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Introduction

Few of us have actually donned an HMD (head-mounted display) and DGs (data gloves), and none has entered the digital wonderland dangled before our eyes by the early developers of virtual reality: a computer-generated three-dimensional landscape in which we would experience an expansion of our physical and sensory powers; leave our bodies and see ourselves from the outside; adopt new identities; apprehend immaterial objects through many senses, including touch; become able to modify the environment through either verbal commands or physical gestures; and see creative thoughts instantly realized without going through the process of having them physically materialized.

Yet even though virtual reality as described above is still largely science fiction, still largely what it is called—a virtual reality—there is hardly anybody who does not have a passionate opinion about the technology: VR will someday replace reality; VR will never replace reality; VR challenges the concept of reality; VR will enable us to rediscover and explore reality; VR is a safe substitute for drugs and sex; VR is pleasure without risk and therefore immoral; VR will enhance the mind, leading us to new powers; VR is addictive and will enslave us; VR is a radically new experience; VR is as old as Paleolithic art; VR is basically a computer technology; all forms of representation create a VR experience; VR undermines the distinction between fiction and reality; VR is the triumph of fiction over reality; VR is the art of the twenty-first century, as cinema was for the twentieth; VR is pure hype and ten years from now will be no more than a footnote in the history of culture and technology.

We may have to wait until the new century reaches adulthood to see whether these promises and threats will materialize. But since the *idea* of VR is very much a part of our cultural landscape, we don't have to wait that long to explore the perspectives it opens on representation. Approaching VR as a semiotic phenomenon, I propose in this book to rethink textuality, mimesis, narrativity, literary theory, and the cognitive processing of texts in the light of the new modes of artistic world construction that have been made possible by recent developments in electronic technology.

VR has been defined as an "interactive, immersive experience generated by a computer" (Pimentel and Teixeira, *Virtual Reality*, 11). As a literary theorist I am primarily interested in the two dimensions of the VR experience as a novel way to describe the types of reader response that may be elicited by a literary text of either the print or the electronic variety. I propose therefore to transfer the two concepts of immersion and interactivity from the technological to the literary domain and to develop them into the cornerstones of a phenomenology of reading, or, more broadly, of art experiencing. In the course of this investigation we will visit both traditional literary texts and the new genres made possible by the digital revolution of the past two decades, such as hypertext, art CD ROMs, synchronic role-playing games (MOOs), the largely virtual genre of interactive drama, and its embryonic implementations in electronic installation art. My purpose will be twofold: to revisit print literature, more specifically the narrative kind, in terms of the concepts popularized by digital culture, and, conversely, to explore the fate of traditional narrative patterns in digital culture.

The history of Western art has seen the rise and fall of immersive ideals, and their displacement, in the twentieth century, by an aesthetics of play and self-reflexivity that eventually produced the ideal of an active participation of the appreciator—reader, spectator, user—in the production of the text. This scenario affects both visual and literary art, though the immersive wave peaked earlier in painting than in literature.

In pre-Renaissance times painting was more a symbolic representation of the spiritual essence of things than an attempt to convey the illusion of their presence. Its semiotic mode was signification rather than simulation. More attentive to what Margaret Wertheim (*Pearly Gates*, 87) calls "the inner eye of the soul" than to the "physical eye of the body," medieval artists painted objects as they believed them to be, not as they appeared to easily deceived senses. (The same can be said of children's drawings that represent the sky as a thin line at the top of the page rather than as a background behind figures.) Pictorial space was a strictly two-dimensional surface from which the body of the spectator was excluded, since bodies are three-dimensional objects.

All this changed when the discovery of the laws of perspective allowed the projection of a three-dimensional space onto a two-dimensional surface. This projection opens up a depth that assigns spatial coordinates—the center of projection, or physical point of view—to the body of the spectator. Perspective painting immerses a virtual body in an environment that stretches in imagination far beyond the confines of the canvas. From its spatial point of view the embodied gaze of the spectator experiences the depicted objects as virtually present, though the flat surface of the painting erects an invisible wall that prevents physical interaction. This strictly visual immersion reached its high point in the incredible trompe l'oeil effects of the Baroque age. The frescoes of Baroque churches blur the distinction between physical and pictorial space by turning the latter into a continuation of the former.

The illusion of a penetrable space received a first challenge when impressionism disoriented the eye with visible brushstrokes that directed attention to the surface of the canvas, and with shimmering light effects that blurred the contours of objects. Though impressionistic space is still three-dimensional, it opens itself to virtual bodies only after the mind completes a complex process of interpretation and construction of sensory data. For the spectator who has assimilated the lesson of impressionism, visual space can no longer be taken for granted.

In the early twentieth century, pictorial space either folded down into a play of abstract shapes and colors on a canvas that openly displayed its two-dimensionality, or exploded into the multiple perspectives of cubist experiments. Whereas the return to flat representation expelled the body from pictorial space, the cubist approach shattered the physical integrity of both space and the body by forcing the spectator to occupy several points of view at the same time. If abstract and cubist paintings lure the spectator into a game of the imagination, this game is no longer the projection of a virtual body in a virtual space but the purely mental activity of grouping shapes and colors into meaningful configurations. As art became more and more conceptual, the eye of the mind triumphed once again over the eye of the body.

But the appeal of a pictorial space imaginatively open to the body is

hard to kill off, and in the second third of the twentieth century, immersive ideals made a notorious comeback with the sharply delineated dreamscapes of surrealism. The art scene is now split between conceptual schools that engage the mind, hyperrealistic images that insist on the presence of objects to the embodied eye, and three-dimensional installation art in which the actual body is placed in an intellectually challenging environment. By letting the user walk around the display, and occasionally take physical action to activate data, installation art offers a prefiguration of the combination of immersion and interactivity that forms the ideal of VR technology.

In the literary domain, no less than in the visual arts, the rise and fall of immersive ideals are tied to the fortunes of an aesthetics of illusion, which implies transparency of the medium. The narrative style of the eighteenth century maintained an ambiguous stance toward immersion: on one hand, it cultivated illusionist effects by simulating nonfictional narrative modes (memoirs, letters, autobiographies); on the other, it held immersion in check through a playful, intrusive narrative style that directed attention back and forth from the story told to the storytelling act. The visibility of language acted as a barrier that prevented readers from losing themselves in the story-world.

The aesthetics of the nineteenth-century novel tipped this balance in favor of the story-world. Through techniques that are examined in greater detail in chapters 4 and 5 of this book, high realism effaced the narrator and the narrative act, penetrated the mind of characters, transported the reader into a virtual body located on the scene of the action, and turned her into the direct witness of events, both mental and physical, that seemed to be telling themselves. Readers not only developed strong emotional ties to the characters, they were held in constant suspense by the development of the plot. The immersive quality of nineteenth-century narrative techniques appealed to such a wide segment of the public that there was no sharp distinction between "popular" and "high" literature: wide strata of society wept for Little Nell or waited anxiously for the next installment of Dickens's serial novels.

The rest of the story has been told many times: how literature, cross-fertilized with the New Criticism, structuralism, and deconstruction, took a "linguistic turn" in the mid-twentieth century, privileged form over content, emphasized spatial relations between words, puns, intertextual allusion, parody, and self-referentiality; how the novel subverted plot and character, experimented with open structures and permutations, turned into increasingly cerebral wordplay, or became indistinguishable from lyrical prose. This evolution split literature into an intellectual avant-garde committed to the new aesthetics and a popular branch that remained faithful to the immersive ideals and narrative techniques of the nineteenth century. (Ironically, the high branch turned out to be heavily dependent on the resources of the low branch for its game of parody.) As happened in the visual arts, immersion was brought down by a playful attitude toward the medium, which meant in this case the exploitation of such features as the phonic substance of words, their graphic appearance, and the clusters of related or unrelated senses that make up their semantic value field. In this carnivalesque conception of language, meaning is no longer the stable image of a world in which the reader projects a virtual alter ego, nor even the dynamic simulation of a world in time, but the sparks generated by associative chains that connect the particles of a textual and intertextual field of energies into ever-changing configurations. Meaning came to be described as unstable, decentered, multiple, fluid, emergent—all concepts that have become hallmarks of postmodern thought.

Though this game of signification needs nothing more than the encounter between the words on the page and the reader's imagination to be activated, it is easy to see how the feature of interactivity conferred upon the text by electronic technology came to be regarded as the fulfillment of the postmodern conception of meaning. Interactivity transposes the ideal of an endlessly self-renewable text from the level of the signified to the level of the signifier. In hypertext, the prototypical form of interactive textuality (though by no means the most interactive), the reader determines the unfolding of the text by clicking on certain areas, the so-called hyperlinks, that bring to the screen other segments of text. Since every segment contains several such hyperlinks, every reading produces a different text, if by *text* one understands a particular set and sequence of signs scanned by the reader's eye. Whereas the reader of a standard print text constructs

personalized interpretations out of an invariant semiotic base, the reader of an interactive text thus participates in the construction of the text as a visible display of signs. Although this process is restricted to a choice among a limited number of well-charted alternatives—namely, the branching possibilities designed by the author—this relative freedom has been hailed as an allegory of the vastly more creative and less constrained activity of reading as meaning formation.

These analogies between postmodern aesthetics and the idea of interactivity have been systematically developed by the early theorists of hypertext, such as George Landow, Jay David Bolter, Michael Joyce, and Stuart Moulthrop. These authors were not only literary scholars, they had also contributed to the development of hypertext through the production of either software, instructional databases, or literary works,[1] and they had a stake in the promotion of the new mode of writing. They chose to sell hypertext to the academic community—an audience generally hostile to technology but also generally open to postmodern theory—by hyping their brainchild as the fulfillment of the ideas of the most influential French theorists of the day, such as Barthes, Derrida, Foucault, Kristeva, Deleuze, Guattari, and Bakhtin—the latter an adopted ancestor. Many of those who came to electronic textuality from literary theory happily joined in the chorus. To cite a few particularly telling examples of this rhetoric, Bolter calls hypertext a "vindication of postmodern theory," as if postmodern ideas were the sort of propositions that can be proved true or false ("Literature in the Electronic Space," 24); Richard Lanham speaks of an "extraordinary convergence" of postmodern thought and electronic textuality (*Electronic Word,* chap. 4);[2] and Ilana Snyder argues that hypertext teaches "deconstructive skills" that readers supposedly do not acquire from standard texts (*Hypertext,* 119).[3] Though all these comments describe hypertext, not interactivity per se, it was the interactive nature of the genre that inspired these pronouncements.

The list of the features of hypertext that supports the postmodernist approach is an impressive one. It is headed by Roland Barthes and Julia Kristeva's notion of *intertextuality,* the practice of integrating a variety of foreign discourses within a text through such mechanisms as quotation, commentary, parody, allusion, imitation, ironic transformation, rewrites, and decontextualizing/recontextualizing operations. Whether intertextuality is regarded as a specific aesthetic program or as the basic condition of literary signification, it is hard to deny that the electronic linking that constitutes the basic mechanism of hypertext is an ideal device for the implementation of intertextual relations. Any two texts can be linked, and by clicking on a link the reader is instantly transported into an intertext. By facilitating the creation of polyvocal structures that integrate different perspectives without forcing the reader to choose between them, hypertext is uniquely suited to express the aesthetic and political ideals of an intellectual community that has elevated the preservation of diversity into one of its fundamental values.

The device also favors a typically postmodern approach to writing closely related to what has been described by Lévi-Strauss as *bricolage* (tinkering, in Sherry Turkle's translation). In this mode of composition, as Turkle describes it (*Life on the Screen,* 50–73), the writer does not adopt a "top-down" method, starting with a given idea and breaking it down into constituents, but proceeds "bottom-up" by fitting together reasonably autonomous fragments, the verbal equivalent of *objets trouvés,* into an artifact whose shape and meaning(s) emerge through the linking process. The result is a patchwork, a collage of disparate elements, what Gilles Deleuze and Félix Guattari have called a "machinic assemblage" (*A Thousand Plateaus,* 332–35). As Silvio Gaggi has shown, this broken-up structure, as well as the dynamic reconfiguration of the text with every new reading, proposes a metaphor for the postmodern conception of the subject as a site of multiple, conflicting, and unstable identities.

While hypertext can bring together the heterogeneous, it can also break apart elements traditionally thought to belong together. The dismantling effect of hypertext is one more way to pursue the typically postmodern challenge of the epistemologically suspect coherence, rationality, and closure of narrative structures, one more way to deny the reader the satisfaction of a totalizing interpretation. Hypertext thus becomes the metaphor for a Lyotardian "postmodern condition" in which grand narratives have been replaced by "little stories," or perhaps by no stories at all—just by a discourse reveling in the Derridean performance of an endless deferral of signification. Through

its growth in all directions, hypertext implements one of the favorite notions of postmodernism, the conceptual structure that Deleuze and Guattari call a "rhizome." In a rhizomatic organization, in opposition to the hierarchical tree structures of rhetorical argumentation, the imagination is not constrained by the need to prove a point or to progress toward a goal, and the writer never needs to sacrifice those bursts of inspiration that cannot be integrated into a linear argument.

Building interactivity into the object of a theoretical mystique, the "founding fathers" of hypertext theory promoted the new genre as an instrument of liberation from some of the most notorious bêtes noires of postmodern thought: linear logic, logocentrism, arborescent hierarchical structures, and repressive forms of power. George Landow writes, for instance, that hypertext embodies the ideal of a nonhierarchical, decentered, fundamentally democratic political system that promotes "a dialogic mode of collective endeavor" (*Hypertext 2.0*, 283): "As long as any reader has the power to enter the system and leave his or her mark, neither the tyranny of the center nor that of the majority can impose itself" (281). Over twenty years ago Roland Barthes identified the figure of the author as one of these oppressive forms of authority from which readers must be liberated: "We know to give writing its future, it is necessary to overthrow the myth [of the author]: the birth of the reader must be at the cost of the death of the Author" ("Death of the Author," 78). The purpose of new forms of writing—such as what Barthes called "the scriptible"—is "to make the reader no longer a consumer but a producer of text" (*S/Z*, 4).

For the critics mentioned above, interactivity is just what the structuralist doctor (would have) ordered: "There is no longer one author but two, as reader joins author in the making of the text," writes Bolter ("Literature in the Electronic Space," 37). For Michael Joyce, hypertexts are "read when they are written and written as they are read" (*Of Two Minds*, 192). Or to quote again Landow: "Electronic linking reconfigures our experience of both author and authorial property, and this reconception of these ideas promises to affect our conceptions of both the authors (and authority) of texts we study and *of ourselves as authors*" (*Hypertext 2.0*, 25; my italics). In *Grammatron*, a hypertextual novel-cum-theory that challenges traditional generic distinctions, Mark Amerika takes the cult of interactivity to new extremes, by

hailing what he calls "hypertextual consciousness" as the advent of a new stage, perhaps the final one, in the political, spiritual, and artistic growth of mankind:

> The teleportation of Hypertextual Consciousness (HTC) through the smooth space of discourse networks creates an environment where conceptions of authorship, self, originality, narrative and commentary take on different meanings. One can now picture a cyborg-narrator creating a discourse network that serves as a distribution point for various lines of flight to pass through and manipulate data linked together by the collective-self. Directing a site (giving birth to a node) will be one way to reconfigure our notion of authorship but in reconfiguring this notion aren't we in effect radically-altering (killing) the author-as-self and opening up a more fluid vista of potential-becomings? (Fragment "Teleport")

To the skeptical observer, the accession of the reader to the role of writer—or "wreader," as some agnostics facetiously call the new role—is a self-serving metaphor that presents hypertext as a magic elixir: "Read me, and you will receive the gift of literary creativity." If taken literally—but who really does so?—the idea would reduce writing to summoning words to the screen through an activity as easy as one, two, three, click. Under these conditions no writer would ever suffer from the agony of the blank page. Call this writing if you want; but if working one's way through the maze of an interactive text is suddenly called writing, we will need a new word for retrieving words from one's mind to encode meanings, and the difference with reading will remain. One wonders what conclusions would have been drawn about the political significance of hypertext and the concept of reader-author if the above-mentioned critics had focused on the idea of *following* links, or on the limitation of the reader's movements to the paths designed by the author. Perhaps they would have been more inclined to admit that aesthetic pleasure, like political harmony, is a matter not of unbridled license but of controlled freedom.

While interactivity has been hyped as a panacea for evils ranging from social disempowerment to writer's block, the concept of immersion has suffered a vastly different fate. At best it has been ignored by

theorists; at worst, regarded as a menace to critical thinking. (A notable exception is Janet Murray, who devotes a chapter of her book *Hamlet on the Holodeck* to immersion as part of a more general discussion of the aesthetics of the electronic medium.) If we believe some of the most celebrated parables of world literature, losing oneself in a book, or in any kind of virtual reality, is a hazard for the health of the mind. Immersion began to work its ravages as early as the first great novel of European literature. "In short," writes Cervantes in *Don Quixote,* "he so immersed himself in those romances that he spent whole days and nights over his books; and thus with little sleeping and much reading, his brains dried up to such a degree that he lost the use of his reason" (58). The situation does not seem to be better in the virtual realities of the electronic kind: we hear tales of people suffering from AWS (Alternate World Syndrome), a loss of balance, feeling of sickness, and general "body amnesia" (Heim, *Virtual Realism,* 52), when they leave VR systems; of MOO addicts who cannot adapt to ROL (Sherry Turkle's acronym for "the rest of life"); or of children who experience emotional trauma when they inadvertently let their virtual pets die.

The major objection against immersion is the alleged incompatibility of the experience with the exercise of critical faculties. The semiotic blindness caused by immersion is illustrated by an anecdote involving the eighteenth-century French philosopher Diderot. As Wallace Martin reports, "He tells us how he began reading *Clarissa* several times in order to learn something about Richardson's techniques, but never succeeded in doing so because he became personally involved in the work, thus losing his critical consciousness" (*Recent Theories,* 58). According to Jay Bolter, the impairment of critical consciousness is the trademark of both literary and VR immersion: "But is it obvious that virtual reality cannot in itself sustain intellectual or cultural development. . . . The problem is that virtual reality, at least as it is now envisioned, is a medium of percepts rather than signs. It is virtual television" (*Writing Space,* 230). "What is not appropriate is the absence of semiosis" (231).

The cause of immersion has not been helped by its resistance to theorization. Contemporary culture values those ideas that produce brilliant critical performances, that allow the critic to deconstruct the

text and put it back together again in the most surprising configurations, but what can be said about immersion in a textual world except that it takes place? The self-explanatory character of the concept is easily interpreted as evidence that immersion promotes a passive attitude in the reader, similar to the entrapment of tourists in the self-enclosed virtual realities of theme parks or vacation resorts. This accusation is reinforced by the association of the experience with popular culture. "Losing oneself in a fictional world," writes Bolter, "is the goal of the naive reader or one who reads as entertainment. It is particularly a feature of genre fiction, such as romance or science fiction" (*Writing Space,* 155). Through its reliance on stereotypes, popular literature indeed turns the reading experience into something like taking a dip in a Jacuzzi: it is easy to get in, but you cannot stay in very long, and you feel tired once you get out.

But this does not mean that immersive pleasure is in essence a lowbrow, escapist gratification, as Bolter seems to imply. At its best, immersion can be an adventurous and invigorating experience comparable to taking a swim in a cool ocean with powerful surf. The environment appears at first hostile, you enter it reluctantly, but once you get wet and entrust your body to the waves, you never want to leave. And when you finally do, you feel refreshed and full of energy. As for the allegedly passive character of the experience, we need only be reminded of the complex mental activity that goes into the production of a vivid mental picture of a textual world. Since language does not offer input to the senses,[4] all sensory data must be simulated by the imagination. In "The Circular Ruins" Jorge Luis Borges writes of the protagonist, who is trying to create a human being by the sheer power of his imagination, "He wanted to dream a man: he wanted to dream him with minute integrity and insert him into reality" (*Ficciones,* 114). Similarly, we must dream up textual worlds with "minute integrity" to conjure up the intense experience of presence that inserts them into imaginative reality. Is this the trademark of a passive reader?

To counter these two trends it will be necessary to take a more critical look at interactivity, and a more sympathetic one at immersion. This attitude is admittedly no less biased than the approaches I want to avoid, but it offers an alternative to both the rapturous celebrations of digital literature and the Luddite laments for the book that

have greeted the recent explosion of information technologies. If I appear harsher on interactive than on immersive texts, it is not because I view the intrusion of the computer into literary territory as a threat to humanistic values, as does Sven Birkerts, the most eloquent champion of immersion, but because interactivity is still in an experimental stage while literature has already perfected the art of immersive world construction. It is precisely its experimental nature that makes interactivity fascinating. I am interested in the device not as a ready-made message-in-the-medium, as its postmodern advocates read it, but as a language and a *design* problem whose solutions will always be in the making. In my discussion of interactivity I therefore avoid allegorical readings and concentrate instead on the expressive properties of the feature, its potential and limitations, its control of the reader, and its problematic relation to immersion.

The organization of this book grew out of the very definition that inspired the whole project: "virtual reality is an immersive, interactive experience generated by a computer." We will begin by visiting the virtual as philosophical concept, move on to VR as technology, explore its two components, immersion and interactivity, and conclude the itinerary by considering what is for me the ultimate goal of art: the synthesis of immersion and interactivity. This book, then, is as much about virtual literature—literature that could be—as about the actual brand. But since we cannot even begin to envision the virtual without an eye on the real, my presentation interleaves theoretical chapters on the problematics of immersion and interactivity with short case studies of actual texts, labeled interludes, that anticipate, allegorize, or concretely implement one or both of the dimensions of the archetypal VR experience.

Judging by their current popularity in both theory and advertising language, the terms *virtual* and *virtuality* exert a powerful magnetism on the contemporary imagination, but as is always the case when a word catches the fancy of the general public, their meaning tends to dissolve in proportion to the frequency of their use. In its everyday usage the word *virtual* is ambiguous between (1) "imaginary" and (2) "depending on computers." (A third, more philosophical sense, does not seem as influential on the popular usage.) When we speak of

"virtual pets" we mean the computer image of corporeally nonexistent animal companions, but when we speak of "virtual technologies" we certainly do not mean something that does not exist, or we would not spend hundreds of dollars for computer software. Virtual technologies fabricate objects that are virtual in sense 1 but they are themselves virtual in sense 2. When N. Katherine Hayles characterizes the condition of contemporary mankind as "virtual," and further defines this condition as "the cultural perception that material objects are interpenetrated by information patterns" ("Condition of Virtuality," 69), she makes a culturally well accepted, but philosophically less evident, association: Why should information be regarded as virtual, or at least as meaningfully connected with virtuality? Is it because information enables us to build "virtual realities"—digital images that offer simulacra of physically habitable environments? Is it because informational patterns contain *in potentia* new forms of life (as in biological engineering), new forms of art, and, for the dreamers of the coupling of man and machine, new forms of humanity? Is it because information lives principally these days in the silicon memory of computers, invisible and seemingly inexistent until the user summons it to the screen?

I have suggested here three distinct senses of *virtual:* an optical one (the virtual as illusion), a scholastic one (the virtual as potentiality), and an informal technological one (the virtual as the computer-mediated). All three are involved in VR: the technological because VR is made of digital data generated by a computer; the optical because the immersive dimension of the VR experience depends on the reading of the virtual world as autonomous reality, a reading facilitated by the illusionist quality of the display; and the scholastic because as interactive system, VR offers to the user a matrix of actualizable possibilities. In the first chapter of this book I explore the optical and the scholastic interpretation of the virtual by relating them to the work of two prominent French theorists: Jean Baudrillard for the virtual as illusion and Pierre Lévy for the virtual as potentiality. I dwell on these two versions of the virtual not only for the sake of their involvement with VR technology but also because each of them presents important implications for literary theory and the phenomenology of reading.

In the second chapter I turn to VR proper. Though the current

state of the technology falls way short of the expectations raised at the time of its first introduction to the general public, the "myth" matters as much as the technological reality for a project that uses VR as metaphor, and I therefore move back and forth between the exalted vision of the early prophets and the more sober descriptions of the technical literature. Immersion in a virtual world is discussed from both a technological and a phenomenological point of view. Whereas the technological approach asks what features of digital systems produce an immersive experience, the phenomenological issue analyzes the sense of "presence" through which the user feels corporeally connected to the virtual world. I look for answers to this second question in the writings of a philosopher acutely aware of the embodied nature of perception, Maurice Merleau-Ponty. If these concerns seem to showcase immersion to the detriment of interactivity, it is not because VR subordinates one to the other—it may or it may not, depending on its ultimate purpose—but because immersion is by far the more problematic concept. We all know instinctively what interactivity consists of in a computer program—submitting input and receiving output—but it is much harder to tell what it means to feel immersed in a virtual world, and how digital technology and interface design can promote this experience.

The phenomenological idea of consciousness as a sense of being-in-the-world—or in this case, in a simulated world—is at the core of the theory and poetics of immersion presented in the second part of the book. The term *immersion* has become so popular in contemporary culture that people tend to use it to describe any kind of intensely pleasurable artistic experience or any absorbing activity. In this usage, we can be immersed in a crossword puzzle as well as in a novel, in the writing of a computer program as well as in playing the violin. Here, however, I would like to single out and describe a specific type of immersion, one that presupposes an imaginative relationship to a *textual world*—an intuitive concept to be refined in chapter 3. In the phenomenology of reading, immersion is the experience through which a fictional world acquires the presence of an autonomous, language-independent reality populated with live human beings.

For a text to be immersive, then, it must create a space to which the reader, spectator, or user can relate, and it must populate this space

with individuated objects. It must, in other words, construct the setting for a potential narrative action, even though it may lack the temporal extension to develop this action into a plot. This fundamentally *mimetic* concept of immersion remains faithful to the VR experience, since the purpose of VR technology is to connect the user to a simulated reality. It applies to novels, movies, drama, representational paintings, and those computer games that cast the user in the role of a character in a story, but not to philosophical works, music, and purely abstract games such as bridge, chess, and Tetris, no matter how absorbing these experiences can be.

Immersion may not have been particularly popular with the "textual" brands of literary theory—those schools that describe the text as a system of signs held together by horizontal relations between signifiers—but this does not mean that the experience has been totally ignored since these theories became mainstream. Chapter 3 discusses the work of some scholars working on the outskirts of literary studies—cognitive psychology, empirical approaches to literature, or analytic philosophy—who have addressed the issue that I call immersion, though they have done so under a variety of other names: Victor Nell's analysis of the psychological state of being "lost in a book"; Richard Gerrig's concept of transportation; the possible-worlds approach to the semantics of fictionality and its description of the phenomenology of reading fiction as an imaginative "recentering" of the universe of possibilities around a new actual world; Kendall Walton's theory of fiction as game of make-believe and his concept of "mental simulation"; and in an interlude, the spiritual exercise recommended by St. Ignatius of Loyola of a reading discipline involving all the senses in the mental representation of the textual world. These theories show that, far from promoting passivity, as its opponents have argued, immersion requires an active engagement with the text and a demanding act of imagining.

Whether textual worlds function as imaginary counterparts or as models of the real world, they are mentally constructed by the reader as environments that stretch in space, exist in time, and serve as habitat for a population of animate agents. These three dimensions correspond to what have long been recognized as the three basic components of narrative grammar: setting, plot, and characters. The

"poetics" proposed in chapters 4 and 5 associates these narrative elements with three distinct types of immersion—spatial, temporal, and emotional—and analyzes the narrative devices that favor each of them. In my discussion of temporal and emotional immersion I seek explanations for two closely related immersive paradoxes that have generated lively debate among philosophers and cognitive psychologists for a number of years: how readers can experience suspense the second or third time they read a text, even though they know how it ends; and how the fate of fictional characters can generate emotional reactions with physical symptoms, such as crying, even though readers know fully well that these characters never existed.

Chapter 6 examines the change of metaphor that marked the transition from immersion to interactivity as artistic ideals. Whereas the aesthetics of immersion implicitly associates the text with a "world" that serves as environment for a virtual body, the aesthetics of interactivity presents the text as a game, language as a plaything, and the reader as the player. The idea of verbal art as a game with language is admittedly not a recent invention; ancient literatures and folklore are full of intricate word games, and the novel of the eighteenth century engaged in very self-conscious games of narration. But it is only in the middle of the twentieth century, after the concept of game rose to prominence as a philosophical and sociological issue and began infiltrating many other disciplines, that literary authors developed the metaphor into an aesthetic program. The concept of "game" covers, however, a wide variety of activities, and it is too often used in a generic sense by literary critics. Chapter 6 narrows down the metaphor by exploring what kind of games and what specific features pertaining to these games provide meaningful analogies with the literary domain.

No less intuitively meaningful than immersion, the concept of interactivity can be interpreted figuratively as well as literally. In a figural sense, interactivity describes the collaboration between the reader and the text in the production of meaning. Even with traditional types of narrative and expository writing—texts that strive toward global coherence and a smooth sequential development—reading is never a passive experience. As the phenomenologist Roman Ingarden and his disciple Wolfgang Iser have shown, the construction of a textual world

or message is an active process through which the reader provides as much material as he derives from the text. But the inherently interactive nature of the reading experience has been obscured by the reader's proficiency in performing the necessary world-building operations. We are so used to reading classic narrative texts—those with a well-formed plot, a setting we can visualize, and characters who act out of a familiar logic—that we do not notice the mental processes that enable us to convert the temporal flow of language into a global image that exists all at once in the mind. Postmodern narrative deepens the reader's involvement with the text by proposing new reading strategies, or by drawing attention to the construction of meaning. Through their experimental and self-referential character, these texts stand as the illustration of a strong figural version of interactivity.

But the type of interactivity that receives the greatest attention in these pages is the one that largely owes its existence to electronic technology: the textual mechanisms that enable the reader to affect the "text" of the text as a visible display of signs, and to control the dynamics of its unfolding. Here again we encounter a contrast between a weak and a strong form. In the weak literal sense, discussed in chapters 7 and 8, interactivity is a choice between predefined alternatives. In chapters 9 and 10 I consider a stronger form in which the reader—more aptly called the interactor—performs a role through verbal or physical actions, thus actually participating in the physical production of the text. (By *text* I do not necessarily mean something that is permanently inscribed.)

Symmetry would demand that I split my coverage of interactivity into a theory and a poetics chapter, as I do for immersion, but in the case of interactivity the two concepts are much more entangled, and the scope and purpose of theory much more problematic. As a type of reading experience, immersion is a relatively speculative idea that needs to be defined. Its theorization depends on a particular conception of the literary text, while its poetics is a typology of its various manifestations. Interactivity, by contrast, is an empirical feature of certain types of text, and its plain existence is no more in need of demonstration in texts than in VR. We can debate endlessly what it means to be immersed, but if we stick to what I call a literal conception of interactivity, the mechanism is easily defined. What distin-

guishes the pure theory from the poetics of interactivity, in the current literature, is mainly a matter of ideological slant: we may call "theory" the postmodern/deconstructionist readings of interactivity discussed above, while a "poetics" would be a more descriptive and empirical approach that keeps its mind open as to what the uses and effects of interactivity might be. Most work on the subject of electronic textuality is a blend of the two approaches, but I would place the work of Landow, Bolter, Joyce, and Moulthrop on the theory end, though these scholars did make important contributions to both areas, while the more recent books of Espen Aarseth and Janet Murray clearly occupy the poetics end of the spectrum.

Bypassing theory, then, I present in chapter 7 a list of lists that examine a variety of concrete rhetorical problems associated with interactivity: the forms and functions of the device; the relations between interactivity, electronic support, and ergodic design (a concept proposed by Aarseth); the properties of the electronic medium and their exploitation in the creation of new modes of interface between the text and the reader; and the metaphors through which hypertext readers conceptualize interactivity.

Chapter 8 narrows down the inquiry to the possibility of creating genuinely narrative structures in an interactive environment. If narrativity is a reasonably universal semantic structure, a cognitive framework in which we arrange information to make sense of it as the representation of events and actions, it consists of a certain repertory of basic elements arranged into specific logical and temporal configurations. Several scholars have raised the question of narrativity in conjunction with hypertext, but the paradox of maintaining a reasonably solid semantic structure in a fluid environment has been generally avoided in favor of more discourse-oriented issues. (I am alluding here to the classic narratological distinction between discourse, the "expression plane of narrative" [Prince, *Dictionary*, 21], and story, the "content plane," the "what," the "narrated.") Aarseth, for instance, proposes a narratological reading of hypertext and computer games that remains entirely focused on the relevance of the parameters of Gérard Genette's model of the fictional narrative act: author, reader, narrator, and narratee. Landow discusses hypertext as a "reconfiguration of narrative" (*Hypertext 2.0*, chap. 6), but the interactive presentation that he has in mind is either a novel discourse phenomenon that leaves the narrative deep structure intact, or a fundamentally antinarrative device that results in the breaking apart of this deep structure. Literature can admittedly achieve significance by challenging narrative coherence and traditional plot structures, as postmodernism has amply demonstrated, but in giving up well-formed narrative content it also renounces the most time-tested formula for creating immersion.

The realization of the ideal of immersive interactivity is therefore crucially dependent on the development of what Janet Murray (*Hamlet*, chap. 7) has called "multiform plot" or "storytelling system": a collection of textual fragments and combinatory rules that generate narrative meaning for every run of the program, much in the way a Chomsky-type grammar produces a vast number of well-formed sentences by combining words according to syntactic rules. In such a "kaleidoscopic system," as Murray also calls it, the user's actions would create unforeseen combinations of elements, but the pieces would always interlock into a narratively meaningful picture. Murray illustrates the idea of the storytelling system with the example of the bards of oral culture who built ever-new narrative performances out of a fixed repertory of phrases, epithets, similes, and episodes, but the example cannot be directly transferred to the domain of electronic text design because oral epics are not interactive on the level of plot. Though live oral performance reacts to subtle clues from the audience—facial expressions, laughter, and the particular quality of the atmosphere—the bard does not normally consult the audience on how to continue the tale; and even if he did, the audience, knowing the plot, would probably ask for an episode that would readily fit into the global structure. In chapter 8 I look into designs that provide feasible solutions to the problem of interactive narrativity. This leads to an examination of the options between which the interactive text will have to choose in order to survive as an art form when the interest due to its novelty recedes.

Even when narrative coherence is maintained, though, immersion remains an elusive experience in interactive texts. In the last two chapters I argue that the marriage of immersion and interactivity requires the imagined or physical presence of the appreciator's bod

in the virtual world—a condition easily satisfied in a VR system but problematic in hypertext because every time the reader is asked to make a choice she assumes an external perspective on the worlds of the textual universe. In VR we act within a world and experience it from the inside, but in interactive texts of the selective variety we choose a world, more or less blindly, out of many alternatives, and we are not imaginatively committed to any one of them, because the interest of branching texts lies in the multiplicity of paths, not in any particular development.

As chapter 9 shows, VR is not the only environment that offers an experience both immersive and interactive: children's and adults' games of make-believe, fairs and amusement parks, ritual, Baroque art and architecture, and certain types of stage design in the theater propose an active participation of either an actual or virtual body in a reality created by the imagination. The study of these experiences should therefore provide valuable guidelines for the design of electronic texts. Chapter 10 expands the search for immersive interactivity to digital projects, such as computer games, MOOs, automated dialogue systems, installation art, and even a virtual form of VR—a blueprint for future projects—called interactive drama. It is symptomatic of the utopian nature of this quest for the ultimate artistic experience that the most perfect synthesis of immersion and interactivity should be found not in a real work but in a fictional one: the multimedia "smart" book described in Neal Stephenson's science-fiction novel *The Diamond Age.*

By proposing to read VR as a metaphor for total art, I do not mean to suggest that the types of art or entertainment discussed in these last two chapters are superior to the mostly immersive forms of part II or the mostly interactive ones of part III. If aesthetic value could be judged by numerical coefficients, as in certain "artistic" sports such as equestrian dressage or figure skating, a text that scored 10 on immersion and 1 on interactivity—a good realistic novel—would place higher than a text that scored 3 for each criterion. Whether or not future VR installations will be able to offer more than mediocrity on both counts, however, we can still use the *idea* of VR as a metaphor for the fullest artistic experience, since in the Platonic realm of ideas VR scores a double 10.

But why should the synthesis of immersion and interactivity matter so much for aesthetic philosophy? In its literal sense, immersion is a corporeal experience, and as I have hinted, it takes the projection of a virtual body, or even better, the participation of the actual one, to feel integrated in an art-world. On the other hand, if interactivity is conceived as the appreciator's engagement in a play of signification that takes place on the level of signs rather than things and of words rather than worlds, it is a purely cerebral involvement with the text that downplays emotions, curiosity about what will happen next, and the resonance of the text with personal memories of places and people. On the shiny surface of signs—the signifier—there is no room for bodies of either the actual or the virtual variety. But the recipient of total art, if we dare to dream such a thing, should be no less than the subject as Ignatius of Loyola defined it: an "indivisible compound" of mind and body.[5] What is at stake in the synthesis of immersion and interactivity is therefore nothing less than the participation of the whole of the individual in the artistic experience.