

Murray, Janet (1998): *Hamlet on the Holodeck*. Cambridge, MA: The MIT Press.

Chapter 4

Immersion

In short, he so buried himself in his books that he spent nights reading from twilight till daybreak and the days from dawn till dark; and so from little sleep and much reading, his brain dried up and he lost his wits. He filled his mind with all that he read in them, with enchantments, quarrels, battles, challenges, wounds, wooings, loves, torments, and other impossible nonsense; and so deeply did he steep his imagination in the belief that all the fanciful stuff he read was true, that . . . [h]e decided . . . to turn knight errant and travel through the world with horse and armour in search of adventures.

—Don Quixote de la Mancha

Don Quixote, living 150 years after the invention of the printing press, exemplifies the dangerous power of books to create a world that is “more real than reality.” He still stands for the part of each of us that longs to leap out of our everyday life into the pages of a favorite book or, as the ride designers promise us today, to “go into

the screen" of a thrilling movie. A stirring narrative in any medium can be experienced as a virtual reality because our brains are programmed to tune into stories with an intensity that can obliterate the world around us. This siren power of narrative is what made Plato distrust the poets as a threat to the Republic. It is what made Cervantes' contemporaries fear the new fad of silent reading.¹ It is what made the advent of movies and television so frightening to the dystopian writers of the twentieth century. The same enchantment that sent Don Quixote tilting at windmills recently caused an Arkansas woman to show up for jury duty in the Whitewater case wearing a *Star Trek* uniform.²

The age-old desire to live out a fantasy aroused by a fictional world has been intensified by a participatory, immersive medium that promises to satisfy it more completely than has ever before been possible. With encyclopedic detail and navigable spaces, the computer can provide a specific location for places we long to visit. A few clicks on the World Wide Web and we are instantly in one of the feudal fiefdoms of the "current Middle Ages" set up by the Society for Creative Anachronism or in the sick bay of the starship *Voyager* being examined by the cranky doctor. Unlike Don Quixote's books, digital media take us to a place where we can act out our fantasies. With a telnet connection or a CD-ROM drive, we can kill our own dragons or fly our own starship; putting on a VR helmet or standing before a magic screen, we can do it all in 3-D. For the modern Don Quixote, the windmills have been preprogrammed to turn into knights.

The experience of being transported to an elaborately simulated place is pleasurable in itself, regardless of the fantasy content. We refer to this experience as immersion. *Immersion* is a metaphorical term derived from the physical experience of being submerged in water. We seek the same feeling from a psychologically immersive experience that we do from a plunge in the ocean or swimming pool: the sensation of being surrounded by a completely other reality, as different as water is from air, that takes over all of our attention, our whole perceptual apparatus. We enjoy the movement out of our fa-

miliar world, the feeling of alertness that comes from being in this new place, and the delight that comes from learning to move within it. Immersion can entail a mere flooding of the mind with sensation, the overflow of sensory stimulation experienced in the television parlor in Bradbury's *Fahrenheit 451*. Many people listen to music in this way, as a pleasurable drowning of the verbal parts of the brain. But in a participatory medium, immersion implies learning to swim, to do the things that the new environment makes possible. This chapter is about such digital swimming, about the enjoyment of immersion as a participatory activity.

Entering the Enchanted Place

The computer itself, even without any fantasy content, is an enchanted object. Sometimes it can act like an autonomous, animate being, sensing its environment and carrying out internally generated processes, yet it can also seem like an extension of our own consciousness, capturing our words through the keyboard and displaying them on the screen as fast as we can think them. As Sherry Turkle documents in her perceptive research on the psychology of cyberspace, working on the computer can give us uninhibited access to emotions, thoughts, and behaviors that are closed to us in real life.³ MUDders and newsgroup members find it easy to project their deepest desires and fears onto people they have encountered only as words on a screen. People can fall in love very quickly over the Internet, and they also express their anger very easily (for example, by "flaming" one another in newsgroups). Some people put things on their home page (their site on the World Wide Web) that they have not told their closest friends. The enchantment of the computer creates for us a public space that also feels very private and intimate. In psychological terms, computers are liminal objects, located on the threshold between external reality and our own minds.⁴

Narrative is also a threshold experience. As we know from the work of child psychiatrist D. W. Winnicott, all sustained

make-believe experiences, from children's play to Shakespearean theater, evoke the same magical feelings as a baby's first teddy bear because they are "transitional objects." The teddy bear provides comfort because the child projects upon it both his memories of the soothing mother and his sense of himself as a small being who can be cuddled and hugged. But though it embodies these strong subjective elements, the teddy bear is also a real object with a physical presence outside of anything the child imagines about it. To the baby it has a richly ambiguous psychological location, shimmering with emotion but definitely not a hallucination. A good story serves the same purpose for adults, giving us something safely outside ourselves (because it is made up by someone else) upon which we can project our feelings. Stories evoke our deepest fears and desires because they inhabit this magical borderland. The power of what Winnicott called "transitional" experiences comes from the fact that "the real thing is the thing that isn't there."⁵ In order to sustain such powerful immersive trances, then, we have to do something inherently paradoxical: we have to keep the virtual world "real" by keeping it "not there." We have to keep it balanced squarely on the enchanted threshold without letting it collapse onto either side.

Because the liminal trance is so inherently fragile, all narrative art forms have developed conventions to sustain it. One of the most important ways they have done this has been to prohibit participation. Suzanne Langer, in her classic study of aesthetics, *Feeling and Form*, describes the "terrible shock" she received as a child watching a performance of James Barrie's *Peter Pan*:

It was my first visit to the theater, and the illusion was absolute and overwhelming, like something supernatural. At the highest point of the action (Tinkerbell had drunk Peter's poisoned medicine to save him from doing so, and was dying) Peter turned to the spectators and asked them to attest their belief in fairies. Instantly the illusion was gone; there were hundreds of children sitting in rows, clapping and even calling, while [the actress], dressed up as Peter Pan, spoke to us

like a teacher coaching us in a play in which she herself was taking the title role. I did not understand, of course, what had happened; but an acute misery obliterated the rest of the scene, and was not entirely dispelled until the curtain rose on a new set. (Pp. 318-19)

Langer attributes her distress to the fact that art is dependent on establishing distance. To her mind, Barrie committed a theatrical sin by violating the fourth-wall convention that prohibits actors from acknowledging the spectators. The playwright's invitation to enter the circle of enchantment created by the stage is for Langer a shocking violation of the compact between playwright and audience. "To seek delusion, belief, and 'audience participation' in the theater is to deny that drama is art" (p. 319).

Whether or not it is destructive to art, audience participation is also very awkward. The literature of the twentieth century includes many concrete visions of the kind of boundary problems a truly participatory narrative would present. For instance, in Woody Allen's classic story "The Kugelmass Episode" a humanities professor at City College finds a magician with a kind of Don Quixote machine, a box that will allow him to jump into the pages of any novel he takes into it. Appropriately enough, Kugelmass chooses *Madame Bovary* and finds bliss with his fellow daydreamer by arriving just between her romances with Leon and Rodolfe. But students all over the country are confused: "Who is this character on page 100? A bald Jew is kissing Mme Bovary?" (p. 67). Kugelmass's problem is similar to the one I experienced standing in front of the magic mirror in MIT's Media Lab. When we enter the enchanted world as our actual selves, we risk draining it of its delicious otherness.

A simpler means to enchantment would be to bring to life a world that we wholly invent, a universal fantasy that is charmingly portrayed in Crockett Johnson's classic picture book, *Harold and the Purple Crayon*. Harold, a little boy drawn in black and white, carries a magenta crayon at arm's length as he walks across the pages of the book, drawing as he goes. Harold begins by improvising a sidewalk,

an apple tree, and then a dragon to guard the apples. But the dragon scares him. His hand shakes and creates waves. He starts to drown in his own immersive world—until he thinks to draw a boat. In Johnson's fantasy, Harold's fluid imagination keeps getting him into and then out of such scrapes. External reality is represented by a black-and-white crescent moon that follows him no matter what he draws. At the end of his journey Harold becomes panicky when he cannot find his own room no matter how many buildings and windows he draws. Then he remembers that his window is always around the moon and realizes that he knows how to draw his way back into his own bed.

The digitally equipped Harold faces an intensification of Harold's perils. In the British space comedy *Red Dwarf*, a TV series, three unheroic space travelers—a fun-loving slob named Lister, a narcissistic humanoid evolved from a house cat, and the uptight moralistic Rimmer—receive a state-of-the-art “total immersion video” system based on mind reading. The game is called *Better Than Life*, and it is designed to immediately concretize the users' fantasies, like a sort of instantly programmable holodeck.⁶ Lister and Cat joyfully imagine a motorcycle, a plush resort, and glorious meals, but the neurotic Rimmer finds himself unable to sustain pleasurable fantasies and involuntarily injects into their virtual paradise a tax collector, a deadly tarantula, and a torture scene with killer ants. End of game.

Ursula LeGuin pursues the same problem with more seriousness in her multiform novel *The Lathe of Heaven*. Here George Orr, an ordinary man, discovers that he has the magical power to remake reality literally according to his dreams. Despite his best intentions to save the world from disaster, George repeatedly awakens from dreams of peace and plenty to find that he has accomplished these ends by inflicting worse and worse catastrophes—from plague to alien invasion—upon his society. When he falls in love, George is tortured by the possibility that he will accidentally imagine a world in which his beloved is never born. The possibility of a magical domain in which our dreams can come true also arouses our most anxious nightmares.

The more present the enchanted world, the more we need to be reassured that it is only virtual and the more we need to see Harold's moon reminding us that there is a way back to the external world.

Participatory narrative, then, raises several related problems: How can we enter the fictional world without disrupting it? How can we be sure that imaginary actions will not have real results? How can we act on our fantasies without becoming paralyzed by anxiety? The answer to all of these questions lies in the discovery of the digital equivalent of the theater's fourth wall. We need to define the boundary conventions that will allow us to surrender to the enticements of the virtual environment. We cannot pick up the magic crayon until we have a clear fix on Harold's moon.

Finding the Border

Part of the early work in any medium is the exploration of the border between the representational world and the actual world. It is commonplace in the twentieth century to point to elaborate simulations of reality (electronic and otherwise) as a new and dangerous thing, a distancing of human beings from direct experience. But part of our dismay at televised events, wax museums, and immersive theme parks, at what Umberto Eco identified as the “hyperreal” quality of much of American life,⁷ derives simply from the fact that we need time to get used to any increase in representational power. During this time one of our main activities, as creators and audience, involves testing for the boundaries of the liminal world.

At the beginning of the second part of *Don Quixote*, published ten years after the first, Cervantes has Don Quixote and Sancho Panza discuss the reception of the first part and quarrel with the representation of some of their adventures. Cervantes shows them meeting people who have read about them, thus mingling readers and fictional characters in the same illusory space. In the same way, characters on Web serials answer public fan mail and invite fans to post their own opinions and experiences to common bulletin boards. We get

the same shiver from these posts today that Cervantes' readers experienced in his time. Just as we became accustomed to such devices in fiction, so too will we become used to them in cyberspace.

Similarly, when the form of the novel was beginning to coalesce in the eighteenth century, Laurence Sterne wrote a self-deconstructing memoir called *Tristram Shandy* in which the narrator inserts black pages, numbers chapters as if they had been rearranged, claims to have torn out certain pages, and sends us back to reread certain chapters. In short, he does everything he can to remind us of the physical form of the book we are reading. Sterne is exhilarated at his sheer power of representation, at the fact that he can transmit the voice of the imaginary Shandy into our minds using nothing but printed words. The brilliant animator Chuck Jones created at the height of his powers a similar virtuoso performance in *Duck Amuck*, which pits the pencil of a sadistic animator (revealed in the last frames to be Bugs Bunny) against an exasperated Daffy Duck. As Daffy tries to perform, the backdrop is redrawn from farm scene to castle to igloo; he himself is continually redressed, distorted, and even erased; the sound is divorced from the picture, so that guitars behave like machine guns; and the screen is allowed to go blank. After all the elements of cartooning have been deconstructed, Daffy is revealed to be in a filmstrip and two versions of himself confront one another from adjoining frames. The cartoon celebrates the persistence of the illusion. Just as *Tristram Shandy* survives a totally black page, Daffy Duck survives a totally white screen. Once the illusory space is created, it has such psychological presence that it can almost divorce itself from the means of representation.

Computer-based narratives are already showing the same tendency to emphasize the border, celebrate the enchantment, and test the durability of the illusion. In the experimental narrative installation *Archeology of a Mother Tongue*, produced for the Banff Center for the Arts in 1993 by Toni Dove and Michael Mackenzie, a key narrative transition takes the form of a system crash, which simulates a power failure in the virtual city represented by the surreal interface. Interac-

tors must press a restart button on their screen to resume, and then find the city altered as if it had suffered a memory loss.⁸ Even less artistically ambitious narratives offer similar effects. When my son puts down the game controller for a moment and pauses the action on the *Escape from Mars* maze game, the Tasmanian devil he had been controlling does not freeze in place. He glares out from the screen and begins to tap his foot and wave impatiently. This engaging comic gesture emphasizes the boundary between the puppet controlled by the player and the written character. It is almost as if the programmer within the system is waving at us, but doing so in a manner that deepens rather than disrupts the immersive world.

In the seventeenth and eighteenth centuries it was common to play with the borders of the illusion by presenting a novel as a collection of actual letters. Readers at the time were often confused (even two hundred years later I recently had a student who believed the fictional preface to *Les Liaisons Dangereuses* and accepted the exaggerated seduction stories as a true account). Early television shows like *Ozzie and Harriet* and *Burns and Allen* often fused the actor and the television character, suggesting to the audience that the virtual TV world was close to the actual lives of the stars. The premise was often accepted at face value by 1950s audiences, but few people watching the 1990s sitcom *Seinfeld* think that the comedian lives in New York rather than Los Angeles, where the show is produced, even though the character has the same name as the star. Web-based narrative is now playing the same kind of trick on us, by not giving us two sets of names to distinguish the actors from the characters they play and by linking fictional characters to sites in the real world.

Another way of exploring the border is to explicitly dramatize it. Winsor McCay, working at the very beginning of film animation in 1914, performed a vaudeville act in which he stood in a spotlight on stage and gave commands to a charming animated dinosaur, named Gertie, who appeared beside him on a giant movie screen. Gertie would have to be coaxed out slowly by him, but then she would perform tricks at his direction, snap at him when she got angry, and cry

when he scolded her. At one point in the act McCay would take a prop cardboard apple, turn his back to the audience, and seem to throw it into the screen, where it appeared to land right in Gertie's mouth. At the dramatic climax of the act, McCay walked behind the screen and emerged as an animated drawing of himself. The animated McCay then stepped into Gertie's mouth so that she could lift him onto her back, where he took his bows while Gertie gracefully carried them both offscreen.⁹

The difference for the audience between the boundary experiments of earlier media and the ones that artists are now undertaking in the digital world is that this time *we* have also been invited into the mouth of the dinosaur.

Structuring Participation as a Visit

How will we know what to do when we jump into the screen? How will we avoid ripping apart the fabric of the illusion? Participation in an immersive environment has to be carefully structured and constrained. Ideally, the range of allowable behaviors should seem dramatically appropriate to the fictional world, just as ELIZA structured conversation in the format of a psychiatric interview and *Zork* constrained responses to the adventure game. For purposes of experiencing multisensory immersion, one of the simplest ways to structure participation is to adopt the format of a visit. The visit metaphor is particularly appropriate for establishing a border between the virtual world and ordinary life because a visit involves explicit limits on both time and space.

Amusement park fun house rides are a familiar model for an immersive visit that is also a narrative. The fun house has an entrance and an exit that mark the beginning and end of the story. As the visitor progresses on a moving platform, the dramatic tension builds from small surprises and hints of danger; then there are thrills and a mounting sense of threat or terror, which culminates in a big finish such as a free fall or an attacking beast. Like a movie set or

theatrical stage, the fun house ride is calculated to look as if it had a fuller existence, even though the illusion is meant to be seen only from a particular angle and in carefully timed momentary glimpses. A fun house is a movie made into a machine that you travel through.

Most amusement rides still assume that the visitor can do nothing more than sit and scream. But that does not mean that they are easier to make than movies. For instance, most of the dinosaurs in the movie *Jurassic Park* were part of a virtual set; computer models were drawn, rather than built, and then transferred directly to the film. Those that were built were only partial dinosaurs, meant to be photographed from one angle at a time. By contrast, the spectacular *Jurassic Park* attraction at the Universal Studios theme park has to be much more explicit. Its models are giant dinosaur-size robots that move realistically on special hydraulic cylinders designed to produce a smooth motion. They are made to be viewed from multiple angles and have special realistically textured skin that clings and flaps from the robot's metal frame. The amusement ride occupies five acres and accommodates three thousand visitors per hour on its twenty-five-person boats. The various events of the ride—the surprising appearances of the various dinosaurs, the flashing of warning lights, the glimpses of an overturned jeep, the attack of the dinosaurs, the destruction of the breeding lab—unfold as the boat passes the corresponding trigger point. Unlike the video-based *Back to the Future* or the graphics-based ride *Aladdin* rides (described in chapter 2), the *Jurassic Park* ride seems like a visit to a real place. The visitor even gets wet during the eighty-four-foot plunge that gives the ride its big finish. But *Jurassic Park* is not a place, any more than a theatrical stage is, since a visitor cannot step off the boat without destroying the experience. *Jurassic Park* is essentially a giant computer-driven machine for telling an immersive story, and the boat is the fourth wall, an enchanted threshold object that carries you into the immersive world—and then out again. Like Harold's moon, the *Jurassic Park* boat is both part of the illusory world and also a reminder of the

boundaries. Sitting within it, you are free to give way to terror without worrying about being able to find your way back.

Screen-based electronic environments can also provide the structure of an immersive visit. Here the screen itself is a reassuring fourth wall, and the controller (mouse or joystick or dataglove) is the threshold object that takes you in and leads you out of the experience. When the controller is very closely tied to an object in the fictional world, such as a screen cursor that turns into a hand, the participant's actual movements become movements through the virtual space. This correspondence, when actual movement through real space brings corresponding movement in the fantasy world, is an important part of the fascination of simple joystick-controlled videogames. Moreover, an electronic game that involves a maze and combatants is also very much like a fun house visit in that opponents keep popping out at you and obstacles keep appearing in your path in a randomized and therefore surprising fashion. This constant activity means that even if you move through the space without fighting, the world is still dramatically present; this is not a passive game board but a live-action stage.

By contrast, one of the limitations of the graphically immersive world of *Myst* is that it is dramatically static. Nothing happens of its own accord as the player wanders around in search of puzzles to solve. *Myst* sends us on a treasure hunt in a weirdly depopulated environment, a quest that is only partially motivated by the story. The lack of dynamic events reflects the simplicity of the underlying programming. *Myst* offers the interactor an elegant and seamless interface in which most of the activity of the game is moving forward through a space by mouse-clicking in the direction you wish to go. There are no enemies to encounter or people to bargain with. Few of the puzzles require any carrying of objects from one location to another. *Myst* is an unusually nonacquisitive and nonviolent game compared to most puzzle quests. The solution to the puzzles often depends on subtle aural cues, increasing the player's attentiveness to

the meticulous sound design. In short, there is almost nothing to distract you in *Myst* from the densely textured visual and aural environment, but this intense immersion in visiting the place comes at the cost of a diminished immersion in an unfolding story.

The visitor role is also exploited in the CD-ROM version of the starship *Enterprise*, a "technical manual" that promises to use "a subset of holodeck technology" to present the starship and that includes a voice-over tour from Commander Riker. The visuals are produced from video of the key sets from the TV series *Star Trek: The Next Generation* and processed with a virtual reality tool (QuickTime VR) that lets you rotate your onscreen position 360 degrees and step forward and backward within continuous space, a tremendous improvement over the discontinuities of still-frame representations like those in *Myst*. The movement is so fluid, the visuals have such authority, and the representation is so complete that our visit to the *Enterprise* has a magical quality; it is as if we are aboard the real starship, the canonical location of the fictional world of which the television and movie representation are just copies. But after we check out all the key places—the captain's ready room, the bridge, the lounge area on 10-Forward, the quarters of all the crew members—the visit to the *Enterprise* loses its immersive hold because nothing is happening there. In a digital environment we do not want to use a spaceship as a databank. The more we feel that we are actually there, the more we want to fly off on it and have adventures.

In environments based on the amusement park model, the story and the visit can be tightly meshed. Objects can perform for us as we pass in front of them, their performance triggered by our presence. But if the interactor is not allowed to step off the moving platform, the visit will have to be short and full of intense stimulation to hold our attention and keep us from wanting to go off to explore the space. A more exploratory visit, on the other hand, can feel very lonely without other characters to engage with or a drama that unfolds in real time. Because we experience ourselves as present in these im-

mersive worlds, as if we are on the stage rather than in the audience, we want to do more than merely travel through them.

The Active Creation of Belief

The pleasurable surrender of the mind to an imaginative world is often described, in Coleridge's phrase, as "the willing suspension of disbelief." But this is too passive a formulation even for traditional media. When we enter a fictional world, we do not merely "suspend" a critical faculty; we also exercise a creative faculty. We do not suspend disbelief so much as we actively *create belief*. Because of our desire to experience immersion, we focus our attention on the enveloping world and we use our intelligence to reinforce rather than to question the reality of the experience.

As the literary theorists known as the "reader response" school have long argued, the act of reading is far from passive: we construct alternate narratives as we go along, we cast actors or people we know into the roles of the characters, we perform the voices of the characters in our heads, we adjust the emphasis of the story to suit our interests, and we assemble the story into the cognitive schemata that make up our own systems of knowledge and belief. Similarly when we watch a movie, we take the separate spaces of the various sets and merge them into a continuous space that exists only in our minds. We take fragmentary scenes and mentally supply the missing actions; if someone is seen with a grocery bag and then working over a stove, we understand the meal is effortful. If someone is wearing an Ivy League sweatshirt, we might assume they are intelligent and earnest or maybe spoiled and preppy. We bring our own cognitive, cultural, and psychological templates to every story as we assess the characters and anticipate the way the story is likely to go.¹⁰

In a complex narrative world we can reinforce our belief by writing scholarly analyses or fanzine articles that analyze the underlying assumptions of the world, whether they concern Irish history or matter replicators. Encyclopedic writers like James Joyce, Faulkner, Tolkien,

or Gene Roddenberry evoke this kind of response by the encyclopedic detail and intricacy with which they present their fictional creations. Such immersive stories invite our participation by offering us many things to keep track of and by rewarding our attention with a consistency of imagination.

In digital environments we have new opportunities to practice this active creation of belief. For instance, in an interactive video program set in Paris that my research group designed in the 1980s for language learners, we included a working telephone, represented by a photograph of a phone whose keypad could be clicked on. Students found the phone in an apartment they were free to explore by stepping through a photographed space. Near the phone were the numbers of people they had been motivated to telephone by the plot of the story (and whose answering machines they reached when they called). If they punched in a number outside the game, they heard the authentic out-of-service message used in Paris. The story was mostly told in well-directed video segments, which the students also found enjoyable, but the telephone was one of the most popular features of the story. This was because it behaved as a functional virtual object and because it became part of the accomplishment of a specific goal. In short, it became real through use.¹¹

In the CD-ROM game *Star Trek: The Final Unity*, the player has to figure out how to free a woman scientist trapped under a pipe after an attack on a power plant. The pipe is too heavy to lift and it cannot be vaporized with the crew's phaser guns. The solution is to use a tricorder to record the coordinates of the pipe's location and then go down to the transporter room on the first floor to enter the coordinates into the transporter to "lock onto" the pipe and beam it off of her. If this is done right, the pipe appears in the transporter room, materializing to the accompaniment of the familiar tinkling transporter sounds. Operating the tricorder and the transporter in this way—which really only means clicking the mouse here and there on some unspectacular screen graphics—makes the world of the game seem much more present than does the same world on *Starship Enterprise*,

the more visually impressive CD-ROM. It is the experience of using the objects and seeing them work as they are supposed to in our hands that creates the feeling of being a part of the *Star Trek* world.

The great advantage of participatory environments in creating immersion is their capacity to elicit behavior that endows the imaginary objects with life. The same phenomenon occurs when a child rocks a teddy bear or says "Bang!" when pointing a toy gun. Our successful engagement with these enticing objects makes for a little feedback loop that urges us on to more engagement, which leads to more belief. As the digital art medium matures, writers will become more and more adept at inventing such belief-creating virtual objects and at situating them within specific dramatic moments that heighten our sense of immersed participation by giving us something very satisfying to do.

Structuring Participation with a Mask

Cyberspace gains much of its immersive power from spectacular effects—arresting visuals like the fast-moving, pulsating explosions of the videogame, the flashing billboards of the World Wide Web, and the hallucinatory apparitions of virtual reality landscapes. This visual pageantry links computer culture to ancient forms of entertainment. Spectacle has traditionally marked the descent into a gathering of ordinary mortals of a godlike being—Dionysus, a Hopi kachina, the pope during a papal procession, a royal bride and groom, or Santa Claus rolling down Broadway to Macy's department store every Thanksgiving Day. Spectacle is used to create exultation, to move us to another order of perception, and to fix us in the moment.¹²

Historically, spectacle tends to move toward participatory narrative in order to retain our attention, to lengthen the immersive experience. For instance, in the Middle Ages, the rituals of the church were extended into a folk dramatic form. Mystery, or miracle, plays were performed on wagons that rotated around the town; each episode was staged by an appropriate guild, with shipbuilders doing

the story of Noah and cooks using their pots and pans to simulate the clatter of the Harrowing of Hell. The tradition survives today in parade floats and in the Nativity pageants still popular at Christmas. Renaissance masques, a secularized form of pageantry, were often performed by aristocratic guests at celebrations that ended with an unmasking and general dance. In the twentieth century, Halloween is widely celebrated as a giant participatory costume pageant. True to the ancient origins of the holiday, there are processions of costumed figures and a large component of neighborly participation.

In all of these traditions, participation in the spectacular event begins with ordinary people, rather than professional entertainers, donning a costume or mask. The mask sets off the participants from the nonparticipants and reinforces the special nature of the shared reality. It creates the boundary of the immersive reality and signals that we are role-playing rather than acting as ourselves. The mask is a threshold marker, like Harold's moon or the Jurassic Park boat. It gives us our entry into the artificial world and also keeps some part of ourselves outside of it.

In digital environments we can put on a mask by acting through an avatar. An avatar is a graphical figure like a character in a videogame. In many Internet games and chat rooms, participants select an avatar in order to enter the common space. Even when avatars are crudely drawn or offer a very limited choice of personalization, they can still provide alternate identities that can be energetically employed. For instance, the inclusion of graphic avatars in the networked action game called *Quake* led players to organize themselves into clans. Each clan dresses its avatars in the same colors, and its members fight together against other clans. *Quake* players have created an array of clan web pages, which look like what the Crips and Bloods might create if they traded their semiautomatics for laptop computers.

Virtual reality technology can offer a new kind of costuming and pageantry. Brenda Laurel and Rachel Strickland have devised "smart costumes" for the virtual playground called *Placeholder* (described in chapter 2). In fact, the participants are doubly costumed, since they

are wearing actual helmets and body sensors that allow them to enter the virtual animal bodies that make up the smart costumes within the imaginary world. The virtual costumes are "smart" in that the interactor's vision, voice, and movement change appropriately as he or she changes, for example, from a swimming fish to a hissing, slithering snake. Since the system is designed for two players to inhabit the imaginary worlds together, they can enjoy the pleasures of a masquerade by showing off their costumes to one another and observing each other's displays. Participants are so present in the space that they sometimes think they have touched one another, even though they are actually physically isolated and unconnected by tactile sensors. Since *Placeholder* is based on a childhood model of play in which the interactors make up their own stories, the smart costumes are a kind of dress-up box, a set of enchanted story materials that provide a stimulus for improvisation.

There is a similar pleasure in embodiment in the Oz group's screen-based *Woggles* creatures at Carnegie Mellon University.¹³ Here the user is invited to operate a cartoon figure with large eyes and an oval, stretchy body that can leap and slide and bow through a simple two-dimensional graphics world in the company of other creatures who behave autonomously. Since *Woggles* are programmed to play together and imitate one another, once you learn how to make your creature slide, another creature may slide after you. This world is engaging for people who do not like to operate the characters in fighting games; here the object is not to master a set of joystick twitches in order to destroy an opponent but to participate in a social world by taking on an intriguingly flexible body whose movements are also a means of communication. Entering a *Woggle* body is like becoming a citizen of *Woggeland*. It is as if you could put on a beret and start to shrug, gesture, and even speak like a Frenchman.

Smart costumes and social avatars are encouraging steps in the direction of a more expressive and less gun-crazy medium.

Structuring Collective Participation with Roles

The presence of other participants poses special challenges to immersion. For Suzanne Langer, the other children in the audience watching *Peter Pan* disrupted her immersion in a shocking way. But this is not a necessary effect. Like many baby boomers, I first experienced *Peter Pan* not in a theater but on television. I can vividly remember the thrill I felt, sitting on the floor in my living room close to the screen, when Mary Martin's Peter looked into the camera and asked us all to clap for Tink. I felt part of a vast effort that was truly healing her as I clapped away. But I also remember my self-consciousness in subsequent showings when my parents expressed amusement at my reaction. The problem for me was not with Peter Pan turning to the camera but with my awareness of unbelievers in the rest of the audience.

Clapping for Tinkerbell disturbed Langer in part because it is too explicit an enactment of the audience's role in sustaining the theatrical illusion. By gathering together in a theater, maintaining silence, and applauding in ritual ways, the audience creates the magic spotlight in which the actors move. But when Peter makes our applause a direct expression of belief in the imaginary, we are then reminded of the fact that Tinkerbell is only a trick of lighting on a stage. Perhaps the ideal way to clap for Tink is to do so alone in a room with a television set, aware of all the other people watching and clapping but not actually hearing them. This is the experience of the MUDs.

The power of a MUD is that the computer filters out the distraction of the actual appearance of the other players who are present. What is visible instead is their assumed identity, the role that everyone must choose in order to log on to the MUD. When you join a MUD, you assign yourself a sex and a physical description; if it is a very structured game, you acquire a set of attributes and skills represented by numerical values (e.g., magical powers = 10, strength = 8). As Sherry Turkle has pointed out, people do not so much play in MUDs as move into them.¹⁴ They can sustain a role over a long pe-

riod of time, accumulating experience points in a structured game by killing trolls or finding treasure or by learning to pilot a starship. Or they can just accumulate social experience in role-playing a particular kind of character—a scheming necromancer or a hyperrational Vulcan. In very story-specific MUDs, crucial roles such as the role of the wizard Gandolf in a Tolkien MUD may only be available by audition, but most MUDs allow the players to invent their own characters within the conventions of the controlling fictional genre. The role is therefore a combination of personal fantasy and collectively recognized conventions.

One key to functioning in a MUD is the ability to flip back and forth between player and character, to remove the mask in order to adjust the environment and then to put it back on again. For instance, if a player becomes frustrated with someone who is being too intransigent in a negotiation, he or she might send the following double message:

IN [in character]: Please consider withdrawing your ultimatum.

OOC [out of character]: Just because you're a Klingon doesn't mean you have to act like a jerk.

Sharing an unscripted fantasy environment with other people entails a constant negotiation of the story line and also of the boundary between the consensual hallucination and the actual world. When things are going well, the players can provide one another with a collective creation of belief that is like the shared make-believe of childhood. But when it is going badly, the player is stuck with a sputtering story line from lack of consensus or is left stranded with no one logged on to play with.

In the view of some players, live-action role-playing games (LARP) offer more coherent stories than MUDs.¹⁵ Because the players are visible to one another and clearly not in a spaceship or a medieval castle (but, probably, in the basement of a university or the cabin of a summer camp), live-action games rely on explicit mechanisms of participation to sustain the illusion of a fictional world. One

of the most powerful strategies, used by the role-playing group at MIT for instance, is the development of specific character profiles by the game masters to guide the individual players without rigidly prescribing their actions. The character profiles, provided to the players in advance of the game, are a combination of background story and game goals. In the hands of some game masters, they can be as elaborate as a short story.

For instance, in a LARP based on the world of Hamlet, the character sheet for Ophelia might go something like this:

You are a beautiful but delicate young woman, and things have not been going well in your kingdom lately. For one thing, the king, whom you were very fond of, has died, and his wife, Gertrude, who has been a second mother to you since your own mother died, has married his brother very quickly. This seems to have upset your boyfriend, Prince Hamlet, who was very attentive to you before his father died but has been moping around ever since. Thank goodness your brother Laertes is on his way home. He always seems to understand you. And he will divert some of the attention of your dad, who is an old dear but can be so long-winded and bossy and is always nudging you to get back together with Hamlet. He keeps thinking of embarrassing things you should do to throw yourself at Hamlet, which drives you crazy since you are very obedient but you are too modest to enjoy flirting with someone who keeps rejecting you. If only Hamlet would return to his old self.

Such a character sheet would provide the player with ideas on how to act—docile and modest and lovesick—and guide her in how to relate to other characters. It would work as a kind of “smart costume,” a ready-made set of behaviors to slip into that do not require much invention to sustain but that offer opportunities for elaboration if the player is so inclined.

In addition, the character might be given a set of small sealed envelopes, or “packets,” marked with instructions on when to open them. Often these are “memory packets,” things a character is not to

remember until an appropriate time in the game. For instance, running into Rosencrantz and Guildenstern might remind the Ophelia character of an occasion when Hamlet was particularly loving to her just before he left for college. Or she might have a packet meant to be opened after drinking a special kind of tea, a packet that might tell her that her infatuation is over and that she is now passionate about botany and has forgotten all about Hamlet. In this world, of course, her fate would be an open matter. Somewhere in her stack of packets might be written an instruction to go insane. Perhaps it would be triggered by the phrase "Get thee to a nunnery." But this would be only one of many possible paths her life could take.

In order to participate with focus in the immersive world, a character is usually given some goals to try to accomplish. For the Ophelia character, a major goal might be marrying Hamlet, and a minor one might be helping her brother get more money from their father. She would also need some hints about specific tasks that might help her achieve these goals. For instance, the overall design of the game might include a town witch and a meddlesome friar who each have potions that could affect Hamlet's behavior. Ophelia's character sheet might mention a rumor that the innkeeper knows where to get such potions. Ophelia could then set about finding out more about them, choosing which one would work, and locating and negotiating with the seller. Engaging in these activities could have repercussions for her relationship with her father. She might have to hide these activities from him or sneak off to look for them without arousing his suspicions.

A good character sheet provides a number of different plots for the player to get involved with, and a good game design would cue the various characters on how to relate to one another. The Polonius character would be told how anxious he was to make this sidetracked marriage happen. The town witch might be told to try enhancing her reputation by acquiring as clients important people who need a good herbal cure but to beware certain neighbors who will have her arrested if she is seen peddling her wares.

The person who plays Ophelia (like all the other players in the LARP) is thus supported by a world full of characters programmed to fit into her own character's plot, characters whose own intricate activities, even those that are completely unrelated to Ophelia's goals, add depth and variety to her world. The well-defined roles provide the means for each individual participant to actively create belief in the illusory world, and for all of them together to form a powerful circle of enchantment.

Regulating Arousal

According to Winnicott, "the pleasurable element in playing carries with it the implication that the instinctual arousal is not excessive"; that is, the objects of the imaginary world should not be too enticing, scary, or real lest the immersive trance be broken. This is true in any medium. If a horror movie is too frightening, we cover our eyes or turn away from the screen. If a romantic movie is too directly arousing, audience members may start necking instead of watching the characters. In the case of child's play, according to Winnicott, "instinctual arousal beyond a certain point must lead to: (i) climax; (ii) failed climax and a sense of mental confusion and physical discomfort that only time can mend; or (iii) alternate climax (as in provocation of parental or social reaction, anger, etc.)."¹⁶ Similarly, if a participatory immersive experience is not to be pornographic and if it is not to lead to frustration or to inappropriate explosion (like the verbal tirades, or flaming, in MUDs), then the participant's arousal must be carefully regulated. The trance should be made deeper and deeper without the emotions becoming hotter and hotter.

Traditional narratives have clear conventions for regulating arousal so that it is strong enough to make the story compelling but not so strong as to render the viewer uncomfortable. Consider, for example, the filmic conventions used in the barn scene in the movie *Witness* (1985) between the Philadelphia policeman John Book (Harrison Ford) and the Amish woman Rachel (Kelly McGillis), one of

the most romantic scenes in recent films. Not only are the characters attractive, but their love is forbidden (since they belong to such different cultures) and goes unconsummated throughout the movie. In this scene they are sitting together in Book's car, which is hidden in the barn, and he is fixing something on the dashboard while she holds a lantern. The radio suddenly comes on, and it is playing Sam Cooke's "Wonderful World." The scene takes them out of the car and into a shy but exuberant dance. The moment at which they decide to dance is exquisitely staged. Book, moved by the nostalgic music, backs out of the passenger side of the car while the camera follows him from just behind the driver's side. He is facing the camera across the roof of the car and tapping on the roof to the beat of the song. The moment is fraught with desire, with Book's unspoken invitation to Rachel. Then Rachel is seen moving up into the frame, her back to the camera, and he smiles at her. The seduction is addressed both to the character and to the audience. In fact, in the first moment, before Rachel gets out of the car, it is aimed almost explicitly at *us*. But Harrison Ford is not looking directly into the camera, he is looking a little to the side.

This over-the-shoulder position of the camera is a standard film technique that keeps us identified with the characters while also distanced enough so that we are reminded of the presence of the other actor in the frame of the movie and of our own exclusion from it. This combination of tremendous immediacy with a clearly demarcated border maximizes our immersion in the dramatic action.

In the café scene of the IMAX movie *Wings of Courage* (discussed in chapter 2), there is a similar moment when Val Kilmer, playing the gallant pilot Jean Mermoz, gets up to dance. He has the same movie star attractiveness that Harrison Ford has in *Witness*, and, just as Huxley warned us, the three-dimensional display makes him appear extremely present before us, much more so than on a conventional movie screen. Sitting in the theater with the 3-D goggles on, I felt myself begin to blush, as if I were actually meeting his gaze. There is a discomfort in not knowing the limits of the illusion. What if he were

to come right up and ask me to dance? What if he were to extend his arms like Lord Burleigh? How far into seduction could he go without breaking the spell?

One solution to the need for boundaries and conventions in participatory narrative is to focus on exhibitionism rather than on simulated sex. Feminist critics have pointed out the pervasive use of film to linger over women's bodies. In this respect, *Witness* is unusual in that (for most of the picture) it is the male actor whose body is eroticized. When John Book takes a drink of lemonade and some of it runs down his virile neck, we see him through Rachel's eyes—as achingly attractive yet forbidden. Such a scene, in which the character is erotically displayed but made unavailable by the plot, is particularly well suited to a medium with such a riveting sense of presence. In a three-dimensional movie, the viewer is inherently placed in a situation of immobilized desire. The enticing images placed before us tease us into touching them and then evaporate in our fingers. When we have virtual reality environments with strong narrative interest, they may feel similarly poignant to us. If so, then virtual reality theaters will be a good place to stage the twenty-first-century version of the crypt scene from *Romeo and Juliet*, or any participatory story that centers on unattainable desire or tender longing for the dead. Perhaps the VR medium of the future will largely support a literature of nostalgia, full of shimmering visions of the preindustrial past.

The cyberpunk writers have offered a very different view. In Neal Stephenson's complex vision of a technological dystopia, *The Diamond Age*, "ractors," or professional interactive actors, operate avatar characters over a vast medianet, through sensors implanted in their faces and bodies. The expert ractor Miranda (named for the naïf in Shakespeare's *Tempest* who speaks of the "brave new world") takes a wide range of parts: Shakespearean heroines in role-playing adaptations (which are only pleasurable to her if done with a talented customer), a salesclerk whose image is customized to the sexual preferences of each particular customer, and even the "eternally elusive" Carmen Sandiego. Part of her job is handling the sexual improprieties

of "ractiv" entertainment. For instance, while playing the role of Ilse in the ractiv equivalent of *The Mousetrap* (a long-running murder mystery set on a train in World War II Europe), a performance in which paying guests and professional ractors interact from distant locations in a shared virtual space, she is distracted by a virtual masquerader:

It was nearly ruined by one of the players, who had clearly signed up exclusively for the purpose of maneuvering Ilse into bed. He turned out to be the secret SS colonel too; but he was so hell-bent on fucking Ilse that he spent the whole evening out of character. Finally Miranda lured him into the kitchen in the back of the dining car, shoved a foot-long butcher knife in his chest, and left him in the fridge. She had played this role a couple of hundred times and knew the location of every potentially lethal object on the train. (P 108)

Miranda's very professional solution to the problem of how to deal with instinctual arousal when it threatens to disrupt the illusory world was to provide an "in character" response to inappropriately "out of character" behavior.

In live-action role-playing games, the narrative conventions that control the boundary between the real world and the illusion are called "mechanics." LARP mechanics are a kind of abstract mimicry for behaviors that would otherwise require props, danger, or physical involvement. For instance, many role-playing games represent combat by elaborate arithmetical calculations of comparative strength, force, and vulnerability values. In such a game one might see a crowd of people standing in a college corridor in the middle of the night, shouting numbers at one another, doing the math in their heads, and then turning over the name tags of those players who have been calculated to be dead. There can also be mechanics for seduction. If two characters want to have sex, the mechanic might be that they go to a place separate from other players and remain there for a certain number of minutes. They then report to the game master that they have had sex. If they want to kiss, they might just say to one another "I kiss you" and "I kiss you back."

In some ways, these mechanics are the equivalent of the fade-out technique used in movies. They signal that something is happening that can only take place in the viewer's or interactor's imagination. The abstractly represented action can be exploited for the immersive pleasure of role-playing as, for example, when two players improvise a love scene, complete with longing looks and poignant words but no necking. Or the mechanic can be exploited for its narrative consequences. For instance, in one simulation, sex with a particular woman served as a kind of truth serum. After making love she could ask one question, which her partner had to answer truthfully. This mechanic allowed sex to be used as a game strategy independent of the players' enjoyment of the scene.

In MUDs, which are on-line role-playing environments, players have created a similar repertoire of conventions for everything from weddings to virtual pie-making. Sometimes these conventions only involve navigating through the MUD to a particular virtual room and engaging in a ritualized conversation with other MUDders. For example, I might type in "south, west, south" until the program announces, "Wedding Chapel." The program would then tell me the names of those who are present, but it would be up to all the role players together to improvise the wedding scene. In other MUDs, players can program some objects and events into the system. The Wedding Chapel could contain an automated minister, who would lead the couple through their vows. After the ceremony the minister would remember they were married; he might be programmed to tell everyone he meets about each new marriage—perhaps even gossiping about what the bride was wearing and whether she looked pregnant.

The narrative strategies used in MUDs raise many questions about how to establish boundaries between private fantasy and public enactment. There is no single storyteller in a MUD; the computer program itself serves as narrator of the story, publishing the dialogue of the players to their computer screens and announcing entrances, exits, descriptions, and some events. The command structure by

which the players act in the fictional world establishes the narrative conventions. The most common conventions regulate the privacy of the dialogue: players can establish separate rooms, which function as private stages, or they can use the "whisper" command to one another, so that their conversation cannot be heard by others in the same room. If DarkBird whispers to WoodElf, "I kiss you," then the words "DarkBird whispers, 'I kiss you'" will appear only on the screens of these two players and no one else's. But if DarkBird "says" the words instead of whispering them, then everyone else in proximity to the lovers will see "DarkBird says, 'I kiss you'" on their screens. The privacy conventions allow the players to decide how much of their role-playing they want to share with the general group, but the digital stage does not always offer them complete privacy. A common grievance on MUDs is the presence of nosy wizards—the chief programmers or senior players in the virtual world who can eavesdrop on private conversations.

In other MUDs, *kiss* might be a command word; that is, if DarkBird types, "I kiss WoodElf" (or perhaps "kiss:WoodElf"), the system reports "DarkBird kisses WoodElf." The command convention gives the kiss the authority of a narrated event. Events that happen by command can change the state of the game (e.g., the command *Go north* changes who is where), and they can have hidden consequences. For example, if two people have virtual sex using command words, the result might be a virtual pregnancy, which would be generated by the system on the basis of a combination of random chance and the couple's virtual birth control practices. The system would then keep track of a character's pregnancy, remembering it at future sessions. It might offer an automated abortion service or provide some of the other role-playing characters with the ability to use specialized commands that allow them to perform virtual abortions or deliver virtual babies.

In some MUDs only the wizards can make up new commands; in others, all the players share this power. The issue of defining new commands becomes particularly sensitive in sexual matters. If, for ex-

ample, BadTroll invents a rape command and then types in "rape:WoodElf," the system will report the action as objective reality to everyone in the room. The narration increases the victim's sense of violation. Often such events spill over into long out-of-character discussions on the social values of the virtual community. Sometimes they result in limiting the participants' ability to invent their own commands.¹⁷

Just as actors need conventions for staging fights and faking kisses, so too will interactors in a virtual world need specific mechanics for physical contact, mechanics that deepen the fantasy without disrupting the immersive trance. For instance, a holographic lover might offer a kiss by coming closer and then swirling away while music swells in the background. Such a "swirling" convention would emphasize the approach to the embrace and the long glance afterward rather than the kiss itself. Or an interactor wearing a special data glove might gently wave her hand, thereby signaling to her avatar figure within the frame of the virtual world that she should walk toward her lover and receive the kiss, which would be experienced through imaginative identification with the surrogate.

The computer is providing us with a new stage for the creation of participatory theater. We are gradually learning to do what actors do, to enact emotionally authentic experiences that we know are not "real." The more persuasive the sensory representation of the digital space, the more we feel that we are present in the virtual world and the wider range of actions we will seek to perform there. The ease with which MUDDers and LARPer take on and cast off personas suggests that an audience is growing that has been trained in impersonation. We are all gradually becoming part of a worldwide repertory company, available to assume roles in ever more complex participatory stories. Little by little we are discovering the conventions of participation that will constitute the fourth wall of this virtual theater, the expressive gestures that will deepen and preserve the enchantment of immersion.