Beyond Myth and Metaphor: Narrative in Digital Media

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Abstract The concept of *narrative* has been widely invoked by theorists of digital textuality, but the promotion of what is described as the *storytelling* power of the computer has often relied on shallow metaphors, loose conceptions of narrative, and literary models that ignore the distinctive properties of the digital medium. Two myths have dominated this theorization. The myth of the Aleph (as I call it) presents the digital text as a finite text that contains an infinite number of stories. The myth of the Holodeck envisions digital narrative as a virtual environment in which the user becomes a character in a plot similar to those of Victorian novels or Shakespearean tragedies. Both of these myths rely on questionable assumptions: that any permutation of a collection of lexias results in a coherent story; that it is aesthetically desirable to be the hero of a story; and that digital narrativity should cover the same range of emotional experiences as literary narrative. Here I argue that digital narrative should emancipate itself from literary models. But I also view *narrative* as a universal structure that transcends media. This article addresses the question of reconciling the inherent linearity of narrative structures with the multiple paths made possible by the interactive nature of the digital text by distinguishing four forms of interactivity, which result from the cross-classification of two binaries: internal versus external interactivity; and exploratory versus ontological. Each of these categories is shown to favor different narrative themes and different variations of the universal narrative structure.

If we compare the field of digital textuality to other areas of study in the humanities, its most striking feature is the precedence of theory over the object of study. Most of us read novels and see movies before we consult

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literary criticism and cinema studies, but it seems safe to assume that a vast majority of people read George Landow's *Hypertext 2.0* (1997) before they read any work of hypertext fiction. Or to take another example, we read full descriptions of what virtual reality technology would mean for our lives and for art long before VR became reality. (Even now its level of sophistication is far from allowing the immersive experience promised by its early prophets.) In this article I would like to investigate one of the most important forms that this advance theorizing of digital textuality has taken, namely, the use of narrative concepts to advertise present and future product. I will approach this topic in three ways: first, through a critique of some of the (mis)uses of the concept of narrative in advertising and theoretical discourse; second, through a taxomony of the various modes of user participations in digital narratives; and third, through a personal assessment of the most efficient way to exploit the resources of hypertext, the most literary form of digital narrative.

As a cognitive structure, narrative has such a grip on the mind that the popular success of a genre or medium involving language is crucially dependent on its ability to tell stories. It is because knowledge was encoded as tales that it was effectively transmitted and remembered in oral societies; it is because of its narrative power that the novel emerged as the dominant literary genre of the nineteenth and twentieth centuries; and it is because it gave new narrative dimensions to the novel and to the theater that cinema became "the art of the twentieth century." In recent years, the concept of narrative has caught like fire in cultural discourse, and the software industry has duly followed suit by turning the metaphors of narrative interface and of the storytelling computer into advertising buzzwords. To take a couple of recent examples of this free use of narrative terminology: Steven Johnson concludes his popular book *Interface Culture* (1997) with the pronouncement: "Our interfaces are stories we tell ourselves to ward off senselessness"; Steve Jobs, the founder and CEO of Apple, talks about "the importance of stories, of marrying technology and storytelling skills (Auletta 1999: 47); and the package of a computer game named Starcraft advertises its capacity to let users "tell their own stories." What this phrase really means is that the user can create new mazes and new levels of difficulty, adding weapons and characters to the game by selecting items from a fixed repertory.

To promote the narrative power of the computer, theorists of digital media have either implicitly or explicitly relied on myths and metaphors. The first part of this essay proposes a critique of three of these conceptualizations: the metaphor of the narrative interface, the myth of the Aleph (a label of my own making), and the myth of the Holodeck. The second part

presents my own view of the role, and of the possible mode of realization of narrative, in digital media.

The terms *myth* and *metaphor*, in my view, are not synonymous, though they present some overlap. Metaphor is generally defined as the transfer of a concept from one domain to another. In this case it means the use of narrative concepts—such as plot, storyteller, or character—to describe the design or mode of operation of a computer application whose purpose is not in itself the telling of stories. By myth, on the other hand, I understand a theoretical model borrowed from fiction that describes the artistic potential of a digital form of narrative. This model is a myth not only because it is an imaginary construct but also because it offers an idealized representation of the genre it describes. My use of the term *myth* has both positive and negative connotations: positive, because the pursuit of ideals is the most powerful of the forces that sustain art, and negative, because ideals are by definition not reachable. The myths I will evoke have served a useful purpose, since they energized the public's imagination, but they did so by setting impossible or ill-conceived goals that raised false expectations. This may lead to a loss of interest in new media when these expectations turn out to be unfulfillable.

Before moving on with my discussion, let me sketch some of my positions on the nature of narrative:

- Narrative is not coextensive with literature, fiction, or the novel.
- Narrativity is independent of tellability.
- Narrative is not limited to written or oral storytelling. It is a mental representation that can be evoked by many media and many types of signs.
- Narrativity is a matter of degree: postmodern novels are not nearly so narrative as those of the nineteenth century.
- As a mental representation, narrative consists of a world (setting), populated by individuals (characters), who participate in actions and happenings (events, plot), through which they undergo change (temporal dimension).

1. The Metaphor of the Narrative Interface

The story of interface design, since the advent of the Macintosh, has been shaped by a very simple and very powerful idea: computers are ugly, fearsome, inhuman, and they make people feel inadequate; it is therefore necessary to hide them behind a metaphor that will make them pass for something else. The best-known of these disguises is the desktop concept introduced by Apple in the mid-eighties. This family of metaphors associ-

ates the modules of a software package with familiar objects, such as pens, files, folders, erasers, palettes, envelopes, and so on. These objects are represented on the computer screen by visual icons that give the user a sense of their objectlike, physical presence. But the desktop metaphor has the unfortunate side effect of limiting the computer to the role of a business machine. The next logical step in the concealment of the computer's true nature is therefore the development of interface metaphors that suggest play and entertainment, even when the actual function of the software is the performance of professional tasks. All this explains the popularity of narrative metaphors with software designers and Web page authors.

The concept of narrative interface was introduced in a handful of articles gathered in a collection edited by Brenda Laurel, *The Art of Human-Computer Interface Design* (1990). Some contributors understand narrative in a diegetic way, while others advocate a mimetic, or dramatic, application. The diegetic conception presupposes the existence of a narrator or storyteller addressing an audience. If we apply this model to the case of human/computer interaction, the computer will be the storyteller, and the user will be the audience. In the mimetic or dramatic conception of narrative, by contrast, there is no need for a verbal act of narration, no need for a storyteller. Narrative comes into existence not by being told but by being enacted. More precisely, it comes into existence in the mind of the spectator as an interpretation of what is seen or heard. All it takes in this case to produce a narrative is agents who engage in an action that inspires the proper interpretation in the mind of the audience. In the mimetic model, the computer is not a storyteller but a character who interacts with the user in such a way that the user will regard their interaction as a story.

The main proponent of the storyteller metaphor is Abbe Don (1990) in her contribution to Laurel's anthology, "Narrative and the Interface." Though the article does not contain a systematic analysis of the features of the storyteller, it is easy to see what makes the metaphor so attractive to software designers:

- Oral storytelling is an inherently interactive situation. When a parent tells a story to a child, for instance, the child can ask questions or get the parent to expand some episodes ("tell me again how Little Red Riding Hood got out of the wolf's mouth"). The story can be easily adapted to the particular needs of the audience.
- Storytelling, as a culturally universal phenomenon, provides models of understanding that people have already mastered. If software programs exploit narrative structures, people will learn to use them effortlessly.

- Though each storytelling performance is uniquely adapted to the needs of the audience, the plot remains basically the same. Similarly, when users operate a program, they may have their own personal goals, but a basic protocol and certain tasks must be fulfilled every time.
- Storytelling creates a sense of solidarity among the members of a community. Operating a computer is a lonesome activity. The metaphor helps overcome this loneliness by suggesting the supporting presence of a user community.
- The storyteller functions as the keeper and disseminator of cultural knowledge. Storytelling stands for the idea of teaching through entertainment. In oral cultures, information is traditionally embedded in a spellbinding narrative action. The *Iliad*, for instance, may have helped memorize the list of Greek tribes or the parts of a warrior's equipment. The metaphor of the computer as storyteller means that the computer acts as a tutor and educator who knows how to turn the frustration of learning the complicated operation of a program into a pleasurable experience.
- Storytelling provides an antidote to the cold indifference, rigid determinism and unbending logic of the computer. It gives a human face to the machine—the face of compassionate computing. The metaphor also gives a voice to a widespread nostalgia for an age when the tasks of everyday life could be performed through a set of tools whose functioning people could easily understand.

Yet there is a limit to the analogy. By casting the user as audience, the storyteller metaphor ignores the dialogic nature of human/computer interaction. Storytelling may depend on the audience input, but it is essentially a monological form of discourse, with the storyteller monopolizing the floor for a lengthy turn. The dramatic metaphors, with their implicit dialogism, seem therefore better suited to model the dynamics of human/computer interaction. Their most influential advocate is Brenda Laurel in her well-known book *Computers as Theatre* (1991). Her analogy can be decomposed into a series of equivalencies:

- The screen is a stage.
- The objects on the screen are the props.
- The user is a character who plays a role on the stage by manipulating the objects.
- The interaction between the user and the objects produces a plot.

To be truly pleasurable to the user, this plot should be carefully scripted by the system. Laurel recommends the adoption of an Aristotelian pattern that guides the user through the traditional dramatic curve of rise and fall in

tension. But she remains suspiciously vague on the question of the practical implementation of her concept of plot as well as on the kinds of applications that lend themselves to a dramatic experience.

How do these ideas of the storytelling computer and of the computer as theater translate into concrete applications? At the present time the narrative metaphor has inspired two types of design. One involves the creation of a character and the other the creation of a setting.

The best-known manifestation of the creation of a character is the "Office Assistant" of Microsoft Office, a comic, friendly character selected by the user from a menu of several choices that include a paper clip, a dog, a cat, and a cartoon version of Albert Einstein. What does this Einstein character do? He rolls his eyes, flaps his arms, shakes his head, gets mad, quiets down, nods approvingly. He remains active as long as a time-consuming task is going on—such as saving, opening, copying, or downloading a file. Through his cute antics, the Office Assistant fulfills several functions, some dramatic, some communicative, and some more narrowly narrative. The most obviously dramatic one is the Shakespearean function of comic relief. Even when Einstein has nothing substantial to say, he alleviates the seriousness of the task performed by the user. The danger of comic relief, of course, is that the routine is funny only the first time around; most of the people I have asked about the Office Assistant find him a distracting nuisance. The second function of Einstein—a communicative rather than strictly narrative one—is what Roman Jakobson (1960) has called the phatic function. This function consists in maintaining contact with an interlocutor to make sure that the channel of communication is still open, for instance, by piping muzak over the telephone line while putting a customer on hold. Through his little dance, Einstein entertains users and tells them that the system is not dead when control has been taken over by the machine for a lengthy period of time. The third, and most specifically narrative, function of Einstein is the helper function. If the user tries to close a file without saving it first, Einstein gets upset and asks: "Do you really want to lose your changes?" If the user types "Dear Susie," Einstein pops up in the corner and says, "It looks like you want to write a letter. Do you want me to help?" Though a single character does not make a story, the figure of the Office Assistant suggests an implicit scenario that puts the user in the role of a hero of a Proppian fairy tale: as the user-hero I have a task to accomplish; in order to do so, I must tame a mean machine; but along the way, I meet a friendly character who helps me conquer the villainous system and fulfill the mission.

The other concretization of the concept of narrative interface is the design of a setting that encourages make-believe. This type of metaphor places users in a role that conceals what they are actually doing and dictates

a scenario that gives them a sense of purposeful action. My example of narrative setting is the movie-making metaphor of the program Director. As the name of the program suggests, the user is cast as a filmmaker, the screen is the stage (the metaphor is somewhat mixed between film and theater), the objects that the user puts on the stage are the members of the cast, they behave according to scripts written by the director, the pairing of scripts and cast members is called the score, and the end product is called a movie. As a Director user, I can personally attest that I experienced an exhilarating feeling of power at the thought that I had become a filmmaker, able to summon actors on the stage and to dictate their behavior. The metaphor also greatly facilitated my understanding of the various types of objects I was dealing with in the program.

Those who expect from the term *narrative interface* a spellbinding plot with lively characters and surprising twists will be deeply disappointed by these rather trivial scripts and superficial analogies. But it is precisely the banality of the narrative scenario that makes it efficient. In the design of software, narrative is not an end in itself but a means toward a goal, and this goal is to facilitate the operation of the program. Interface metaphors, not unlike poetic ones, fulfill their rhetorical and pedagogical functions by relating a strange new world to a familiar one.

2. Hypertext, and the Myth of the Aleph

"Myth of the Aleph" is my way of describing how the early theorists of hypertext conceived the narrative power of the new type of text. The term comes from a short story by Jorge Luis Borges (1970), in which the scrutiny of a cabbalistic symbol enables the experiencer to contemplate the whole of history and of reality, down to its most minute details. The Aleph is a small, bound object that expands into an infinity of spectacles. The experiencer could therefore devote a lifetime to its contemplation. Though they did not explicitly invoke the model of the Aleph, the pioneers of hypertext theory conceived the new literary genre in strikingly similar terms. For theorists such as George P. Landow, Jay David Bolter, and Michael Joyce, hypertext is a textual object that appears bigger than it is because readers could spend hours—ideally, their entire lifetimes—unraveling new stories from it. As Michael Joyce (1995: 193) puts it: "Every reading . . . becomes a new text. . . . Hypertext narratives become virtual storytellers." 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.

This conception of hypertext as a matrix that contains an infinite number of narratives is particularly prominent in the work of George Landow. One of the chapters of his seminal book *Hypertext 2.0* (1997) is titled "Reconfiguring Narrative." Since the word *narrative* is ambiguous between "narrative discourse" and "mental representation" (the technical *story* concept of narratologists, in its opposition to discourse), Landow's claim can be understood in two ways. The first is the discourse sense: hypertext changes the way narrative structures are encoded, how they come to the reader, how they are experienced in their dynamic unfolding. The feature that enables hypertext to "reconfigure narrative" on the discourse level is, evidently, its interactive design, a design that enables the reader to select many different paths through the narrative discourse and to view its units in many different orders. But this new way of presenting stories does not mean that the stories themselves are radically different from traditional narrative patterns. There could be one fixed story that comes to the reader in many different ways, depending on which path is chosen through the network.

But this rather tame interpretation of "reconfiguring narrative" is not what Landow (1997: 181) has in mind: "Hypertext, which challenges narrative and all literary form based on linearity, calls into question ideas of plot and story current since Aristotle." The Aristotelian ideas that hypertext challenges are:

> (1) fixed sequence, (2) definite beginning and ending, (3) a story's "certain definite magnitude," and (4) the conception of unity and wholeness associated with all these other concepts. In hyperfiction, therefore, *one can expect individual forms, such as plot, characterization, and setting, to change*, as will genres or literary kinds produced by congeries of these techniques. (Ibid.: 181–82; italics added)

When he writes that plot changes, does Landow mean that in hypertext plot becomes something entirely different: a representation in which events freely float in time rather than forming a sequence at all? Or does he mean that every reading resequences events, and that plot consequently changes all the time, but within reasonably constant parameters? The first interpretation alters the concept of plot beyond recognition: if events float freely in time, without forming a fixed sequence, time itself disappears, since our sense of time is tied to a sense that moments and events succeed each other in an inexorably linear fashion. Without sequence, moreover, there is no causality and no logical coherence. How can one still speak of plot and of story under these conditions?

Let me therefore consider the other option: hypertext challenges the notion that there is only one sequence and one plot in the text and that readers are done when they have reconstructed an event trajectory that

leads from a beginning to an end. It is up to the reader to rationalize every reading, and consequently every arrangement of lexias, into a coherent story. "In a hypertext environment a lack of linearity does not destroy narrative. In fact, since readers always, but particularly in this environment, fabricate their own structures, sequences, or meanings, they have surprisingly little trouble reading a story or reading for a story" (ibid.: 197). In this interpretation, every traversal yields a possible story, in the semantic sense, because it is the reader who constructs the story out of the textual segments. Hypertext is like a construction kit: it throws lexias at its readers, one at a time, and tells them: make a story with this.

Landow (ibid.: 196) compares this situation to the mental activity of the speaker of a language who forms an infinite number of sentences out of finite grammar: "As readers we find ourselves forced to fabricate a whole story out of separate parts. . . . It forces us to recognize that the active author-reader fabricates text and meaning from 'another's' text in the same way that each speaker constructs individual sentences and entire discourses from 'another's' grammar, vocabulary, and syntax." I find this analogy fallacious, because it hides an important difference: the linguistic competence of the speaker is an internalized knowledge of the syntactic rules and lexicon of a language. To make a sentence, the speaker selects patterns and words from a knowledge base more or less completely available to the mind *before* the speaker begins the sentence. But in hypertext, lexias come one at a time; and the reader must create a story "on the move," without knowing what lexia will come next.

Another problem with Landow's suggestion is that if we take literally the claim that every traversal of the database produces a different story, a reader who encounters three segments in the order "A then B then C" will construct a different story than a reader who encounters the same segments in the order "B then A then C." It is only if sequence plays a crucial role in determining meaning that hypertext can be viewed as an Aleph that contains potentially a large number of different stories. If the reader could place A, B, and C wherever narrative logic asks for in a developing narrative pattern, it would not matter in which order A, B, and C are encountered. This emphasis on the meaningfulness of sequence hits, however, a serious logical obstacle. Textual fragments are like the pieces of a jigsaw puzzle; some fit easily together, and some others do not because of their intrinsic content, the narrative equivalent of shape. The reader will admittedly do what Wolfgang Iser (1980) calls "fill in the blanks" to construct a plot, that is, imagine untold episodes that glue the lexias together; but when we deal with a type of meaning as narrowly constrained as narrative, filling in the blanks has its limits. It is simply not possible to construct a coherent story out of every

permutation of a set of textual fragments, because fragments are implicitly ordered by relations, such as logical presupposition, material causality, and temporal sequence. What, for instance, will I do if, in the course of my reading, I encounter a segment that describes the death of a character and, later on, a segment that describes the actions of this character when alive? Should I opt for a supernatural interpretation, according to which the character was resurrected? This may be appropriate in certain contexts, but if the text has so far created a realistic, everyday type of world, the theme of resurrection would threaten its thematic coherence. Most readers, accustomed to techniques of flashback and flash-forward, will construct a mental image in which being alive precedes being dead; but if such rearrangement occurs, readers will reconstruct the same story regardless of the order in which they read lexias.

If it is unrealistic to expect that readers will be both willing and able to provide missing links to connect segments in a narratively meaningful way for *every* different order of appearance, we must abandon the Alephic conception of a new story with every reading session and replace it with a model that describes the reader's activity as the arrangement of textual segments into a global pattern that slowly takes shape in the mind. This model is the jigsaw puzzle. Just as we can work for a time on a puzzle, leave it, and come back to it later, readers of hypertext do not start a new story from scratch every time they open the program but, rather, construe a global representation over many sessions, completing or amending the picture put together so far.

3. Virtual Reality Narrative, and the Myth of the Holodeck

My second myth, the Holodeck, has been proposed by theorists as a model of what narrative could become in a multisensory, three-dimensional, interactive virtual environment. Its main proponent is Janet Murray in her well-known book *Hamlet on the Holodeck* (1997). But the concept of the Holodeck has also been invoked by Jaron Lanier, the visionary developer of VR technology (mentioned in Ditlea 1998) and by Michael Heim (1993), its no less visionary theorist.

All of these writers borrow the Holodeck idea from the popular TV series *Star Trek*. The Holodeck is a kind of VR cave, to which the crew members of the starship *Voyager* retreat for relaxation and entertainment. In this cave, a computer runs a three-dimensional simulation of a fictional world, and the visitor—the "interactor"—becomes a character in a digital novel. The plot of this novel is generated "live," through the interaction between the human participant and the computer-created virtual characters. As Murray (1997:

15) writes: "The result is an illusory world that can be stopped, started, or turned off at will but that looks and behaves like the actual world. . . . The *Star Trek* Holodeck is a universal fantasy machine . . . a vision of the computer as a kind of storytelling genie in the lamp." It enables crew members to "enter richly detailed worlds . . . in order to participate in stories that change around them in response to their actions."

The first chapter of Murray's book describes a *Star Trek* episode in which Kathryn Janeway, the female commander of the starship *Voyager*, sneaks into the Holodeck and becomes Lucy, the governess of the children in an aristocratic Victorian household. Lucy falls in love with the father of the children, Lord Burley, and they exchange passionate kisses, but the very responsible Kathryn realizes that this love for a virtual human is detrimental to the fulfillment of her duties in the real world, and she eventually orders the computer to delete the character. Murray (ibid.: 25) interprets this action as evidence that VR–based interactive drama can match both the entertainment and the educational value of literary narrative: "The Holodeck, like any literary experience, is potentially valuable in exactly this way. It provides a safe place in which to confront disturbing feelings we would otherwise suppress; it allows us to recognize our most threatening fantasies without becoming paralyzed by them." Some readers may be puzzled by this use of a science-fictional scenario to make predictions about the artistic potential of what is supposed to become someday a real technology. Even more strangely, however, Murray bases her assessment of the wholesome effect of Holodeck narrative on an episode in which, precisely, the heroine is forced to shut down the system in order to be able to function in the real world. It is as if literary narrative were only good for those readers who throw the book away midway though their reading.

The viability of the concept of the Holodeck as model of digital narrative is questionable for a number of reasons: technological, algorithmic, but above all psychological. These problems are evident in Murray's description of how she envisions a VR–based interactive version of the movie *Casablanca*. The object of this version would be "to offer the interactor to have different adventures by assuming the roles of several distinct characters, all of whom are pursuing their own destinies in the French-controlled colonial city during World War II" (ibid.: 204). We can ignore the question of the creation of the setting, since it is primarily a problem of hardware and graphic design. The truly problematic issues are those of plot and dialogue. Unlike most hypertext theorists, Murray has a fairly strict idea of plot, and she is not willing to leave responsibility for its creation to the interactor or to chance. In her vision of the Holodeck, plot and dialogue are controlled by the author and users step into the roles of predefined characters rather

than creating their own. Murray envisions the plot as a branched or "multiform" design made of many prerecorded units—episodes, themes, or "morphemes," as Murray (ibid.: 195) calls them in reference to Propp's *Morphology of the Folktale* (1968 [1928])—that are activated by the system in response to the interactor's actions. The many branches in the plot correspond to the various decisions the interactor could make in the situations presented by the system. But how could the interactor retain a reasonable freedom of action throughout the performance without taking the plot in a direction for which there is no ready-made, logically coherent response stored in the system? And how would the system handle dialogue between the interactor and the characters? Only an impractically large amount of author-created, prerecorded dialogue could allow the system to produce meaningful conversation between the interactor and the virtual characters. This means that there will be no dialogue or that the user's freedom of speech will be limited to something of the scope of yes/no responses. Or perhaps even that the system will take full control over dialogues and generate the words of the interactor.

But even if all these problems could be resolved, even if the right balance could be struck between user freedom and system control, even if the system managed to coax, rather than coerce, the interactor to take dramatically optimal paths, an important question remains. What kind of gratification will the experiencer receive from becoming a character in a story? It is important to remember at this point that, even though interactors are agents and in this sense coproducers of the plot, they are above all the beneficiaries of the performance. The entertainment value of the experience depends on how the interactors relate to their avatars. Will interactors be like actors playing a role, innerly distanced from their characters and simulating emotions they do not really have, or will interactors experience their character as their own self, actually feeling the love, hate, fears, and hopes that motivate the character's behavior or the exhilaration, triumph, pride, melancholy, guilt, or despair that may result from the character's actions?

If we derive aesthetic pleasure from the tragic fates of literary characters such as Anna Karenina, Hamlet, or Madame Bovary, if we cry for them and fully enjoy our tears, it is because our participation in the plot is a compromise between identification with the character and distanced observation. We "simulate" mentally the inner life of each character, we transport ourselves in imagination into the mind of each, but we remain, at the same time, conscious of being external witnesses. But in the *Star Trek* Holodeck, which is of course an imaginary construct, the interactor experiences emotions "from the inside," to use a concept proposed by Kendall Walton (1990: 28–29). This is why Kathryn Janeway must delete the char-

acter of Lord Burley: even though she experienced the fairy-tale romance of a poor governess conquering the love of a handsome aristocrat, her love for him threatened her ability to fulfill her real-world mission as well as her relationship to her real-world boyfriend. Had she taken another course of action, she might have run into a much less pleasant scenario: loving Lord Burley but being rejected, remaining cold to his passion and regarding his advances as a nuisance, or experiencing nothing more than a strictly businesslike servant-master relationship. Interactors would have to be out of their minds—literally and figuratively—to want to live these plots in the first-person mode. (By first- and third-person mode I do not mean the traditional narrative voices but what Walton calls experiencing "from the inside" and "from the outside.")

Yet if "becoming" a fictional character will often result in a rather unpleasant experience, Murray does not place restrictions on the kind of stories that will be suitable for Holodeck-style enactment. She takes great pains to demonstrate that new media can express the entire spectrum of human emotions. Digital narratives will be as good for gut-wrenching drama as for action plots. In her imaginary *Casablanca* simulation, for instance, she would like to offer the user the choice of causing the death of another character by denouncing him to the Nazis. To rival the ethical dimension of literary narrative, the simulation should make the user conscious of the moral consequences of this action. This means inflicting guilt on the despicable interactor. Murray (1997: 207) imagines the following ending for the traitor scenario: "You could find yourself sitting at a table with a newspaper report of the death lying in front of you next to a bottle and glass. You would be able to pour the liquor and raise the glass but not get up from the table. This enforced immobility would suggest the despair of a person about to drink himself to death." This is a very moral ending indeed—but will interactors actually feel guilt, or will they respond by thinking: "The poor devil feels guilty, and he sure deserves it." This reaction would mean that users relate to their avatars in the third-person mode. The user will be more a puppet master who makes decisions for a certain character, motivated by the curiosity of finding out what will result from these decisions, than a human being existentially, emotionally, and morally caught in a certain situation. By maintaining a safe distance between reader and characters, literature has been able to explore the whole spectrum of human emotions without inflicting intolerable suffering on the reader. Any attempt to turn empathy, which relies on mental simulation, into emotions felt "from the inside" would in the vast majority of cases cross the fragile boundary that separates pleasure from pain.

Only selected types of emotional experiences, and consequently selected

types of plots, lend themselves to a first-person perspective. If we consider the whole gamut of fictional characters, which ones would we really like to impersonate? Given the choice, would we identify with somebody like Hamlet, Emma Bovary, Gregor Samsa in *The Metamorphosis*, Oedipus, Anna Karenina, and Brutus in *Julius Caesar*, or would we rather enter the skin of the dragon-slaying hero of Russian fairy tales, Alice in Wonderland, Harry Potter, and Sherlock Holmes? If we pick a character from the second list, this means that we prefer becoming a rather flat character whose involvement in the plot is not affective but a matter of exploring a world, solving problems, performing actions, competing against enemies, and above all dealing with objects in a concrete environment. This kind of involvement is much closer to playing a computer game than to living a Victorian novel or a Shakespearean drama.

Toward the end of her book *Hamlet on the Holodeck*, Murray (ibid.: 273) writes rather cryptically: "Narrative beauty is independent of medium." This statement can be interpreted in two ways, one that I find profoundly true, and the other profoundly false. The false interpretation claims that since narrativity is a cognitive pattern or mental representation independent of medium, all media are equally equipped to represent a given plot. This means that in some distant and very questionable future, when AI is sufficiently advanced to generate coherent plots in response to the user's action, and to do this in real time, we will have an interactive version of *Hamlet*, or one of any other imaginable plot. Digital media will offer an enhanced version of literary classics, and they will truly become the art form of the twenty-first century. This interpretation not only ignores the idiosyncratic features of each medium, it also assumes rather presumptuously that what digital technology adds to existing media is necessarily a dimension that enhances narrativity. The other interpretation, the one that I endorse, says that the abstract cognitive structure we call narrative is such that it can be called to mind by many different media, but each medium has different expressive resources and will therefore produce a different concrete manifestation of this general structure. Put in simpler words: there are plot types and character types that are best for the novel, others are best for oral storytelling, and yet others are best for the stage or the cinema. The question, then, is to decide which types of stories are suitable for digital media.

4. Narrativity and Interactivity

The answer to this question is crucially dependent on what constitutes the truly distinctive resource of digital media, namely, the ability to respond to changing conditions in the global state of the computer. When the change

in conditions is determined by the user's input, we call this resource interactivity. By singling out this one feature, it may seem that I am neglecting others, such as the realism and fluidity of digital images, the sense of space that comes from navigating a virtual world, the dramatization of time that occurs when players compete against moving objects in computer games; or the immersive nature of virtual worlds. But all these features can be traced back to the responsiveness of the system to the actions of the user. It is because the display adapts itself to the position of the cursor, which stands for the body of the user, that digital environments convey the experience of movement; it is in turn the experience of movement that leads to a heightened sense of time, of space, and of the presence of the environment. The interactive nature of digital worlds is the true foundation of their immersivity (Ryan 2001).

For the purpose of my argument I would like to distinguish four strategic forms of interactivity on the basis of two binary pairs: internal/external and exploratory/ontological. These two pairs are adapted from Espen Aarseth's (1997: 62–65) typology of user functions and perspectives in cybertexts, which is itself part of a broader cybertext typology. But I use different labels that shift the emphasis toward the user's relation to the virtual world. The point of my discussion of these categories, however, is not to revise Aarseth's typology, but to show how different types of interactivity open different possibilities on the level of narrative themes and plot configuration.

4.1. Internal/External Interactivity

In the *internal* mode, users project themselves as members of the fictional world, either by identifying with an avatar or by apprehending the virtual world from a first-person perspective. In the *external* mode, users are situated outside the virtual world. They either play the role of a god who controls the fictional world from above or they conceptualize their own activity as navigating a database. This distinction is a matter of degree: there are digital texts that situate the user at a variable distance with respect to the fictional world or that locate the user at the periphery, not quite in, not quite out.

The dichotomy internal/external corresponds roughly to Aarseth's (1997: 63) distinction between personal and impersonal perspective: a world-internal participation will logically result in the user's personification, since worlds are spaces populated by individuated existents, while world-external involvement does not require a concrete persona. The only potential difference between Aarseth's labels and mine is the case of a user who is projected as a powerful figure external to the playing field and who makes strategic decisions for the participants, such as the commander in chief of an army, a sports coach, an author writing a novel, or a specific god.

4.2. Exploratory/Ontological Interactivity

In the *exploratory* mode, users navigate the display, move to new observation points, alter their perspective, or examine new objects in order to learn more about the virtual world. But this activity does not make fictional history, nor does it alter the plot; users have no impact on the destiny of the virtual world. In the *ontological* mode, by contrast, the decisions of the users send the history of the virtual world on different forking paths. These decisions are "ontological" in the sense that they determine which possible world, and consequently which story, will develop from the situation in which the choice presents itself. This distinction is much more strictly binary than the preceding one: the user either does, or does not, have the power to intervene in the affairs of the fictional world.

In his own taxonomy, Aarseth (1997: 64) comes up with two roughly similar categories, but his "exploratory" and "configurative" are part of a longer list of "user functions" that also comprises the opposition "textonic" and "interpretive": *textonic* means the ability to add permanent elements to the text; *interpretive*, the lack of this feature. I view these last two categories as different ways to fulfill the exploratory and ontological functions. Whereas the merely interpretive stance is compatible with both an exploratory and an ontological involvement, textonic participation presupposes ontological involvement, since the text added by the user contributes to the shaping of the fictional world. My dichotomy also bears some resemblance to Brian McHale's (1987: 9–11) distinction between an "epistemological" dimension, dominant in modernist literature, and an "ontological" one, dominant in the postmodernist era. Exploratory interactivity is clearly dictated by epistemological concerns, since its purpose is to learn more about the fictional world. But my ontological category is far less metaphysical than the "literary dominant" described by McHale. It is a largely nonreflexive way of performing world-creating actions rather than a questioning of the nature of being.

The cross-classification of the two binaries leads to four combinations. Each of them is characteristic of different genres and affords different narrative possibilities.

Group 1: External-exploratory interactivity. In the texts of this group—mostly classical hypertexts, such as the "novels" of Michael Joyce, Stuart Moulthrop, or Mark Amerika—the user is external to both the time and the space of the fictional world. Interactivity resides in the freedom to choose routes across a textual space, but this space has nothing to do with the physical space of a narrative setting. The implicit map of the text represents a

network of lexias, not the geography of a fictional world. In classical hypertext, the network is usually too densely connected for the author to control the reader's progression over significant stretches. Randomness sets in after one or two transitions. But randomness is incompatible with the logical structure of narrative. Since it would be impossible for the author to foresee a coherent narrative development for each path of navigation, the order of discovery of the lexia cannot be regarded as constitutive of narrative sequence. The only way to preserve narrative coherence under such conditions is to regard the text as a scrambled story that the reader puts back together, one lexia at a time.

This type of interactivity is external, because the text does not cast the reader as a member of the fictional world. Readers regard the text less as a world in which to immerse themselves than as a database to be searched or as a construction kit for assembling a world. If we conceptualize the text as a puzzle, interactivity is exploratory, because the reader's path of navigation affects not the narrative events themselves but only the way in which the global narrative pattern (if there is one at all) emerges in the mind. Similarly, with a jigsaw puzzle, the dynamics of the discovery differ for every player, but they do not affect the structure that is put together. Moreover, just as the jigsaw puzzle subordinates the image to the construction process, external-exploratory interactivity de-emphasizes the narrative itself in favor of the game of its discovery. This mode is therefore better suited for self-referential fiction than for narrative worlds that hold us under their spells for the sake of what happens in them. It promotes a metafictional stance, at the expense of immersion in the fictional world. This explains why so many literary hypertexts offer a collage of literary theory and narrative fragments.

Group 2: Internal-exploratory interactivity. In the texts of this category, the user takes a virtual body with her into the fictional world—to paraphrase Brenda Laurel (1993: 14)—but her role in this world is limited to actions that have no bearing on the narrative events. She inhabits the space of the fictional world but not the time of the narrative events. (I am using the feminine form because it is through texts of this type that the game industry is trying to reach a female audience.)[1] The user has a seat on the stage; she may even play an active role, such as that of a traveler, an explorer, a historian, or a detective who tries to solve a mystery, but she is not the hero of the action. In the words of Thomas Pavel (1986: 85), she is a "non-voting member" of the fictional world. The user exercises her agency by moving

1. On this topic, see Cassell and Jenkins 1998.

around the fictional world, picking up objects and looking at them, viewing the action from different points of view, investigating a case, and trying to reconstitute events that have taken place a long time ago.

This type of interactivity lends itself to several types of plot:

- The mystery plot, in which two narrative levels are connected: one constituted by the actions of the detective, the other by the story to be reconstructed. In this configuration, the second level is predetermined, while the first is created in real time by the actions of the user. Example: the computer game Myst, in which the user explores an island and solves certain puzzles to crack the mystery of what happened in the past.
- The parallel plot, or soap opera type, in which a large cast of characters acts simultaneously in different locations, so that it is necessary for the user to move from one location to another to another to follow every thread in the plot. Example: the now defunct Internet soap opera *The Spot*, which followed the intersecting destinies of several characters. New episodes were posted everyday, each written from the point of view of one of the characters. The user could follow one character for a while, then switch to another. She could look at their letters and diaries, and in a possible variation, she could access a version of the story told in the third person.
- The spatial narrative, whose main theme is travel and exploration. This could be an electronic version of *Alice in Wonderland*, where Alice would not really do anything but rather stumble into the lives of the other characters and observe them for a while.
- The narrative of place, which is a combination of parallel plot and spatial narrative. The purpose of the narrative of place is not to travel across vast expanses, as does the narrative of space, but rather, to explore in depth a specific location, to look at all the objects contained in it, and to meet all of its inhabitants. An example of this type is the hypertext fiction *Marble Springs* (1993) by Deena Larsen, a text that invites the reader to explore the map of a Colorado ghost town and tells, in short poems, about the lives of its female inhabitants. (The lives of the men are left to the reader to write.) In the narrative of place, interest resides not in an overarching plot, that is to say, not in a "grand narrative" of the macro level, but in the "little stories" that the user discovers in all the nooks and crannies of the fictional world.

Group 3: External-ontological interactivity. Here the user is like the omnipotent god of the system. Holding the strings of the characters, from a posi-

tion external to both the time and the space of the fictional world, the user specifies their properties, makes decisions for them, throws obstacles in their way, and creates different destinies for them by altering their environment. A classical example of this type of interactivity is the interactive DVD movie *I'm Your Man* (1998, directed by Bob Bejean. A Choice Point Film). The movie involves three characters: a villain, Richard; a fool, Jack; and a good girl, Leslie. At one of the branching points, the movie asks the spectator if Richard should kill Leslie or seduce her. At another point, the spectator faces the choice of making Jack act like a hero or a coward. By making a decision, the spectator assumes an authorial stance toward the protagonists, since the choices affect their moral characters, which in turn determines their fates. This activity of playing with parameters to see how the system will evolve is equivalent to the operation of a simulation system. Since the operator of the narrative system is external to the fictional world, he or she has no strong interest at stake in any particular branch of its virtual history; gratification resides instead in the contemplation of the whole field of possibilities. The individual forking paths in the plot are therefore less interesting than the global system of their interconnections.

From a thematic point of view, this mode of interactivity lends itself to what I would call, following Niall Ferguson (1997), "virtual history narratives." In the newly fashionable field of virtual history, serious scholars debate such questions as—to plagiarize Pascal—"what would have been the fate of the world if Cleopatra's nose had been shorter." The meaningfulness of such exercises is rooted in the belief that destiny is governed by small random events that lead to large-scale differences, if the system is allowed to run its course without further intervention for a long period of time. The same idea underlies the so-called butterfly principle of chaos theory: a butterfly flapping its wings in Beijing affects the weather in Corsica.

The combination of ontological and external interactivity would be illustrated by the conception of hypertext as an Aleph and of the reader as coauthor of the plot, if indeed it were possible to find narrative coherence in each particular traversal of a hypertextual network. But as I have already suggested, narrative coherence is impossible to maintain in a truly complex system of links. We need therefore simpler structures, structures with fewer branches and fewer decision points, so that every path can be individually designed by the author. Once the user has made a choice, the narrative should be able to roll by itself for an extended period of time; otherwise, the system would lead to a combinatory explosion—or fall back into randomness, the deathbed of narrative coherence.

The best-known example of a narrative system with an ontological-external type of interactivity is the series of children's books Choose Your

Own Adventure. The underlying structure of these stories is a fairly simple tree-shaped diagram, on which each branch is kept separate from the others. This enables the designer to maintain a strict control over the linear sequence of events.[2]

Another example of external ontological interactivity is the simulation game, such as Simcity, Simlife, Caesar, or The Sims. In these games, players rule over a complex system, such as a city, an ant colony, an empire, or a family, and their decisions affect the evolution of the system. Even in a game like The Sims, where the player creates a number of individuals, the main character in the developing narrative is a collective entity, and this character has no consciousness of its own: it is just the sum of multiple microprocesses. The range of possible developments at any given point depends on the possibilities of action offered by the various objects and individuals within the fictional world. For instance, a computer in The Sims affords two types of action: play games or look for a job. The choice of one of these affordances affects the life and the options of several members of the fictional world; for instance, if the user decides that Betty in The Sims will use the computer to get a job, Betty will earn money, and she will be able to buy a wider variety of commodities. This in turn may affect Bob's feelings for Betty. The possibilities of action evolve during the run of the program, and since affordances are determined by the global state of the system, as well as by the nature of the objects, the user's choices will always produce a coherent narrative development.

While the operation of a simulation system requires a godlike position of power, many of the games mentioned above try to increase dramatic interest by casting the user as a member of the fictional world. In Caesar, for instance, the user is the ruler of the Roman Empire; in Simcity, the mayor of the city. The mayor or the emperor are external interactors, because they do not exist in the same space and time as their subjects. They rule the system from above, as the god's eye perspective of the graphic display indicates, and they do not operate in a simulacrum of real time, since they have all the time in the world to make their decisions. But they are also internal participants, because their personal fates are at stake in the way they govern. The mayor will be voted out of office if his or her administration of the city does

2. The second-person form should not be taken to mean that the reader is internalized as character; the texts of the series are usually told in the third person. Even when the text uses the second person, the reader relates to this "you" as if the reader were a "he" or a "she." In a branching story about Pinocchio, for instance, the reader holds the strings of a puppet named Pinocchio and maintains an authorial perspective over the plot that diminishes the reader's emotional involvement in the current destiny of Pinocchio. A sane reader will not feel crushed if his or her decisions lead Pinocchio to be turned into a donkey or swallowed by a whale: there will always be another run of the system, another destiny to be explored.

not please his or her constituents, and Caesar will be dethroned if the Barbarians invade his empire. This combination of features places the games in question halfway between categories 3 and 4.

Group 4: Internal-ontological interactivity. If the Holodeck could be fully implemented, this is where it would belong. In the meantime, the category will have to be represented by computer games of the action and adventure type, such as Doom, Quake, or Half-Life. Here the players are cast as characters situated in both the time and the space of the fictional world. The actions of the players determine the fate of their character (*avatar* in the technical jargon) and, by extension, the fate of the fictional world. Every run of the system produces a new life and consequently a new life story for the avatar. This narrative is created dramatically, by being enacted, rather than diegetically, by being narrated.

In this type of system, interactivity must be intense, since we live our lives by constantly engaging with the surrounding world. Most players are too deeply absorbed in the pursuit of a goal to reflect on the plot that they write through their actions, but when people describe their sessions with computer games, their reports typically take the form of a story. Consider, for instance, this review by Peter Olafson (2000) of the game Combat Mission, which simulates the German campaign into Russia during World War II:

> My two panzer IVG tanks got lucky. Approaching the crossroads, they cleared a rise and caught two Sherman tanks out of position, one obstructing the aim of the other. Concentrating their fire, they quickly took out the Allied units and the surviving crews abandoned the flaming hulks and retreated into the woods nearby.

After three paragraphs of such prose, the account of the session concludes with:

> The computer commander knew it was licked. It began to pull back, and I finally allowed myself to breathe again. It's the first war game I can recall in which I've responded emotionally to a victory, and I know why. It felt as though I was there. (Ibid.)

As this retelling demonstrates, the narrativity of the action game lies in the *trace* of the actions performed by the player.

Many people will rightly argue that "creating a narrative" is not the point of adventure/action games. Computer games are played for the sake of solving problems and defeating opponents, of refining strategic skills, and of participating in on-line communities, not for the purpose of creating a trace that reads as a story. Few people in their right minds will bother to record a game session and watch the replay as a movie. (Developers may do that,

but for a different purpose.) The drama of the game is only worth experiencing as an active participant; it is meant to be lived and not spectated. Yet if narrativity were totally irrelevant to the enjoyment of games, why would designers put so much effort into the creation of a narrative interface? Why would the graphics be so sophisticated? Why would the task of the player be presented as fighting terrorists or saving the earth from invasion by evil creatures from outer space, rather than as "gathering points by hitting moving targets with a cursor controlled by a joystick"? The evolution of computer games, since the early days of PacMan, Tetris, or Paddle Ball, has been toward greater visual realism, which also means toward greater narrativity, since in at least one of its definitions, realism is the power to construct a coherent, believable world that functions as setting for a dramatic action. The narrativity of action games functions as what Kendall Walton (1990: 21) would call a "prop in a game of make-believe." It may not be the raison d'être of games, but it plays such an important role as a stimulant for the imagination that many recent games use lengthy film clips, during which the player can only watch, to enrich the plot. (The fact that it is necessary to temporarily remove control from the user to establish the narrative frame is a further indication that interactivity is not a feature that facilitates the construction of narrative meaning.)

At present, the thematic and structural repertory of ontological/internal interactivity is quite limited. Adventure and role-playing games[3] implement the archetypal plot that has been described by Joseph Campbell (1968 [1949]) and Vladimir Propp (1968 [1928]): the quest of the hero across a land filled with many dangers to defeat evil forces and gain a desirable object. Some plots, however, deviate from the archetype in two ways: the hero can lose, and the adventure never ends. In most action games, the archetype is further narrowed down to the pattern that underlies all wars, sports competitions, and religious myths, namely, the fight between two sides—good and evil—for dominance of the world. These plots are miles away from the psychological complexity of Victorian novels, Shakespearean dramas, and even Hollywood thrillers, which Murray hopes to see enacted on the Holodeck. This predictability of the plot would constitute a weakness if narrative were an end in itself, but it is an important asset in the case of games, since it allows the user to jump into the fictional world and start playing right away, without having to plod through tedious instructions.

As was the case in Propp's corpus of Russian fairy tales, individual games differ from each other in the concrete motifs that flesh out the archetypal

3. This term refers to nondigital games, such as Dungeons and Dragons, a game that inspired much of digital culture.

structure. In a predominantly visual medium, the element of narrative that offers the richest potential for variation is the setting. This is why action games invest so heavily in the thrill of moving through a landscape. But there is another factor that accounts for the importance of spatial themes, a factor that also explains why shooting plays such an important role in computer games. For an action game to be worth playing, the opportunities for action must be frequent, or the user would become bored. As I suggest above, living one's life is a matter of constantly engaging with the world. Moreover, players want their actions to have an immediate effect: nothing is more irritating in a game than clicking and seeing nothing happen. But to maintain the narrative on the proper track, the range of actions must be severely restricted. Adventure games do not preplan each possible narrative development, as do the Choose Your Own Adventure texts, but they make sure that options will remain within a certain range so that the overall destiny of the player's avatar will not deviate from the general line of the master plot. In the case of shooting, the user's choices consist of selecting a weapon, aiming it, and deciding when or whether to fire; in the case of movement, the possibilities correspond to directions, and they are limited by the architecture of the landscape: the player can run through hallways but cannot go through the walls. When players choose a direction, they see their avatar move immediately, and this provides the sensation of a high degree of control. Shooting gives an even greater feeling of power because of the instantaneous and dramatic result of pulling the trigger. The predominance of violence in computer games has been widely attributed to cultural factors, but it can be partly explained by a desire for immediate response. Moreover, of all human actions, none is better simulated by clicking on a control device than pulling a trigger. It is not my intent to defend the violence of computer games; but the theme of shooting exploits with a frightful efficiency the reactive nature of the medium.

Conclusion

How, then, do I envision "the future of narrative in cyberspace"—a phrase that Janet Murray uses as subtitle to her *Holodeck* book? I will not propose a global answer to this question because digital textuality, like literature, is a field of many genres. A reasonable coverage of the issue of digital narrativity should reflect this diversity. I will consider three forms of digital narrative: the largely virtual genre of VR, or "Holodeck" narrative, and the two very real genres of computer games and literary hypertext.

The first entertainment uses of VR technology will almost certainly be action games. The playing field will be a computer-generated three-

dimensional environment that surrounds the player, rather than a rectangular display restricted to the screen. VR games will implement type 4 ("internal-ontological") interactivity, and they will use a narrative framework as an incentive to play. But if narrative is to become the center of interest in a VR environment, the user should be placed in the role of the active observer of category 2 ("internal-exploratory"). This role not only permits a wider range of themes and emotional experiences, it is also much more compatible with the detachment of aesthetic contemplation than the existential involvement of category 4. If digital narrative is going to become a significant, and reasonably popular, art form in the twenty-first century, it will be as a movie that creates a heightened sense of presence by opening its world to the body of the spectator and by letting this body watch the action from various perspectives.

The two other genres, computer games and hypertext, stand at the opposite ends of the cultural spectrum: one a widely popular form of entertainment consumed for its own sake, especially by teenage males, the other an arcane academic genre read mostly by theorists and prospective authors—by people more interested in writing about it than in reading it. (It is mainly in this sense that hypertext turns readers into writers.) Each genre, I believe, could expand its territory by learning from the other. Though the motivation of the game player is not primarily aesthetic, the care given to graphics and to the construction of a narrative framework suggests that users are not indifferent to artistic quality. But computer games suffer from the same economic pressures as Hollywood movies; they are expensive to produce, and the investment can only pay off if they reach a wide audience. On the shelves of computer stores, there is only room for the gaming equivalent of John Grisham and Stephen King narratives. What is needed for computer games to fulfill their artistic potential (and of course will not happen in today's society) is an emancipation from the tyranny of the market. I can imagine games in which users would be given a concrete task but would also be invited to take breaks in the action, during which they would explore the landscape and meet characters who would entertain them with stories about the fictional world. But hardcore game players would probably resent these narrative interludes as aggravating interruptions of the forward momentum of the game and as temporary loss of control over their fates. The competitive involvement of the game player is basically incompatible with the detached contemplation of the aesthetic experience, and my proposal will only be viable if the works I am imagining are able to foster a new attitude in the user, namely, the willingness to switch back and forth between the contemplative and the active stance.

While the narrative variety of games has been limited by the need to

court a popular audience, the popularity of hypertext has suffered from the ideological contempt of its authors for the closure and coherence of classical narrative. The early practitioners and theorists of hypertext thought of the genre as "the novel of the future," but in the postmodern area, "novel" is more likely to mean "the subversion of narrative" than "lengthy literary narrative prose text." Since most hypertext authors aim at the high end of literary culture, they take a deliberately experimental approach to the new writing technology. The dominant pattern of early hypertexts was the scrambled narrative—what Espen Aarseth (1997: 94) calls a "game of narration"—but in recent years hypertext has turned toward nonnarrative types of meaning, such as atemporal lyrical structures, musical structures of themes and variations, collage of various genres, unstructured lists, visual effects, animation, and self-erasing text. It is indeed as conceptual art that hypertext has carved out for itself a modest place in contemporary literary culture.[4] The danger with the conceptual route has been clearly seen by Umberto Eco (1989: 170–71): once readers have grasped the basic concept, they may feel that reading is no longer necessary. It is far from my intent to discourage conceptual art and experimental literature, but as long as hypertext authors limit themselves to this route, they should not be surprised to see the medium confined to a narrow cultural niche.

Hypertext cannot live forever in the academic cocoon. It will not fly on its own until it broadens its audience beyond academic circles, and it will not broaden its audience until it learns to satisfy, rather than frustrate, narrative desire. This does not mean that it should try to be a novel but, rather, that it should discover narrative modes and themes more suitable to its interactive nature and multimedia capabilities. Here I must fundamentally disagree with Robert Coover (2000), who thinks that the golden age of digital literature came to an end when hypertext ceased to be purely verbal. To me the future of digital narrative—or more broadly, the future of digital textuality—lies in the enhancement of verbal storytelling with visual and audio documents. An author who plays masterfully with the newly acquired sensory dimensions of digital environments is M. D. Coverley in *Califia* (2000) and *The Book of Going Forth by Day*, an electronic novel in progress. These texts are far less fragmented than the purely textual hypertexts of the first generation (e.g., Michael Joyce's *Afternoon*), because hyperlinks can now be used to move from one medium to another—text, pictures, music—rather than to jump across the text. The result is a much more sustained narrative

4. The *Norton Anthology of Postmodern American Fiction* makes room for hypertext in the postmodern literary canon by including printed excerpts from two hypertext fictions: *Afternoon: A Story* (1987) by Michael Joyce and "I Have Said Nothing" (1994) by J. Yellowlees Douglas. Does this amount to an official acceptance of hypertext, or is it a token gesture?

interest. The literary model for this new type of digital narrative is not the multicursal[5] novel, such as Mark Saporta's *Composition No. 1* (1961) or Milorad Pavić's *Dictionary of the Khazars* (1988), but the artist's book,[6] such as Tom Phillips's *A Humument*, or recent literary works that propose an original dialogue between text and picture, such as *The Emigrants* (1996) by the German author W. G. Sebald. In order to take full advantage of the reactive nature of its medium, hypertext could also seek inspiration from playful art forms and artifacts that stage the act of "reading" as a journey filled with many surprises: pop-up children's books, Advent calendars, and art CD ROMs—the last illustrated by the work of Norie Neumark, Agnes Hegedüs, or Jean-Louis Boissier. The digital medium can give the tactile pleasure of mousing over "hot spots" (invisible hyperlinks) and of making images or text unexpectedly appear—a pacifist alternative to the thrill of pulling the trigger in shooting games. It can tell stories in many modes and layers, by making the individual episodes expandable into other media or into more detailed narrations. And finally, it can handle mini-stories that fill the screen. From a cognitive point of view, small stories are more efficient than large narrative patterns that need to be chunked up, because this chunking necessitates constant interruptions and digressions that make it very difficult for the reader to hold onto a thread.

I personally wish to see these design strategies put in the service of projects with a do-it-yourself, cottage-industry quality that would give free rein to self-expression: projects such as building an autobiographical scrapbook, reconstructing a family saga, exploring local history, or preserving cultural memory. These projects lend themselves particularly well to the nonlinear browsing of hypertext, because the story of a life or a community is not a "dramatic" narrative aimed at a climax and built on suspense but an epic narrative made of many self-sufficient episodes that can be read in many orders. Thanks to multimedia hypertext programs, such as Flash or Director, and to the design tools of the Internet, it is now possible to tell our personal stories, or the stories of our communities, through text, music, and pictures without incurring the exorbitant costs of making a documentary movie or publishing a glossy illustrated book. What I am calling for is abandoning the hegemonic dream of turning new media narratives into *the*

5. As Aarseth (1997: 6) observes, a multicursal labyrinth is one that can be solved (i.e., exited) through more than one route. Similarly, a multicursal novel allows many itineraries through the text.

6. Artists' books are visual artworks that present themselves as a collection of illustrated pages bound together in book form. Some are meant to be printed, while others remain original manuscripts. In either case, the work reveals itself to the spectator through the activity of page turning, and this dynamic mode of apprehension becomes a source of artistic effects. See on the topic Drucker 1995 and Hubert and Hubert 1999.

art (read: the *highbrow*, *avant-garde* art) or into *the* entertainment form (read: the *mass entertainment* form) of this new century and seeking for these narratives a less glamorous, but no less important, place in culture—a place that will represent a true democratization of digital textuality.

The claims made in this essay can be summarized by three seemingly incompatible statements:

1. The truly distinctive feature of digital media is interactivity. This feature enables the user to choose her or his way through the text at run time.
2. Interactivity does not make it easy to tell stories, because a narrative interpretation is a response to a linear structure that is built into the text, not a type of meaning freely created by the reader out of *any* set of data.
3. Yet without some degree of narrativity, digital media cannot become a major presence on the arts and entertainment scene.

Digitality is a fluid environment; narrative, as a type of meaning, is a solid structure. To reconcile the two, some compromise will be necessary. Narrative will have to learn to share the spotlight with other types of sensory data; to accept a subordinate role, as in games, or limit itself to certain plot types. Conversely, the medium will have to give up some of its fluidity to allow narrative meaning to solidify in the mind of the reader. This means limiting the range of possible actions, channeling interactivity, and neutralizing the threat that it poses to coherence by orchestrating periods of user activity and periods of system control. If "digital narrative" is going to be more than a new mode of diffusion for texts that could be materialized in print, such as the works of Stephen King, it cannot be a freeway that takes the reader through the landscape, as do standard novels. But if it is to keep narrative desire alive, it cannot be a wilderness, where links are so numerous that the reader is lost in a thicket that looks the same from every position. To borrow a metaphor from Mark Bernstein of Eastgate Systems (1998), the compromise between being lost in the wilderness and being sucked onto the freeway is to be invited into a garden with many carefully designed paths. These paths guide users through the narrative landscape and enable them to see it from various points of view without losing their sense of orientation. But rather than making the experience fully predictable, the paths reveal unexpected, delightful features at every turn—gazebos, follies, grottoes, statues. This combination of designed space and serendipitous discovery, mapped trails and surprise attractions, contained area and expanding vistas make the garden look much bigger than it really is. This may be the closest one gets to the mythical Aleph, without entering

a jungle where narrative meaning chokes in the brambles of uncontrollable multiplicity.

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