

HAMLET
on the HOLODECK

THE FUTURE OF NARRATIVE
IN CYBERSPACE

Janet H. Murray

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Chapter 5

Agency

The more realized the immersive environment, the more active we want to be within it. When the things we do bring tangible results, we experience the second characteristic delight of electronic environments—the sense of agency. Agency is the satisfying power to take meaningful action and see the results of our decisions and choices. We expect to feel agency on the computer when we double-click on a file and see it open before us or when we enter numbers in a spreadsheet and see the totals readjust. However, we do not usually expect to experience agency within a narrative environment.

Even in the rare circumstances when we are invited to participate in a traditional narrative form, our participation is circumscribed in a way that generally limits our sense of agency. For instance, if the audience at a performance of *Peter Pan* decided that Tinkerbell is a pest and refused to clap her back to life, the play would come to a halt. The participatory dinner theater plays that simulate an Italian wedding or an Irish wake or a Jewish funeral encourage audience participation by keeping the plot to a minimal level and the dialogue with the audience to social formulas appropriate to distant friends of the family. When the groom in such a play leans down to kiss me as a

guest at his wedding, I can congratulate him and warn him about staying away from his ex-girlfriend now that he is married, but I cannot really influence his behavior. When audience members are included in the story, they serve only as the butt of a joke. They may be accused of adultery by the priest or shot by a mafioso relative. The slender story is designed to unfold in the same way no matter what individual audience members may do to join the fun.

In fact, participatory theater performances become participatory by incorporating folk art forms and festival behavior such as singing, dancing, and sharing a feast. Striking up a familiar song or dance tune—“Que Sera Sera” or a tarantella—is a reliable way to get the audience involved. Musical participatory forms are successful because they rely on careful cueing and formulaic behavior: We sing along with the chorus and remain silent for the verse; we answer the singer’s “call” with the appropriate response. And we do these things in unison as a single voice. In a square dance we perform whatever steps the caller announces because the repertoire of possible movements and the rules of combination are known to both parties before the music starts, and though everyone does not have to do exactly the same thing at the same time, all the square dancers do have to be part of a single overall pattern. Folk dancing in ballroom style offers a model of freer participation. In the Cajun two-step or the Brazilian samba, for instance, all the dancers share a repertoire of movements, and each set of partners has license to invent its own combinations and interpretations of these movements. Like jazz musicians, the dancers can improvise their own satisfying creations from these given elements. But the greater individual freedom in ballroom-style folk dancing means that the group as a whole has less coherence than at a square dance.

Electronic environments have similar formulas and rules for structuring participation. For instance, when users are merely asked to respond to a menu with a predictable begin/quit choice, they are performing a kind of response to the “call” of the machine. When we learn a complicated program, like a word processor, and run through

its familiar steps in order to do a difficult job, we are like participants in a square dance, repeating formulaic sequences, with the relevant manual page acting as caller of the dance. When we are placed within a simulation environment and allowed to experiment with changing a set of parameters as we see fit (more nitrogen, less algae), we are acting more like the leading partner in a Cajun dance. The crucial difference, however, between folk art rituals and computer-based interactions is that on the computer we encounter a world that is dynamically altered by our participation. On the ballroom dance floor, we can at most influence our partner, but the musicians and the rest of the dancers remain relatively unaffected. Within the world of the computer, however, when the right file opens, when our spreadsheet formulas function correctly, or when the simulated frogs flourish in the model pond, it can feel as if the entire dance hall is at our command. When things are going right on the computer, we can be both the dancer and the caller of the dance. This is the feeling of agency.

Because of the vague and pervasive use of the term *interactivity*, the pleasure of agency in electronic environments is often confused with the mere ability to move a joystick or click on a mouse. But activity alone is not agency. For instance, in a tabletop game of chance, players may be kept very busy spinning dials, moving game pieces, and exchanging money, but they may not have any true agency. The players' actions have effect, but the actions are not chosen and the effects are not related to the players' intentions. Although gamemakers sometimes mistakenly focus on the number of interactions per minute, this number is a poor indicator of the pleasure of agency afforded by a game. Some games, like chess, can have relatively few or infrequent actions but a high degree of agency, since the actions are highly autonomous, selected from a large range of possible choices, and wholly determine the course of the game.

Agency, then, goes beyond both participation and activity. As an aesthetic pleasure, as an experience to be savored for its own sake, it is offered to a limited degree in traditional art forms but is more com-

monly available in the structured activities we call games. Therefore, when we move narrative to the computer, we move it to a realm already shaped by the structures of games. Can we imagine a compelling narrative literature that builds on these game structures without being diminished by them? Or are we merely talking about an expensive way to rewrite *Hamlet* for the pinball machine?

The Pleasures of Navigation

One form of agency not dependent on game structure yet characteristic of digital environments is spatial navigation. The ability to move through virtual landscapes can be pleasurable in itself, independent of the content of the spaces. A friend of mine whose son is an avid *Nintendo* player complains that when he tries out the games he is annoyed at having to be fighting all the time, since the combat is an unwelcome distraction from the pleasure of moving around the unfolding spaces of the maze. For my friend, videogames are about exploring an infinitely expandable space. Similarly, new explorers of the World Wide Web find themselves entranced with the ability to leap around the world, following links from one home page or Web site to the next mostly for the pleasure of the repeated arrivals. The navigational pleasures are richly exploited by the many forms of labyrinths, from Zork-like dungeons to informational webs, that fill cyberspace. All of them allow us to experience pleasures specific to intentional navigation: orienting ourselves by landmarks, mapping a space mentally to match our experience, and admiring the juxtapositions and changes in perspective that derive from moving through an intricate environment.

This participatory pleasure is not unlike the enjoyment people find in the organized sport of "orienteering," where players follow a series of geographical clues across a large and complex terrain, such as a portion of the Maine woods or downtown Boston. Construing space and moving through it in an exploratory way (when done for its own sake and not in order to find the dentist's office or the right airport

gate) is a satisfying activity regardless of whether the space is real or virtual. Electronic environments offer the pleasure of orienteering in two very different configurations, each of which carries its own narrative power: the solvable maze and the tangled rhizome.

The Story in the Maze

Zork-like puzzle dungeons and maze-based combat videogames derive from a heroic narrative of adventure whose roots are in antiquity. It was the mythical King Daedalus of Crete who built a labyrinth around the deadly Minotaur. The horrible beast required the yearly sacrifice of Athenian youths and maidens, whom it devoured, until the hero Theseus arrived to slay it. In the story, Ariadne, the daughter of the king, fell in love with Theseus and gave him a sword to kill the beast and a thread to find his way out again. Theseus's maze was therefore a frightening place, full of danger and bafflement, but successful navigation of it led to great rewards.

The adventure maze embodies a classic fairy-tale narrative of danger and salvation. Its lasting appeal as both a story and a game pattern derives from the melding of a cognitive problem (finding the path) with an emotionally symbolic pattern (facing what is frightening and unknown). The maze story celebrates the combination of intelligence and courage, and it depicts romantic love as the element that provides the hope that brings the hero into the confrontation and back out again to safety. Like all fairy tales, the maze adventure is a story about survival. The maze is a road map for telling this story.

As a format for electronic narrative, the maze is a more active version of the immersive visit (as described in chapter 4). Maze-based stories take away the moving platform and turn the passively observant visitor into a protagonist who must find his or her own way through the fun house. A typical maze-based puzzle game sends you, the player, through a multitiered space vaguely resembling an *Arabian Nights* palace. You operate an avatar who walks through the palace rooms, whose tiled floors and ornately decorated corners often hide

treasures that are tricky to perceive. The palace is full of informants, who speak in text bubbles and whom you reply to from menus, and you must negotiate with them carefully, offering them icons representing money or other valuables. A mysterious peddler on one of the lower levels holds a talisman needed to get into the highest chamber. You must have it with you while you stand on a special spot that is hidden in the patterning of the floor. If you forget to get it, you must retrace your steps through many perils. The game is like a treasure hunt in which a chain of discoveries acts as a kind of Ariadne's thread to lead you through the maze to the treasure at the center.

This kind of narrative structure need not be limited to such simplistic content or to an explicitly mazelike interface. In the right hands a maze story could be a melodramatic adventure with complex social subtexts. For instance, instead of a fairy tale palace it could be set in a Kafkaesque city where the secret police are rounding up and deporting citizens with the wrong kind of papers. The protagonist's role would be to save them, a task that would require navigation through the corridors of power and through underground hiding places, elaborately conducted negotiations, clever manipulation of bureaucrats, and split-second timing. The characters in the menacing world could be subtly portrayed, in either graphics with text bubbles or in video segments. Saving people might involve horrifying choices, perhaps implicating the protagonist in the corruption of the violent world. The maze could be composed not only of spatial twists but of moral and psychological choices. Just as it is hard to see where a tangle of virtual corridors is leading, so too would it be hard to foresee the consequences of your actions and to determine what to value and whom to trust. Just as Kafka used the conventions of the fable to convey the profound depersonalization of modern life and Art Spiegelman used the format of the comic book to tell the story of his father's Holocaust experiences, a digital artist might use the structure of the adventure maze to embody a moral individual's confrontation with state-sanctioned violence.

Whether an adventure maze is simple or complex, it is particularly

suiting to the digital environment because the story is tied to the navigation of space. As I move forward, I feel a sense of powerfulness, of significant action, that is tied to my pleasure in the unfolding story. In an adventure game this pleasure also feels like winning. But in a narrative experience not structured as a win-lose contest the movement forward has the feeling of enacting a meaningful experience both consciously chosen and surprising. However, there is a drawback to the maze orientation: it moves the interactor toward a single solution, toward finding the one way out. The desire for agency in digital environments makes us impatient when our options are so limited. We want an open road with wide latitude to explore and more than one way to get somewhere. We want the “pullulating” web that Borges described, constantly bifurcating, with every branch deeply explorable.

Rapture of the Rhizome

The second kind of digital labyrinth, which has arisen from the academic literary community, is the postmodern hypertext narrative described in chapter 2. Full of wordplay and indeterminate events, these labyrinths derive not from Greek rationalism but from poststructuralist literary theory and are unheroic and solutionless. Like a set of index cards that have been scattered on the floor and then connected with multiple segments of tangled twine, they offer no end point and no way out. Their aesthetic vision is often identified with philosopher Gilles Deleuze’s “rhizome,” a tuber root system in which any point may be connected to any other point.¹ Deleuze used the rhizome root system as a model of connectivity in systems of ideas; critics have applied this notion to allusive text systems that are not linear like a book but boundaryless and without closure. Stuart Moulthrop, a theorist and electronic fiction writer, states it this way:

Seen from the viewpoint of textual theory, hypertext systems appear as the practical implementation of a conceptual movement that . . .

rejects authoritarian, “logocentric” [i.e., truth-affirming] hierarchies of language, whose modes of operation are linear and deductive, and seeks instead systems of discourse that admit a plurality of meanings where the operative modes are hypothesis and interpretive play.²

The postmodern hypertext tradition celebrates the indeterminate text as a liberation from the tyranny of the author and an affirmation of the reader’s freedom of interpretation. But the navigational software designed specifically for this purpose and celebrated by many proponents of literary hypertext is anything but empowering to the reader, even in comparison to the earliest Web browsers.³ For instance, it offers the navigating reader no way to mark links as having been already taken, and no way to mark a lexia so it can be easily jumped back to. Many of the stories written in this framework do not even mark which words are hot links within the lexia text. Instead, the reader has to click on a pop-up display of cryptic link names. Moulthrop’s own *Victory Garden*, which is perhaps the most coherently structured literary hypertext, contains a clever overview map of the major story clusters, which are arranged like a Borgesian garden labyrinth. But readers cannot easily return to the overview in order to get a sense of where they are or how much is left to read. In trying to create texts that do not “privilege” any one order of reading or interpretive framework, the postmodernists are privileging confusion itself. The indeterminate structure of these hypertexts frustrates our desire for narrational agency, for using the act of navigation to unfold a story that flows from our own meaningful choices.

But the unsolvable maze does hold promise as an expressive structure. Walking through a rhizome one enacts a story of wandering, of being enticed in conflicting directions, of remaining always open to surprise, of feeling helpless to orient oneself or to find an exit, but the story is also oddly reassuring. In the rhizome, one is constantly threatened but also continuously enclosed. The fact that the plot will not resolve means that no irreparable loss will be suffered. The narrator of *Afternoon* (discussed in chapter 2) will not have to confront the

fact of the morning's fatal accident so long as the afternoon's evasive wanderings continue, and the reader of *Victory Garden* does not have to accept the death of an appealing character so long as there are multiple paths to explore, including some that lead to alternate realities in which she comes back home from the war. In both stories the reader is protected from feeling the irreversibility of death by the fact that the stories do not have to end there.

The boundlessness of the rhizome experience is crucial to its comforting side. In this it is as much of a game as the adventure maze. In fact, it reminds me of a particular game my son William invented at about age five. At his own initiative he one day drew a large game board, assembled dice and playing pieces, and invited his father to join him in an inventively improvised game with ever-changing and ever more elaborate rules. After two hours of this surreal activity, my husband became restless and began asking every five minutes or so if the game was almost over. William responded by calmly walking into the kitchen, where I was sitting, and asking me to write his father the following note:

DEAR DAD—THIS GAME WILL NEVER END. WILLIAM

The rhizome has the same message. As we navigate its tangled, anxiety-laden paths, enclosed within its shape-fitting borders, we are both the exasperated parent longing for closure and separation and the enthralled child, lingering forever in an unfolding process that is deeply comforting because it can never end.

Giving Shape to Anxiety

Both the overdetermined form of the single-path maze adventure and the underdetermined form of rhizome fiction work against the interactor's pleasure in navigation. The potential of the labyrinth as a participatory narrative form would seem to lie somewhere between the two, in stories that are goal driven enough to guide navigation

but open-ended enough to allow free exploration and that display a satisfying dramatic structure no matter how the interactor chooses to traverse the space.

The key to creating an expressive fictional labyrinth is arousing and regulating the anxiety intrinsic to the form by harnessing it to the act of navigation. Suspense, fear of abandonment, fear of lurking attackers, and fear of loss of self in the undifferentiated mass are part of the emotional landscape of the shimmering web. Moving through the space can therefore feel like an enactment of courage and perseverance, like Gary Cooper's striding through the town in *High Noon*. Computer gamers often experience shivers of physical fear as they approach an unopened door in a text-based or graphics-based labyrinth. The drama of suspenseful approach does not have to be tied to combat or to jack-in-the-box effects. It can also have the feeling of a determination to face the truth, to stare directly at the threatening beast. It can be experienced by the navigating reader/viewer as well as by the player/protagonist.

One such use of the labyrinth as a means of evoking and controlling terror is a story format increasingly used by my fiction students, a story I have come to call the "violence hub." Writers will place an account of a violent incident, often a real or invented newspaper article, at the center of a web of narratives that explore it from multiple points of view. A helicopter accident near MIT, a robbery in a convenience store, a canoeing fatality—these are all examples of an act of sudden violence that have served as the center of such a story web. The incident account itself is usually bare but evocative. People have died in violent and surprising circumstances, we are told. The incident happened at a particular place and time involving a particular group of people. The names in the account or in a diagram of the site of the accident lead outward with hot links to the satellite files that tell us how the incident appeared to the various people involved—the perpetrator, the witnesses, the rescuers, the victims, the survivors.

The proliferation of interconnected files is an attempt to answer the perennial and ultimately unanswerable question of why this

incident happened. For instance, one convenience store robbery labyrinth follows the robber, the clerk, the owner, and the cop (who shoots the robber) back through the events leading up to the shoot-out and forward again into the moment of violence.⁴ Reading it we feel sympathy with all of them, and we see how they appeared to one another. A web story of a teenager who drowned on a white-water canoeing trip describes the traumatic experience from the points of view of the friends he was traveling with, the operators of the canoeing company, the emergency medics, and the family members receiving the dreadful phone call. These violence-hub stories do not have a single solution like the adventure maze or a refusal of resolution like the postmodern stories; instead, they combine a clear sense of story structure with a multiplicity of meaningful plots. The navigation of the labyrinth is like pacing the floor; a physical manifestation of the effort to come to terms with the trauma, it represents the mind's repeated efforts to keep returning to a shocking event in an effort to absorb it and, finally, get past it. The retracing of the situation from different perspectives leads to a continual deepening in the reader's understanding of what has happened, a deepening that can bring a sense of resolution but one that allows for the complexity of the situation and that leaves the moment of shock unchanged and still central.

A linear story, no matter how complex, moves toward a single encompassing version of a complex human event. Even those multiform stories that offer multiple retellings of the same event often resolve into a single "true" version—the viewpoint of the uninvolved eyewitness or the actual reality the protagonists wind up in after the alternate realities have collapsed. A linear story has to end in some one place: the last shot of a movie is never a split screen. But a multithreaded story can offer many voices at once without giving any one of them the last word. This is a reassuring format for encountering a traumatic event because it allows plenty of room for conflicting emotions. It lets us disperse complex, intense reactions into many derivative streams so that we do not have to feel the full flood of sorrow all at

once. The multithreaded web story achieves coherent dramatic form by shaping our terror into a pattern of exploration and discovery.

The Journey Story and the Pleasure of Problem Solving

The navigational space of the computer also makes it particularly suitable for journey stories, which are related to mazes but offer additional opportunities for exercising agency. Journey stories date back to oral storytelling, from the fairy-tale convention of setting out from home to find one's fortune to the voyages of Odysseus and Sinbad. It is a universal archetype recognizable across all the variations of culture, author, and medium. After the invention of the printing press, the journey story was reinvented as the picaresque novel, exemplified by *Don Quixote*, *Moll Flanders*, *Tom Jones*, *Huckleberry Finn*, and *Catcher in the Rye*. With the invention of the movie camera, the journey story was again revived, and its variations include everything from the comic (e.g., Buster Keaton's *The General*) to the cowboy melodrama (e.g., *Stagecoach*, *The Searchers*) and the feminist buddy film (*Thelma and Louise*). When television came along, journey stories (*Wagon Train*, *Route 66*, *The Fugitive*, and, of course, *Star Trek*) were among the most successful series.

Moving the journey story from the fairy tale to the novel meant moving it from a symbolic realm of universal actors (a king, a wicked stepmother) to a particularized social world and a particular time and place. In the novel the cruel things that happen to the hero are often treated as instances of a specific social injustice, like the English Poor Laws, rather than as the work of a generic antagonist like a big bad wolf. Moving the journey to the movies opened up the visual dimension of the archetype. Journey films often emphasize exotic landscapes, foreign cultures, and the lure of open spaces. Since television is best at portraying interior dramas and family-size social units,⁵ journey stories on TV generally focus on a succession of small communities or even replace the hero and sidekick with an entire traveling

community, as on *Star Trek*. On the computer the journey story emphasizes navigation—the transitions between different places, the arrivals and departures—and the how-to's of the hero's repeated escapes from danger.

One of the consistent pleasures of the journey story in every time and every medium is the unfolding of solutions to seemingly impossible situations. We watch each new situation along the road and wonder how the hero will escape a beating or a hanging or a forced marriage or jailing. When Odysseus foolishly allows himself to be captured by the Cyclops, a huge, one-eyed man-eater, he is presented with a life-and-death riddle. The situation is carefully described so that it seems that he has no chance of getting out. The Cyclops is a brutal and heartless creature who brags that he is unafraid of Zeus and therefore free to do what he pleases. Every night two more of Odysseus's men are eaten; the survivors know they must get out soon or die. They could kill the monster as he sleeps, but the cave is barred with a stone too heavy for them to move; if they kill him, they will never get out again. The Cyclops's routine is unvaried: he goes off with the sheep in the morning, closing the cave behind him, and comes back at night with the sheep, ready for a dinner of Greek sailors. Then Odysseus (who is narrating the story) tells us how he solves the problem. He prepares some wine. He prepares a battering ram and gathers a group of strong helpers. He tells the giant his name is "Nobody" and gets him very drunk. When the Cyclops falls asleep, Odysseus and his men heat the battering ram in the fire and thrust it into his one terrible eye. Now the giant is blinded, but how will the Greeks get out? While the Cyclops is raging, Odysseus separates the sheep into groups of three and places each of his men under the middle sheep and himself beneath the strongest ram in the flock. Finally, the Cyclops lets out his sheep, as Odysseus has seen him do every morning, and out go all the Greeks with them. And when the Cyclops complains about his tormentor to Zeus, how does he refer to him? He calls him by name: Nobody. Odysseus's description is constructed so that we can enjoy each individual step and gain increasing

pleasure as the overall plan becomes clear. The story is as much a riddle as Oedipus's, but the answer to the riddle is not in a single word; it is in a series of beautifully orchestrated steps, an elegant algorithm for defeating giants.

Computer-based journey stories offer a new way of savoring exactly this pleasure, a pleasure that is intensified by uniting the problem solving with the active process of navigation. On the computer the dramatic situation of capture and escape can be simulated by keeping the player within a confined space until the solution to a puzzle is found. These puzzles are most satisfying when the actions have a dramatic appropriateness, when they serve as a way of increasing our belief in the solidity and consistency of the illusory world. For instance, in *Myst* the wizard's island includes an elevator hidden in a giant tree and operated by a nearby control panel. In addition to solving the puzzle of the panel, the interactor must move efficiently through the space to get to the elevator at just the right moment in its descent. The concreteness with which the space is detailed makes the sequence feel not like a test of coordination but like a dramatic moment. By contrast, in the computer game *The Seventh Guest*, the player is asked to cut up a cake into enough segments to match the number of murder victims. The puzzle is a satisfying one, but since there is no one there to eat the cake, the action takes us outside the immersive world instead of reinforcing our belief in it.

The most dramatically satisfying puzzles are those that encourage the interactor to apply real-world thinking to the virtual world. For instance, a computationally sophisticated MIT student who is also an expert gamer instanced a particular dramatic moment from the text-based *Zork II* as among his lifetime favorites: The story involves a dragon that is slow to rouse but always lethal if you persist in fighting him. Elsewhere in the dungeon is a wall of ice that is impossible to pass. What you must do is attack the dragon enough to get his attention—but not so much that he "toasts" you—and then run and head for the wall of ice. The dragon follows, sees his reflection in the ice, and thinks it is another dragon. He rears up and breathes fire at his

enemy; as he does so, the ice melts, drowning the dragon and eliminating the obstructing wall.⁶ Like Odysseus in the Cyclops's cave, the player escapes by outsmarting a ferocious monster using only the materials at hand.

Games into Stories

Games seem on the face of it to be very different from stories and to offer opposing satisfactions. Stories do not require us to do anything except to pay attention as they are told.⁷ Games always involve some kind of activity and are often focused on the mastery of skills, whether the skill involves chess strategy or joystick twitching. Games generally use language only instrumentally ("checkmate," "ball four") rather than to convey subtleties of description or to communicate complex emotions. They offer a schematized and purposely reductive vision of the world. Most of all, games are goal directed and structured around turn taking and keeping score. All of this would seem to have nothing to do with stories.

In fact, narrative satisfaction can be directly opposed to game satisfaction, as the endings of *Myst*, widely hailed as the most artistically successful story puzzle of the early 1990s, make clear. The premise of the *Myst* story is the confinement of two brothers, SIRRUS and ACHENAR, in magical books that serve as a dungeon. Through a video window we can see them in their imprisonment and hear them talking to us in short, staccato segments. Each one warns us about the wickedness of the other and asks us to rescue him. The brothers can only be freed by heroic labors of problem solving by the player, who must journey to four magical lands or ages and bring back a single page from each of them for either SIRRUS or ACHENAR. Each time the player gives one of the brothers a magic page, he responds with a slightly clearer video segment. At the end of the game, when most of the puzzles have been solved, the player has most likely gone to each land twice in order to gather both sets of pages and to hear all of the messages from both brothers. At this point we are faced with a dra-

matic choice. The last magic page will release one or the other of them from the book. Which is it to be?

The game is well designed in that all the evidence on which to base a decision is, as in any good detective story, available to the player. Exploring the various lands reveals—through accusatory notes, hidden corpses, imperial furnishings, desolated landscapes, and multiple instruments of torture and destruction—the villainy of both brothers. The secret of the game is that although both brothers are evil, their father, ATRUS, is alive and—with some more puzzle solving—can be found and rescued. The "winning" ending involves locating the good wizard ATRUS and remembering to bring with you the magical item that will free him from captivity. This is a satisfyingly fair yet challenging mystery plot.

Yet surprisingly, the "losing" endings of the game are much more satisfying than the winning ending. In the winning ending one finds a beautifully rendered but dramatically inert video cutout of ATRUS superimposed on a backdrop of a very shallow fantasyland. Unlike all the other lands visited during the game, this one is not really explorable and offers no pleasures of manipulation. It is a dead end. The ending in which you get to the wizard but forget to bring him the means of escape is more dramatic, because he gets quite angry at you. But the most dramatically satisfying endings are the near-identical losing branches, which are the result of choosing to rescue either of the evil brothers. The moment you release either ACHENAR or SIRRUS from imprisonment, he will mockingly turn on you and lock *you* in the very same dungeon from which he has escaped! The visual effect is simple but brilliantly effective because it reverses your perspective. Throughout the game you have peered into each brother's dungeon through a static-ridden, credit-card-size window embedded with the parchment page of an enchanted book. The brothers' immobility has been marked by the fact that you could see little more than their faces. Now you are looking out through a similarly staccato window set into a totally black screen. Through the window you can see the evil brother now exultantly standing and moving around while look-

ing down at you, just as you had looked down at him. A game that marked a breakthrough in ease of navigation appropriately ends by immobilizing the player.

The superiority of the losing endings of *Myst* suggest a basic opposition between game form and narrative form. How can we tell significant stories in a form that always has to end happily? How can we impose endings that yield complex story satisfactions on a form that is based on win/lose simplicity? Many would argue that computer-based narrative will always be gamelike and that such dissatisfactions are therefore inevitable. But when looked at more closely, games and stories are not necessarily opposed.

Games as Symbolic Dramas

A game is a kind of abstract storytelling that resembles the world of common experience but compresses it in order to heighten interest.⁸ Every game, electronic or otherwise, can be experienced as a symbolic drama. Whatever the content of the game itself, whatever our role within it, we are always the protagonists of the symbolic action, whose plot runs like one of the following:

- I encounter a confusing world and figure it out.
- I encounter a world in pieces and assemble it into a coherent whole.
- I take a risk and am rewarded for my courage.
- I encounter a difficult antagonist and triumph over him.
- I encounter a challenging test of skill or strategy and succeed at it.
- I start off with very little of a valuable commodity and end up with a lot of it (or I start off with a great deal of a burdensome commodity and get rid of all of it).
- I am challenged by a world of constant unpredictable emergencies, and I survive it.

Even in games in which we are at the mercy of the dice, we are still enacting a meaningful drama. Playing purely luck-based games is cap-

tivating because we are modeling our basic helplessness in the universe, our dependence on unpredictable factors, and also our sense of hopefulness. The people who line up at my neighborhood convenience store for lottery tickets can be seen either as dupes or as risk takers engaging in a playful ritual of faith in the benevolence of forces beyond their control. In fact, even when we lose, we are still part of the symbolic drama of the game. In that case the plots might go like this:

- I fail at an important test and suffer defeat.
- I decide to try again and again until I finally succeed.
- I decide to win by cheating, that is, by acting outside the rules, because authority is meant to be flouted.
- I realize that the world is rigged against me and others like me.

In games, therefore, we have a chance to enact our most basic relationship to the world—our desire to prevail over adversity, to survive our inevitable defeats, to shape our environment, to master complexity, and to make our lives fit together like the pieces of a jigsaw puzzle. Each move in a game is like a plot event in one of these simple but compelling stories. Like the religious ceremonies of passage by which we mark birth, coming of age, marriage, and death, games are ritual actions allowing us to symbolically enact the patterns that give meaning to our lives.

Games can also be read as texts that offer interpretations of experience. For instance, the board game Monopoly can be read as an interpretation of capitalism, an enactment of the allures and disappointments of a zero-sum economy in which one gets rich by impoverishing one's neighbors. Or it can be read as a patterned expression of our knowledge that success in life is always the result of both planning and chance. When we play Monopoly, we are taking part in a structured drama that offers, in addition to its win/lose ending, moments in which we give expression to our ambition, greed, and benevolence and our tendencies to take risks and exploit others. Even a game with no verbal content, like Tetris, the wildly popular and powerfully ab-

sorbing computer game of the early 1990s, has clear dramatic content. In Tetris irregularly shaped objects keep falling from the top of the screen and accumulating at the bottom. The player's goal is to guide each individual piece as it falls and position it so that it will fit together with other pieces and form a uniform row. Every time a complete row forms, it disappears. Instead of keeping what you build, as you would in a conventional jigsaw puzzle, in Tetris everything you bring to a shapely completion is swept away from you. Success means just being able to keep up with the flow. This game is a perfect enactment of the overtasked lives of Americans in the 1990s—of the constant bombardment of tasks that demand our attention and that we must somehow fit into our overcrowded schedules and clear off our desks in order to make room for the next onslaught.⁹

If the same spatial ideas behind the movement of the colored shapes in Tetris—relentless activity, misfits and tight couplings, order and chaos, crowding and clearing—are represented in a dance, we automatically associate them with ordinary human experience, because we see human beings enacting them. In the computer game the interactor is the dancer and the game designer is the choreographer. The screen objects are like a symbolic language for inducing our activity. So while we experience the game as being about skill acquisition, we are drawn to it by the implicit expressive content of the dance. Tetris allows us to symbolically experience agency over our lives. It is a kind of rain dance for the postmodern psyche, meant to allow us to enact control over things outside our power.

Games are recreational because they offer no immediate benefit to our survival. Yet game-playing skills have always been adaptive behaviors. Games traditionally offer safe practice in areas that do have practical value; they are rehearsals for life. Lion cubs roughhouse with one another in order to grow to be predators. Small children still play hide-and-seek, a good way of training hunters, and ring-around-a-rosy, a good way of practicing cooperation and coordinated behaviors. Older children in our society are understandably drawn to pitting themselves against machines. The violence and simplistic

story structure of computer skill games are therefore a good place to examine the possibilities for building upon the intrinsic symbolic content of gaming to make more expressive narrative forms.

The Contest Story

The most common form of game—the agon, or contest between opponents—is also the earliest form of narrative. This is not surprising since opposition is one of the most pervasive organizing principles of human intelligence and language.¹⁰ Just as we automatically organize the temporal and spatial world into opposing characteristics (night/day, up/down, right/left), so too do we look at the things that happen in the world in terms of struggles between opposites (God/Satan, male/female, Cain/Abel, Jews/Gentiles). The Greek word *agon* refers to both athletic contests and to dramatic conflicts, reflecting the common origin of games and theater. A simple shoot-'em-up videogame, then, belongs to the extremely broad dramatic tradition that gives us both the boxing match and the Elizabethan revenge play.

Most of the stories currently told on the computer are based on the structure of a contest of skill. The interactor is given the role of a fighter or detective of some sort and is pitted against an opponent in a win/lose situation. From their beginnings in the 1970s, computer games have developed multiple representations of the opponent, who may be another human player (as in the first videogame, *Pong*), a character embedded in the story (as in *Pacman*), and the programmer or game designer implicit in the game (as in *Zork*). Contest games have also developed at least three different ways of situating the player: we can watch from a spectator perspective while operating our own avatar character or spaceship (as in *Mortal Kombat*); watch from a situated perspective while operating a character (as in *Rebel Assault*, where we see the vehicle we are operating as if we are following just behind it with a movie camera); or, most immersively, watch and act from a situated first-person viewpoint, as in *Doom*,

where we see the landscape of the game and our opponents coming toward us as if we are really present in space. These gaming conventions orient the interactor and make the action coherent. They are equivalent to a novelist's care with point of view or a director's attention to staging.

Fighting games have also developed a sure-fire way of combining agency with immersion. The most compelling aspect of the fighting game is the tight visceral match between the game controller and the screen action. A palpable click on the mouse or joystick results in an explosion. It requires very little imaginative effort to enter such a world because the sense of agency is so direct. The imaginative engagement is even stronger with an arcade-style interface that lets you sit in a brightly painted model of a spaceship or fire a toy gun. My own surprising immersion in the *Mad Dog McCree* arcade game (discussed in chapter 2) depended heavily on the heft and six-shooter shape of the laser gun controller and on the way it was placed in a hip-height holster ready for quick-draw contests. As soon as I picked up that gun, I was transported back to my childhood and to the world of TV Westerns. When my son brought home the videogame version, based on a multibutton controller, I could not get interested in the game at all (although he liked it better that way, since it was the skill mastery that interested him rather than the story). For me, the six-shooter was an ideal threshold object, a physical device I could hold in my hand that was also an imaginary device in the world of the story. I only had to put my hands around it to enter the immersive trance. Ideally, every object in a digital narrative, no matter how sophisticated the story, should offer the interactor as clear a sense of agency and as direct a connection to the immersive world as I felt in the arcade holding a six-shooter-shaped laser gun and blasting away at the outlaws in *Mad Dog McCree*.

Because guns and weaponlike interfaces offer such easy immersion and such a direct sense of agency and because violent aggression is so strong a part of human nature, shoot-'em-ups are here to stay. But that does not mean that simplistic violence is the limit of the form.

Though violent games have dominated computer entertainment sales, there are some signs of a more complex approach. In many fighting games, like *Mortal Kombat*, the player can switch sides and play through the same confrontation from opposing positions. The *Star Wars* series of computer games offers a particularly dramatic change in player position. Most of the games, like the popular *Rebel Assault* CD-ROMs, put the player in the position of a fighter in the forces led by the heroes, Luke Skywalker, Han Solo, and Princess Leia, but the *Tie Fighter* game casts the player as a member of the Empire forces. As one adult player, a pony-tailed programmer from San Francisco, told me, this recruitment into the forces of the Empire can be a source of intense fascination. "I got totally identified with the Empire and its goals of maintaining order. I found myself hating the rebels because they brought disorder. It really freaked me out. I could see right away how I could become a great fascist." Of course, it is possible to play the game purely for the thrill of flying the Empire's planes, but the moral impact of enacting an opposing role is a promising sign of the serious dramatic potential of the fighting game.

The success of the fighting contest games poses a challenge to the next generation of digital artists. The contest format is open to expressive expansion in many ways once we move the protagonist beyond the role of a simple fighting machine. We need to find substitutes for shooting off a gun that will offer the same immediacy of effect but allow for more complex and engaging story content. We need to find ways of drawing a player so deeply into the situated point of view of a character that a change of position will raise important moral questions. We need to take advantage of the symbolic drama of the contest format to create suspense and dramatic tension without focusing the interactor on skill mastery.

Constructivism

An MIT freshman recently confided to me that he was spending a lot of time on a MUD even though he was bored with the dragon slaying

that formed its main focus of activity. He continued to log on because he had figured out a way to hold parties there. He no longer used the commands for moving around and for killing, carrying, and eating beasts to build up his score as a player. Instead, he had organized other members of the MUD to use these same commands to gather provisions and bring them to a common place at a prearranged time. Dragon slaying had become an electronic form of catering.

The student's ingenuity is typical of the MUD culture. He was taking the materials at hand and repurposing them for his own uses. The notion of reassembling a fixed set of materials into new expressive form was inherent in the original *Zork*, the ancestor of the MUDs, which provided the interactor with a large vocabulary of commands and a rich array of objects that could be combined in multiple ways. MUDs began as collective games of *Zork* (hence their original name, Multi-User Dungeons). But for many people, like my student, the pleasure of sharing a virtual space in which they could chat with one another over the Internet was greater than the pleasure of the game. In the late 1980s, James Aspnes, then a graduate student at Carnegie Mellon University, created a new kind of MUD that emphasized typed conversation among the interactors and offered participants access to the programming language itself.¹¹ Instead of playing to increase their score, MUDders now indulged in more intense role-playing. And with the increase in immersive involvement came a desire to construct their own virtual worlds.

Since objects in a text-based MUD are made out of programming code and words, there is no limit to what can be called into being within the virtual world. An expert MUDder might have his own private castle, with hidden pathways and working drawbridges; he could recruit other people to come live in it and swear fealty to him, or he could amuse "newbie" visitors with puzzle rooms or frighten them off with ferocious trolls. Even a very uncertain programmer can create objects with personal resonance, like a Chinese dancing fan that only looks graceful in the hands of its creator. Most of all, the power to create objects procedurally (by specifying not just their appearance

but their behavior) has led to an outpouring of whimsy and practical jokes: a plate of spaghetti "squirms uneasily" whenever someone says they are hungry; a bucket of water falls on people who try to enter a player's room; magic spells turn fellow players into frogs or make them invisible to one another. MUDders relish one another's ingenuity in stretching the representational powers of the environment. This constructivist pleasure is the highest form of narrative agency the medium allows, the ability to build things that display autonomous behavior.¹²

The goal of the MUDders seems to be to be able to represent every activity from real life and fantasy fiction within the virtual world. Not everyone would enjoy the fantasy content of MUDs or the role-playing activities they support, but the changing emphasis of MUDs suggests a general trend in the exercise of agency in digital environments. The current constructivist MUD culture was built by an academic community that has enjoyed twenty years of consistent access to computers. It may well be a predictor of future trends in the larger population, which is just starting to come on-line. As computer access spreads, it is likely that more and more people will turn from win/lose game playing to the collective construction of elaborate alternate worlds.¹³

Virtual reality researcher Brenda Laurel has argued that VR environments should be reserved for constructivist adult make-believe:

If . . . the goal is to create a technologically mediated environment where people can *play*—as opposed to being entertained—then VR is the best game in town. When children play, they typically use their imaginations quite actively and constructively to invent action and assign meaning to materials (or make or find new ones) as the need arises. In VR as in children's play there is no sharp distinction between "authoring" and "experiencing." With [Laurel's VR environment] Placeholder, we learned that adults can play in the same way—when their imaginations are booted up by a rich virtual environment.¹⁴

But Placeholder is just a demonstration environment, and its interactors are very dependent on the suggestions of a goddess figure who proposes things for them to do and actively discourages all attempts at shooting games. We have a lot more to learn before we can reliably “boot up” the adult imagination enough to provide a completely constructivist digital environment.

One essential component of such an environment would be a repertoire of expressive gestures beyond the current staples of navigation and attack movements. The graphics-based environment of *Myst* offers a wonderful range of concrete actions made real by the textured graphics and the careful sound design. But it is a completely depopulated world. The *Woggles* world of greetings and imitative gestures (discussed in chapter 4) suggests that designers can use movement as a social language. The most expressive gesture I have yet experienced on the computer is petting my digital dog, Buttons, who lives on my home Macintosh screen and growls and pants appreciatively as I move a hand-shaped cursor over him by rolling the mouse. Certainly we could have stories in which we rock a baby’s cradle or cover a sick person with a blanket or open a door to offer shelter to someone fleeing from a mob. It may be hard to picture such gestures in the game interfaces of today, which are often no more expressive than pushing buttons on a bank machine. But there is no reason why gestures could not be animated in a way that very closely matches the visual display with the interactor’s movement and heightens the dramatic impact of the story.

Such constructivist stories will probably evolve out of the current MUD environment. The MUDs now offer a wide repertoire of commands, objects, and ritualized scenes. Soon they may feature 3-D landscapes and graphical avatars with typed-in dialogue appearing in bubbles over their heads. These developments could make it easier for a wider audience to participate in collective fantasy.

But collective fantasy can be fraught with problems. MUDders tend to fight with one another both in and out of character. They resent the power of the wizards and gods who can eavesdrop, reassign

treasure, and kill or revive players. They have difficulty settling disputes over when it is acceptable to kill another player or who is entitled to the treasure left on the virtual corpses of dead adventurers. Because of the improvised nature of MUDding, a lot of time is spent in negotiating appropriate behavior rather than in story making. MUDders often tell me how much they enjoy being in character and performing the routine actions of the parts they play (recruiting squires, negotiating treaties, casting spells), but they also complain that a good MUD story is hard to sustain. They miss the sense of drama they enjoy in the fantasy literature that inspired these on-line fantasy worlds.

Perhaps the most successful model for combining player agency with narrative coherence is a well-run LARP game. Live-action role-playing games are guided by a clear aesthetics that divides plot responsibility between the game master (GM) and the players. The GM is responsible for inventing an enticing world with many things to do in it, a world populated by clearly drawn characters and offering a good dramatic mix of challenges and surprises. In a successful game the players have a great deal of constructive freedom in improvising the story and multiple ways of accomplishing their goals. If a player wants his or her character to take an action that will change the plot tremendously (say, for example, that a player wants her character to poison her husband, who also happens to be the head of the rebel army), the GM cannot prevent the player from proceeding merely because the action was unforeseen. But if the GM were to introduce a sudden hurricane or a nonplayer character in the middle of an ongoing game in order to enhance the plot, this would be considered unfair. The rule of successful game mastering is to set the world in motion, or wind up the clock, and then step back and let the plot unfold at the will of the players. However, part of what keeps live-action games cooperative is the fact that people interact face-to-face and often have continuing relationships with one another beyond the events of a game session.

Computer-based role-playing stories aim for the same degree of

player freedom as the LARPs, but they often depend upon the ongoing intervention of the MUD “wizards” to avoid lapsing into plotless socializing or repetitive vignettes. There is a growing demand among MUDders for computer-based games that will maximize both dramatic structure and player freedom. Producing such systems will require the union of computer science expertise with participatory storytelling artistry. Perhaps the next Shakespeare of this world will be a great live-action role-playing GM who is also an expert computer scientist.

The Interactor as Author

One of the key questions that the practice of narrative agency evokes is, To what degree are we authors of the work we are experiencing? Some have argued (with either elation or horror) that an interactor in a digital story—not just the improvising MUDder, but even the navigating reader of a postmodern hypertext—is the author of the story. This is a misleading assertion. There is a distinction between playing a creative role within an authored environment and having authorship of the environment itself. Certainly interactors can create aspects of digital stories in all these formats, with the greatest degree of creative authorship being over those environments that reflect the least amount of prescribing. But interactors can only act within the possibilities that have been established by the writing and programming. They may build simulated cities, try out combat strategies, trace a unique path through a labyrinthine web, or even prevent a murder, but unless the imaginary world is nothing more than a costume trunk of empty avatars, all of the interactor’s possible performances will have been called into being by the originating author.

Authorship in electronic media is procedural. Procedural authorship means writing the rules by which the texts appear as well as writing the texts themselves. It means writing the rules for the interactor’s involvement, that is, the conditions under which things will happen in response to the participant’s actions. It means estab-

lishing the properties of the objects and potential objects in the virtual world and the formulas for how they will relate to one another. The procedural author creates not just a set of scenes but a world of narrative possibilities.

In electronic narrative the procedural author is like a choreographer who supplies the rhythms, the context, and the set of steps that will be performed. The interactor, whether as navigator, protagonist, explorer, or builder, makes use of this repertoire of possible steps and rhythms to improvise a particular dance among the many, many possible dances the author has enabled. We could perhaps say that the interactor is the author of a particular performance within an electronic story system, or the architect of a particular part of the virtual world, but we must distinguish this derivative authorship from the originating authorship of the system itself.

Interestingly enough, the question of authorship in formulaic media is one that students of ancient oral narrative have considered at length. In the 1930s, Greek scholars were distressed when literary analysis revealed that Homer (and other epic preliterate poets) created through a process that involved fitting stock phrases and formulaic narrative units together. Critics at that time resisted the thought that the great artist Homer was not original in the same way that modern print-based writers are expected to be. Now, with the advent of computer-based authorship, we are experiencing the opposite confusion. Contemporary critics are attributing authorship to interactors because they do not understand the procedural basis of electronic composition. The interactor is not the author of the digital narrative, although the interactor can experience one of the most exciting aspects of artistic creation—the thrill of exerting power over enticing and plastic materials. This is not authorship but agency.