 119-140. *Taylor&Francis Online*. Web. 31 December 2014.
- Manovich, Lev. *Software Takes Command*. New York: Bloomsbury Academic, 2013. Print.
- McCaffery, Larry, and Sinda Gregory. "Haunted House—An Interview with Mark Z. Danielewski." *Critique* 44.2 (2003): 99-135. *EBSCO*. Web. 3 January 2012.
- McGann, Jerome J. *The Textual Condition*. Princeton, NJ: Princeton University Press, 1991. Print.
- McGinnis, Eileen. "Remediated Readers: Gender and Literacy in Neal Stephenson's *The Diamond Age*." *Science Fiction Studies* 40 (2013): 480-495. *Humanities Source*. Web. 1 Feb. 2015.
- McKeon, Michael. *The Origins of the English Novel, 1600-1740*. Baltimore, MD: Johns Hopkins University Press, 2002. Print.
- McHale, Brian. *Constructing Postmodernism*. New York: Routledge, 1992. Print.
- McLuhan, Marshall. *Understanding Media: The Extensions of Man*. Cambridge, MA: MIT Press, 1994. Print.
- McMillan, Graeme. "Why Big Publishers Think Genre Fiction Like Sci-Fi Is the Future of E-Books." *Wired*. 26 June 2013. Web. Accessed 4 March 2016.
- Microsoft Office Videos. "The Office Show—PowerPoint with Jennifer Egan." Online video clip. *YouTube*. YouTube 1 October 2010. Web. 3 April 2014.
- Miller, Laura J. *The Reluctant Capitalist: Bookselling and the Culture of Consumption*. Chicago, IL: University of Chicago Press, 2007. Print.
- Miller, T.S. "Preternatural Narration and the Lens of Genre Fiction in Junot Díaz's *The Brief Wondrous Life of Oscar Wao*." *Science Fiction Studies* 38 (2001): 92-114. *Academic OneFile*. Web. 4 September 2015.
- Montfort, Nick. *Twisty Little Passages: An Approach to Interactive Fiction*. Cambridge, MA: MIT Press, 2003. Print.
- Moore, Alan, and Dave Gibbons. *Watchmen*. New York: DC Comics, 1987. Print.
- Morris, William. *The Home Place*. Lincoln, NE: University of Nebraska Press, 1999. Print.
- Murray, Janet H. *Hamlet on the Holodeck: The Future of Narrative in Cyberspace*. New York: Free Press, 1997. Print.
- Nelson, Theodore. "A File Structure for the Complex, the Changing, and the Indeterminate." 1965. Wardrip-Fruin and Montfort 133-146.

- . From *Computer Lib/Dream Machines*. 1974. Wardrip-Fruin and Montfort 301-338.
- Niu, Greta Aiyu. "Techno-Orientalism, Nanotechnology, and Post-Posthumans in Neal Stephenson's and Linda Nagata's Science Fiction." *MELUS* 33.4 (2008): 73-96. *Literature Resource Center*. Web. 7 May 2015.
- North, Michael. *Camera Works: Photography and the Twentieth-Century Word*. New York: Oxford University Press, 2005. Print.
- Nussbaum, Martha Craven. *Cultivating Humanity*. Cambridge, MA: Harvard University Press, 1998. Print.
- O'Brien, Sean P. "Some Assembly Required: Intertextuality, Marginalization, and *The Brief Wondrous Life of Oscar Wao*." *Journal of the Midwest Modern Language Association* 45.1 (2012): 75-94. *Project Muse*. Web. 31 December 2014.
- Parkin, Simon. "A Truly Revolutionary Video Game," *New Yorker* 11 December 2013. Web.
- Picoult, Jodi. *My Sister's Keeper*. New York: Washington Square Press, 2004. Print.
- Pogue, David. "An E-Book Reader That Just May Catch On." *New York Times* 22 November 2007. Web. 7 December 2011.
- Poster, Mark. *Mode of Information: Poststructuralism and Social Context*. Chicago: University of Chicago Press, 1990. Print.
- Postman, Neil. *Amusing Ourselves To Death: Public Discourse in the Age Of Show Business*. New York: Penguin Books, 1986. Print.
- . *Technopoly: The Surrender of Culture to Technology*. New York: Knopf, 1992. Print.
- Pressman, Jessica. "Conclusion: Whither American Fiction?" *Cambridge Companion to American Fiction After 1945*. Ed. John Duvall. Cambridge, MA: Cambridge University Press, 2012. 256-264. Print.
- Rubin, Charles T. "What Should Be Done: Revolutionary Technology and the Problem of Perpetuation in Neal Stephenson's *The Diamond Age*." *Perspectives on Political Science* 35.3 (2006): 135-142. *Academic Search Complete*. Web. 16 January 2015.
- Ryan, Marie-Laure. "Beyond Myth and Metaphor: Narrative in Digital Media." *Poetics Today* 23 (2002): 581-609. *Project Muse*. Web. 26 March 2013.
- . *Narrative as Virtual Reality: Immersion and Interactivity in Literature and Electronic Media*. Baltimore, MD: John Hopkins University Press, 2001. Print.
- Sáez, Elena Machado. "Dictating Desire, Dictating Diaspora: Junot Díaz's *The Brief Wondrous Life of Oscar Wao* as Foundational Romance." *Contemporary Literature* 52.3 (2011): 522-555. *Project Muse*. Web. 29 December 2014.

- Safran Foer, Jonathan. *Extremely Loud & Incredibly Close*. New York: Mariner Books, 2005. Print.
- Saldívar, José David. "Conjectures on 'Americanity' and Junot Díaz's 'Fukú Americanus' in *The Brief Wondrous Life of Oscar Wao*." *Global South*, 5.1 (2011): 120-136. *Project Muse*. Web. 29 December 2014.
- Shteyngart, Gary. *Super Sad True Love Story*. New York: Random House, 2011. Print.
- Simon & Schuster Books. *The Visible Man* Trailer. Online Video Clip. *YouTube*. 5 October 2011. Web. 3 June 2016.
- Staples, Loretta. "Typography and the Screen: A Technical Chronology of Digital Typography, 1984-1997." *Design Issues* 16.3 (2000): 19-34. *JSTOR*. Web. 14 June 2012.
- Stephenson, Neal. *The Diamond Age or, A Young Lady's Illustrated Primer*. New York: Bantam Spectra Books, 1995. Print.
- Taylor, Sally. "Desktop today: in the current fast-moving technology, what makes sense for book publishers?" *Publishers Weekly* 7 June 1991: 19-22. *Academic OneFile*. Web. 24 June 2012.
- . "Going to school with York Graphics: the Pennsylvania prepress house strives to educate publishers and printers in a changing technological climate." *Publishers Weekly* 21 June 1991: 34-37. *Academic OneFile*. Web. 24 June 2012.
- Thompson, John B. *Merchants of Culture: The Publishing Business in the Twenty-First Century*. New York: Plume, 2012. Print.
- Tufte, Edward. *The Cognitive Style of PowerPoint: Pitching Out Corrupts Within*. Cheshire, CT: Graphics Press LLC, 2006. Print.
- Vargas, Jennifer Harford. "Dictating a Zafa: The Power of Narrative Form in Junot Díaz's *The Brief Wondrous Life of Oscar Wao*." *MELUS* 39.3 (2014): 8-30. *Project Muse*. Web. 29 December 2014.
- Vonnegut, Kurt. *Slaughterhouse-Five*. New York: Dell Books, 1966. Print.
- Wardrip-Fruin, Noah, and Nick Montfort, eds. *The New Media Reader*. Cambridge, MA: MIT Press, 2003. Print.
- Watt, Ian. *The Rise of the Novel: Studies in Defoe, Richardson and Fielding*. Berkeley, CA: University of California Press, 1957. Print.
- Weese, Katherine. "'Tú no Eres Nada de Dominicano': Unnatural Narration and De-naturalizing Gender Constructs in Junot Díaz's *The Brief Wondrous Life of Oscar Wao*." *Journal of Men's Studies*, 22.2 (2014): 89-104. *Psychology and Behavioral Sciences Collection*. Web. 4 September 2015.

White, Glynn. *Reading the Graphic Surface: the Presence of the Book in Prose Fiction*. New York: Palgrave/Manchester University Press, 2005. Print.

Wood, James. *How Fiction Works*. New York: Farrar, Straus and Giroux, 2008. Print.

Zill, Nicholas and Marianne Winglee. *Who Reads Literature?: the future of the United States as a Nation of Readers*. Washington, D.C.: NEA, 1990. Web. 18 Oct 2009.