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Beyond Myth and Metaphor*

-The Case of Narrative in Digital Media

by Marie-Laure Ryan

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 literary criticism and cinema studies, but it seems safe to assume that a vast majority of people read George Landow before they read any work of hypertext fiction. In this paper 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. 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. Steve Jobs, the founder and CEO of Apple, talks for instance about "the importance of stories, of marrying technology and storytelling skills " (1); Steven Johnson concludes his popular book *Interface Culture* with the pronouncement: "Our interfaces are stories we tell ourselves to ward off senselessness"; Abbe Don titles an influential article "Narrative and the Interface," in which she argues that computers can play in modern societies the role of the storyteller of oral cultures; and Brenda Laurel envisions computers as theater, a metaphor that presupposes a dramatic plot. When these grandiose metaphors are put to the test of software design, however, they yield rather meager results:

1. The creation of a character who guides the user through the program, offers personalized help, and provides comic relief, such as the Office Assistant of Microsoft Office.
2. The development of a metaphorical setting or script, such as the Supermarket shopping theme of Amazon.com, or the movie-making environment of Macromedia Director.

Of the three traditional components of narrative-setting, character, action-only the first two provide useful design elements. The third, action, is left to the user. It is by listening to the advice of the Office Assistant of Microsoft, or by manipulating the cast members, scripts, and score of Director that the user metaphorically participates in a narrative script.

Whereas software developers adapt narrative concepts to business programs, in a typically metaphorical transfer, media theorists invoke what I will call "narrative myths" to promote literary or entertainment forms of digital textuality. These myths, which present an idealized representation of the genre they describe, serve the useful purpose of energizing the imagination of the public, but they may also stand for impossible or ill-conceived goals that raise false expectations. Here I will discuss two of these myths: the myth of the Aleph, and the myth of the Holodeck. But to clear any misunderstanding as

to what I mean with narrative, let me begin with the sketch of a definition.

What is narrative?

- Narrativity is independent of the question of fictionality.
- Narrativity is not coextensive with literature nor the novel.
- Narrativity is independent of tellability.
- A narrative is a sign with a signifier (discourse) and a signified (story, mental image, semantic representation). The signifier can have many different semiotic manifestations. It can consist for instance of a verbal act of story-telling (diegetic narration), or of gestures and dialogue performed by actors (mimetic, or dramatic narration).
- The narrativity of a text is located on the level of the signified. Narrativity should therefore be defined in semantic terms. The definition should be medium-free.
- Narrativity is a matter of degree. Postmodern novels are less narrative than simple forms such as fables or fairy tales; popular literature is usually more narrative than avant-garde fiction.
- Narrative representation is constructed by the reader on the basis of the text. Not all texts lend themselves to a narrative interpretation.
- Narrative representation consists of a world (setting) situated in time, populated by individuals (characters), who participate in actions and happenings (events, plot) and undergo change.
- The most prominent reason for acting in life is problem-solving. It is therefore the most fundamental narrative pattern.
- Narrative representations must be thematically unified and logically coherent. Their elements cannot be freely permuted, because they are held together in a sequence by relations of cause and effect, and because temporal order is meaningful. The propositions of a narrative representation must be about a common set of referents (= the characters).

Hypertext, and the myth of the Aleph

The myth of the Aleph describes 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, in which the scrutiny of a cabalistic 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, and the experiencer could therefore devote a lifetime to its contemplation. Though they do 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 Landow, Bolter and Joyce, hypertext is a textual object that appears bigger than it is because readers could spend hours--ideally their entire lifetime--unraveling new stories from it. As Michael Joyce puts it: "Reordering requires a new text; every reading thus becomes a new text?Hypertext narratives become virtual storytellers" (193). 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.

The 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* is titled "Reconfiguring Narrative."

Since the word "narrative" is ambiguous between "narrative discourse" and "semantic structure," 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, the interactive nature, or ergodic dimension of the medium. 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 what path is chosen through the network. But this rather tame interpretation of "reconfiguring narrative" is not what most hypertext theorists have in mind. According to Landow every reading produces a new narrative not just in the discourse sense, but also on the level of plot. "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" (197). In this interpretation, every traversal yields a new 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 lexia at the reader, one at a time, and tells her: make a story with this. Landow 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" (196).

If we take literally the claim that every traversal of the database determines 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 the information given by each lexia wherever she wanted in a developing narrative pattern, it would not matter in which order she encounters the lexia themselves. This emphasis on the meaningfulness of sequence hits however a serious logical obstacle. Textual fragments are like the pieces of a jig-saw puzzle; some fit easily together, and some others do not because of their intrinsic shape, or narrative content. 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 of 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 his actions when alive? Should I opt for a supernatural interpretation, according to which the character was resurrected? If it seems utopian to expect of readers to be able to provide missing links to connect segments in a narratively meaningful way for each different order of appearance, the Alephic conception of a new story with each reading becomes untenable. What we have, instead, is something much closer to the narrative equivalent of a jig-saw puzzle: the reader tries to construct a narrative image from fragments that come to her in a more or less random order, by fitting each lexia into a global pattern that slowly takes shape in the mind. 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 mental

representation over many sessions, completing or amending the picture put together so far.

VR 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 multi-sensory, 3-dimensional, interactive virtual environment. Its main proponent is Janet Murray in her well-known book *Hamlet on the Holodeck*. The idea of the Holodeck comes from the popular TV series *Star Trek*. It is a kind of VR cave, in which the crew members of the starship "Enterprise" retreat for relaxation and entertainment. In this cave, a computer runs a three-dimensional simulation of a fictional world, and the visitor-let's call her 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. According to Murray, becoming a character in a fiction will be both a pleasurable and learning experience: "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" (25).

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. Technologically, it requires the development of far more immersive artificial environments and far more efficient interfaces than VR technology is presently able to provide. From an algorithmic point of view, it necessitates an AI component that could not only generate good plots, but would do so in real time, and would be able to build these plots around the unpredictable actions of the interactor-all achievements far beyond the reach of currently available story-generating systems. But even if the hardware and software problems could be resolved, an important question remains. What kind of gratification will the experienter receive from becoming a character in a story? It is important to remember at this point that even though the interactor is an agent, and in this sense a co-producer of the plot, he or she is above all the beneficiary of the performance. As is the case in games or sports, the interactor participates in the production for her own pleasure, and becoming a character should be a self-rewarding activity. The entertainment value of the experience depends on how the interactor relates to her avatar: will she be like an actor playing a role, innerly distanced from her character and simulating emotions she does not really have, or will she experience her character in the first-person mode, 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 her actions? If we derive aesthetic pleasure from the tragic fate 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 the first-person and the third-person perspective. We simulate mentally the inner life of these characters, we transport ourselves in imagination into their mind, but we remain at the same time conscious of being external observers. But in the *Star Trek* Holodeck, which is of course a fictional construct, the interactor experience emotions in the first person mode. Kathryn Janeway, the commander of the starship Enterprise, actually falls in love with Lord Burley, a computer-created character. This love prevents her from fulfilling her duties in the real world, and she ends up telling the computer to delete her virtual lover. If the blissful experience of loving and being loved in a virtual world causes adaptation problems when the interactor reenters reality, the alternatives plotlines seem even less desirable. Interactors would have to be

out of their mind--literally and metaphorically--to want to submit themselves to the fate of a heroine who commits suicide as the result of a love affair turned bad, like Emma Bovary or Anna Karenina. Any attempt to turn empathy, which relies on mental simulation, into first-person, genuinely felt emotion would in the vast majority of cases trespass the fragile boundary that separates pleasure from pain.

This means that only selected types of emotional experiences, and consequently selected types of plot will lend themselves to first-person perspective. If we consider the whole gamut of fictional characters, which ones would we really like to play: Hamlet, Emma Bovary, Gregor Samsa in *The Metamorphosis*, Oedipus, Anna Karenina, the betrayer Brutus in *Julius Caesar*, or would we rather be characters such as the dragon-slaying hero of Russian fairy tales, Alice in Wonderland, Harry Potter, or Sherlock Holmes? As far as I am concerned I would pick a character from the second list: which means, a rather flat character whose involvement in the plot is not emotional, but rather a matter of exploring a world, solving problems, performing actions, competing against enemies, and above all dealing with interesting 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* Janet Murray writes: "Narrative beauty is independent of medium" (273). 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 adept at representing 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*, as well as 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 idiosyncrasies of each medium, it also assumes all too quickly 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 different concrete manifestation of this abstract 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.

The answer to this question is crucially dependent on what constitutes the most distinctive resource of digital media: namely the ability to respond to changing conditions. When the changes in conditions are determined by the user's input, we call this resource interactivity. 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 typology of user functions and perspectives in cybertexts (*Cybertext*, 62-65), 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 is not however 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.

Internal / External interactivity. In the *internal* mode, the user projects himself as a member 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, the reader situates himself outside the virtual world. He either plays the role of a god who controls the fictional world from above, or he conceptualizes his activity as navigating a database. This dichotomy corresponds roughly to Aarseth's distinction between personal and impersonal perspective (63): 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 projected as a powerful figure external to the playing field 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.

Exploratory / Ontological. In the exploratory mode, the user is free to move around the database, but this activity does not make history nor does it alter the plot; the user has no impact on the destiny of the virtual world. In the ontological mode, by contrast, the decisions of the user 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. In his own taxonomy Aarseth comes up with two roughly similar categories, exploratory and configurative, but these two concepts are part of a longer list of "user functions" (64) that also comprises "interpretive" and "textonic" (the latter the ability to add permanent elements to the text). I see no point in regarding "interpretive" as a distinctive user function, since interpretation is involved in all intelligent text handling (2). Within the present framework, moreover, it is not necessary to distinguish "textonic" from "ontological," since the ability to add permanent components to the text presupposes the demiurgic power to co-create the virtual world. The textonic function is therefore just one of the various modes of ontological participation. Other modes consist of adding non-permanent text, as in MOO dialogue, and of building the virtual world by selecting objects and actions from a fixed set of system-internal possibilities.

Whereas the distinction internal-external is analog, the dichotomy exploratory-ontological is strictly digital. The user can situate herself at various distances from the fictional world. But her decisions either do or do not have the power to affect the history of the fictional world.

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 the "novels" of Michael Joyce, Stuart Moulthrop, or Mark Amerika --interactivity consists of the freedom to chose 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 lexia, 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 path 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 which 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. The reader regards the text less as a world in which to immerse himself than as a database to be searched. 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 jig-saw 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 jig-saw puzzle subordinates the image to the construction process, external/exploratory interactivity de-emphasizes the narrative itself in favor of the game of its discovery. The external/exploratory mode is therefore better suited for self-referential fiction than for narrative worlds that hold us under their spell 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, to paraphrase Brenda Laurel (1993:14), the user takes a virtual body with her into the fictional world, but her role in this world is limited to actions that have no bearing on 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.) The user has a seat on the stage; she may even play a cameo role, but she is not a protagonist in the action. This does not mean that her persona is limited to passive roles. Her character within the fictional world may be scripted as that of a traveler, a confidante, a historian, or a detective who tries to solve a mystery. The user exercises her agency by moving 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 story, 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 case, one level is predetermined, while the other is created in real time by the actions of the user. Example: the computer game *Myst*, where the user explores an island and solves certain puzzles in order 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 observe every thread in the plot.
- Narratives focused on interpersonal relations. The reader could for instance get the story from one character's point of view, then switch to another character's version.
- 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. It could also be a computer game like *The Manhole* (an old game from the late eighties by the same author as *Myst*): the user moves around a fantastic world, meets characters, looks at objects, and imagines a story holding all the screens together.

- The narrative of place, whose focus is the in-depth exploration of a specific location, rather than travel across space. An example of this type of narrative is the hypertext fiction *Marble Springs* 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 life of its female inhabitants. (The life of the men is left to the reader to write.). In a work of this type, narrative interest resides not in an overarching plot, this 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 position external to both the time and space of the fictional world, he specifies their properties, makes decisions for them, throws obstacles in their way, and sends them toward different destinies lines by altering their environment. A classical example of this type of interactivity is the DVD movie *I'm Your Man*. 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 choice, the spectator assumes an authorial stance toward the protagonists, since he creates their moral character, which in turn determines their fate. This activity of playing with parameters to see how the system will evolve is similar to the operation of a simulation system. Since the operator of the narrative system is external to the fictional world, he has no 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 pattern of their interconnections.

From a thematic point of view, this mode of interactivity lends itself to what I would call "virtual history narratives" (Ferguson 1997). In the newly fashionable field of virtual history, serious scholars devote their precious time debating such questions as-to parody 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 idea 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. This is the same idea as 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 co-author 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 combinatorial 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 books *Choose Your Own Adventure*. The underlying structure of these stories is a tree-shaped diagram, on which each branch is kept separate from the others. This enables the

enjoyment of games, why would designers put so much effort into the creation of a narrative interface? Why would 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 narrativity of action games functions as what Kendall Walton 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, which interrupt the game, to immerse the player in the game world. The fact that it is necessary to temporarily remove control from the user to establish the narrative frame brings however further evidence to the claim that interactivity is not a feature that facilitates the creation of narrative meaning.

At the present time, the thematic and structural repertory of ontological/internal interactivity is quite limited. Adventure and role-playing games implement the archetypal plot that has been described by Joseph Campbell and Vladimir Propp: the quest of the hero across a land filled with many dangers to defeat evil forces and conquer a desirable object. The main deviance from the archetype is that the hero can lose, and that the adventure never ends. In most action games, this archetype is further narrowed down to the pattern that underlies all wars, sports competition, and religious myth, namely the fight between good (me) and evil (the other) for dominance of the world.

As was the case in Propp's corpus of Russian fairy tales, individual games differ from each other through the concrete motifs that flesh out the archetypal structure. In a predominantly visual medium, the element of narrative that offers the richest potential for variation is the setting (5). 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 be bored. As I suggest above, living one's life is a matter of constantly engaging with the world and responding to its "affordances" (6). Moreover, the player wants his 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 pre-plan each possible narrative development, as do the *Choose Your Own Adventures* texts, but they make sure that the player's options will remain within a certain range, so that his overall destiny will not deviate from the general line of the master plot. In the case of shooting, the user's choices consists 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 she cannot go through the walls. When the player chooses a direction, he sees his 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 I think that 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. I am not trying to defend the violence of computer games, but it seems to me that the theme of shooting exploits with a frightful efficiency the reactive nature of the medium.

designer to maintain a strict control over the linear sequence of events (3).

Another example of external ontological interactivity is the simulation game, such as *Simcity*, *Simlife*, or *Caesar*. In these games, the user rules over of a complex system, such as a city, an ant colony, or an empire, and his decisions affect the evolution of the system. The network of decisions can be denser than in a *Choose Your Own Adventure* text, because the possible developments are narrative in a looser sense of the term: these narratives do not consist of interpersonal relations, but of the sequence of transformations that affect a micro-environment. There is really only one "character" in the story, the city, ant colony or empire, and this character has no consciousness of its own. It is just the sum of multiple micro-processes. Moreover, the range of possible developments at any given point depends only on the current state of the fictional world. It is therefore easy for the system to compute a menu of options that will not compromise narrative coherence. In a classical narrative, by contrast, the possible futures are determined by the entire past history of the fictional world, and it is much more difficult to create a choice of actions that remain consistent with the past.

While the operation of a simulation system requires a god-like 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 fate is at stake in the way they govern. The mayor will be voted out of office if his administration of the city does not please his 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. Here the user is cast as a character who determines his own fate by acting within the time and space of a fictional world. In this type of system interactivity must be intense, since we live our lives by constantly engaging with the world that surrounds us. The interaction between the user and the fictional world produces a new life, and consequently a new life-story, with every run of the system. This destiny is created dramatically, by being enacted, rather than diegetically, by being narrated (4). The player of a game is usually too deeply absorbed in the pursuit of a goal to reflect on the plot that he writes through his actions, but when people describe their sessions with computer games, their reports typically takes the form of a story. Consider for instance this review by Peter Olafson of the game *Combat Mission*, which simulates the German campaign in 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 (New York Times, 10/5/00).

Many people will rightly argue that computer games are played for the sake of solving problems and defeating opponents, of refining strategic skills and of participating in on-line communities, and not for the purpose of creating a "trace" that reads as a story. Yet if narrativity were totally irrelevant to the

Conclusion

What, in the end, is the mode of participation of digital texts in narrativity ? Offering a uniform answer to this question would ignore the generic diversity of the field. The issue must be treated separately for each of the three main cybertext genres: hypertext, VR-type environments, and computer games. For the first and second category the answer is rather straightforward. Hypertext may or may not succeed in creating coherent, sustained narrative meaning on the macro or micro level, nor does it necessarily aim to create such a meaning, but when it does, it tells a story to the reader in the same diegetic mode as print novels or short stories. It just makes the recovery of narrative meaning more problematic than in the case of standard print novel (a category that, needless to say, excludes postmodern texts). As for interactive drama in a VR environment, it offers a standard case of mimetic, or dramatic narrativity. Just as in drama or cinema the story is not (normally) *told* to the spectator, but enacted by the actors and reconstituted by the spectator on the basis of the observed actions, so in VR environments a story may (or may not, depending on the presence of a script) arise out of the user's interaction with the objects and animated citizens of the virtual world. The main difference with the narrativity of drama and movies resides in the fusion of the actor and spectator (=beneficiary) functions. It is the same person who participates in the enacting of a plot, and reads a story from the action that takes place in the virtual world.

Whereas hypertext and virtual environments implement respectively diegetic and mimetic narrativity, the two traditional literary modes defined by Plato, the case of computer games is more problematic. First, computer games do not always make use of narrative themes; they only do so when the player's actions can be naturalized as the solving of a familiar type of problem, such as masterminding military operations or sinking golf balls into holes. ("Familiar" must be taken here in an imaginative, not in an experiential sense: few of us have actually hunted and shot bad guys.) A game such as Tetris represents the lowest degree of narrativity, because "fitting blocks of various shapes into slots as they fall from the top of the screen" is hardly interpretable as the pursuit of human interests in a concrete situation (7). Second, the use of narrative elements in computer games such as individuated characters, concrete setting and naturalizable goals and actions is not an end in itself, but a means toward the goal of luring the player into the game-world. Narrativity performs an instrumental rather than a strictly aesthetic function: once the player is immersed in the game, the narrative theme may be backgrounded or temporarily forgotten. Though the game can only be recounted in narrative discourse, as I have suggested above, the user's enjoyment of the game during the live session is not primarily a function of the aesthetic value or tellability of the virtual narrative created through her actions; computer games, like sports, are not played for the sake of watching the replay (8). Moreover, if the recounting ever takes place, it will be done from a retrospective point of view that stands in sharp contrast to the prospective, anticipatory attitude of the game player.

Are we then entitled to say that a computer game is, or can be a narrative ? To parody former President Clinton, it all depends on what the meaning of "is" is. Those who deny narrativity to games on the ground that the point is to play, not to hear stories nor to produce a trace readable as narrative adhere to a narrow interpretation of the word "is," an interpretation that reduces the possible modes of participation of a text in a narrative representation to the traditional modes of literary narrativity. The inability of literary narratology to account for the experience of games does not mean that we should throw away the concept of narrative in ludology; it rather means that we need to

expand the catalog of narrative modalities beyond the diegetic and the dramatic, by adding a phenomenological category tailor-made for games. In elaborating this category, we can take a clue from the relation between the diegetic and the mimetic mode. What justifies us in calling movies and drama narrative is the shape of the mental representation formed in the mind of the spectator; if this spectator were to translate his mental image into language, he would produce an act of narration—a diegetically presented narrative. A dramatic narrative is thus a virtual, or potential diegetic one. With games we can extend virtuality one step further. The player perform actions which, were he to reflect upon them, would form a dramatic plot—though this plot is not normally his focus of attention during the heat of the action (9). Games thus embody a virtualized, or potential dramatic narrativity, which itself hinges on the virtual diegetic narrativity of a retelling that may never take place.

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Notes

* This article was first presented as a paper at the 2001 Computer Games & Digital Textualities conference in Copenhagen.

1. Reported by Auletta, 46.
2. Aarseth's point in postulating this category is to distinguish standard linear print text from ergodic ones, but standard texts could be more economically described through the absence of the other three user functions.
3. 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 they use the second person, the reader relates to this "you" as if he were a "he." In a branching story about Pinocchio, for instance, the reader holds the strings of a puppet named Pinocchio, and he maintains an authorial perspective over the plot, rather than feeling emotionally caught in the current destiny of Pinocchio. A sane reader will not feel crushed if his 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.
4. The diegetic and mimetic/dramatic modes are combined in those sports simulation games where a broadcaster describes the action. These games typically belong to the third category, but it is at least logically possible for an action game to contain a narrative voice.
5. This potential for variety is severely limited by technological factors. To be both realistic and easily navigable (i.e. react quickly to the user's actions, so as to give the impression of continuous movement), digital displays rely heavily on texture patterns. This explains why most recent games take place in an indoor landscape that looks very much the same in all applications.
6. This term, now popular in the design of virtual environments, was originally coined by the psychologist J.J. Gibson to describe what possibilities of action are contained or encoded in objects.
7. The narrativity of Tetris would increase if the player stimulated herself by imagining that she is a slave building a wall from bricks

thrown at her at an increasing rate by a sadistic master, and that she will survive only as long as she is not buried under the falling blocks.

8. An avid game player tells me however that he enjoys watching replays of action in the simulation game Caesar. For this type of user, the narrative pleasure taken in at least some kinds of games is not that far removed from the mode of appreciation typical of drama and movies.
9. The situation would be different if computer games could emancipate themselves from the tyranny of the market. At the present time computer games suffer from the same economic pressure as Hollywood movies: they are expensive to produce, and the investment can only pay off if they reach a wide audience. This pressure explains in part the stereotyped nature of game plots. On the shelves of computer stores, there is only room for the gaming equivalent of best-selling novels. Literature has been able to explore a wide variety of narrative formulae because it is cheap to produce; if games could enjoy a comparable freedom of expression, we might see hybrids of literature and games which would place greater aesthetic emphasis on the plot. Then indeed, the player would reflect on the storyline in the very act of creating it, as is ideally the case in interactive drama.

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