Chapter 2. Interactivity

Interactivity is Without a Doubt the most grossly misunderstood and callously misused term associated with computers. Everybody has been using the term for so long that people are quite sure of their appreciation for interactivity. The problem is that everybody seems to have a different conception of interactivity, and most descriptions are fuzzy and accompanied by lots of hand waving. Worse, many of the ideas bantered around about interactivity are seriously wrong.

My Definition of Interactivity

I offer this definition of interactivity:

> *A cyclic process between two or more active agents in which each agent alternately listens, thinks, and speaks—a conversation of sorts.*

In this definition, the terms *listen, think,* and *speak* must be taken metaphorically. A computer doesn't listen in the strict sense of the term, but it does listen to its mouse and keyboard. It may not speak, but it does something operationally similar when it displays output on its screen. And, of course, a computer never thinks in the true sense of the word, but it does process data or calculate. I suppose I could have used the terms *accepts input, processes input,* and *outputs results,* but those terms are just as narrowly computerish as the earlier description's terms are narrowly humanistic. With this proviso for the broader sense of the terms *listen, think, and speak,* the definition is a clear statement of exactly what constitutes interactivity.

The value of this definition lies in its reference to conversation, a well-understood form of interaction. Our experiences with conversation offer useful guidance in software design. Obviously, the overall quality of a conversation depends on the particular quality with which each step— listening, thinking, and speaking—occurs. Even more important is the way those three qualities combine. Many people assume that maximizing the quality of each step is all that's required to achieve the maximum quality of interactivity, but the truth is more subtle.

Consider that the overall quality of a conversation doesn't depend on the isolated qualities of each step—each step must be executed well if the conversation is to succeed. Can you recall conversations in which your participants weren't listening to your words? In such cases, no matter how refined their thinking or eloquent their speaking, the conversations fell short because without good listening, it's not an effective conversation— it's a lecture. In the same fashion, I'm sure you can recall conversations with people who were incapable of understanding your point—and these conversations were just as frustrating and pointless as the previous type. Lastly, you can likely recall conversations with a tongue-tied, inarticulate person who simply couldn't construct an informative sentence. Again, the conversations were failures because without quality in that third step— speaking—the quality of the first two steps didn't matter.

Lesson 8

The overall quality of interactivity (human-with-human or human-with-computer) depends on the product, rather than the sum, of the individual qualities of the three steps. You must

have good listening and good thinking and good speaking to have good interaction.

My definition rejects a number of phenomena mistakenly held to be interactive. For example, *reaction*, no matter how intense, is not the same as *interaction*. If you're watching a great movie, and your heart is pounding with excitement and your fingers trembling with emotion, you're still not interacting with the movie. The movie is not listening to what you are saying, nor is it thinking about anything. It is only speaking. It speaks well and powerfully—that's good! But it is not interacting.

Not so! The viewer engages in active interpretation of the movie and therefore is not in a passive role.

Here is a snippet from the book *Interactive Storytelling for Video Games*, which makes the same argument.

One of the illusions of the "interactive age" is that great art is not interactive. Okay, so indeed not all art has buttons to click on or hyperlinks to follow, but all deep and long-lasting art is participatory in some fashion. Whether it simply evokes an emotion in the viewer or alternatively invites analysis to truly understand the work itself, any art that lasts is multilayered and reveals more upon each repeated examination. To me, this is the very essence of interactivity: the invitation to probe deeper… Art evokes reaction from the audience, which is in part what makes gaming a wonderful medium for artists.

This argument confuses the active/passive dichotomy with the interactive/reactive dichotomy. Reaction is an action, but that doesn't make it an interaction. The audience can actively think, but that doesn't change the fact that the movie isn't thinking. The relationship between the movie and the audience is fundamentally one-sided: The movie does all the speaking, and the audience does all the listening and thinking. The audience does not act on the movie; it merely reacts to the movie.

Interaction requires that the "action" be "inter" (between or among) the agents. If the action is one-sided, it's not "inter"; it's "re."

I belabor this point because so many people balk at it. Perhaps they are influenced by the current status of interactivity as the latest buzzword and the implication that interactivity is somehow "New! Better! Hot! Cool!" My declaration that movies are not interactive becomes, by implication, an assertion that they are "Old! Worse! Tepid!"—a suggestion that any knowledgeable person would reject. Hence, people reject the notion that movies aren't interaction.

Let me set this matter straight: I am not denigrating movies. I like movies. Some of my best friends are movies. I take a movie out to lunch every year on the American film director D.W. Griffith's birthday. Cinema is a highly developed medium that does its job very well. But every medium has its strengths and weaknesses. Movies aren't interactive. Because interactive storytelling is procedurally manufactured rather than handcrafted, it will never have the highly polished internal structure that movies have. They are two different media.

Second-Person Insight

All great artists have some special insight that gives their work profundity.

A brilliant composer has an inner ear that can judge the feel of music. A painter has an eye for form, shape, and color. A deep insight into the language gives a top-notch writer the ability to come up with the perfect phrase. In the same way, the interactive artist needs a special kind of insight, an artistic acuity few others share. I call that acuity *second-person insight*. It's the ability to think primarily in terms of how an expression will be perceived by the audience.

This isn't unique to interactive storytelling; all artists worry about how their expression will be perceived by the audience.

True, but this isn't an artist's primary concern. An expository artist's main task is to get the expression right. A writer prepares a first draft and then attempts to reread it from the reader's point of view. In other words, the primary emphasis is on the expression itself, and the secondary emphasis is on the audience's perception. An artist whose work isn't understood by the masses doesn't seek the nearest tree with a noose in hand. Whether it's a play, a painting, a movie, a novel, or a poem, if people don't understand it, that's their problem, not the artist's.

This is true for fine artists, but entertainers cater to the tastes of their audiences. What difference is there between the second-person insight and the sensitivity to the audience intrinsic to any good entertainer?

Entertainers do indeed require such insight, but it differs in two ways from the second-person insight required of designers of interactive storytelling. First, it is necessarily one-size-fits-all in nature. The entertainer must create the expression that will entertain the average member of the audience. If a few members of the audience don't get the joke, realize the implications of a dramatic action, or fail to remember the crucial link from the character's past, that's an acceptable loss. The interactive storyteller is expected to address a broader range of mentalities, coming up with ways of reaching people further from the average.

The second difference lies in the depth of reaction required. The entertainer's actions are one-shot in nature: The joke, plot twist, or sudden violence evokes a reaction, and that's as far at the entertainer goes. The designer of interactive storytelling must think several layers deep: If the user does X, can I respond with Y? And what happens if the user reacts to Y with Z? The interactive designer is like a chess player, thinking many moves ahead of the user; the entertainer concentrates on a single step at a time.

Therefore, second-person insight requires a fundamental and profound shift in attitude. You must go beyond the normal consideration of your audience's perceptions and make those perceptions the entire thrust of your efforts. You must develop the mental discipline to get out of your own mind and get into your audience's mind.

There are two facets to second-person insight. The first is enhancing your empathy, but it goes much further than having an emotional appreciation of the audience's state. It's not just the ability to empathize with their likely emotions, but the ability to empathize with emotions you wouldn't

feel. You might design a corner of your storyworld with pathos in mind, but your player might react to that situation with anger. You must not reject or suppress that emotional response; you must anticipate and respect it. The second facet operates on an intellectual plane; you must be able to visualize the confusion audience members bring to the experience. What questions will be going through their heads? What assumptions will they be making? How will their minds mesh with the thinking in your work, and where will their thinking clash with yours? How can you minimize the likely clashes between your storyworld and their thinking?

We spend so much time inside our own heads (24/7 for sane people) that seeing the world through another's eyes is immensely difficult. Few people appreciate just how differently other people think. Teachers do; it's quite a jolt teaching your first class. You stand up in front of your students; reveal the truth to them in a few clean, simple sentences; and note with shock the utter incomprehension in their faces. So you repeat yourself with more elaboration, and behold the same blank stares. The act of teaching is mostly a matter of finding an infinite number of ways to communicate an idea. All good teachers have strong second-person insight, at least in the intellectual dimension.

Here's a simple test of your second-person insight. Imagine that you're having a video conversation with a friend using a handheld smartphone or tablet. If you hold the device in your hand, you're failing a simple test of second-person insight. Your hand jiggles, making the image of your face flit about your friend's screen, which can give her a headache. If you could put yourself in your friend's shoes, you'd know to prop your device in a stable position.

A Model for Human Understanding

A detailed appreciation of the nature of human understanding will clarify the role of second-person insight and reveal the importance of interactivity. The starting point is the notion of associative memory. Information in the human mind is not stacked neatly in files and folders the way it's organized inside a computer. Rather, the ideas are organized by association. For example, credit cards and bank accounts are perceptually different from money, yet most people associate credit cards and bank accounts with coins and bills, even though credit cards and bank accounts don't contain actual coins and bills. You might imagine coins and bills moving into or out of your bank account, even though nothing is moving; it's just numbers being added or subtracted. The mental associations spread out from there: Money flowing into accounts from your paychecks, flowing out to pay rent, gaining interest, being transferred to savings or invested in stocks—all an imaginary process carried out in your mind by associations between these concepts.

Many of these associations are natural and logical, but people put different weights on them. Perhaps your view of these associations puts your checking account at the center of a web of connections. Another person might use the credit card as the focal point. A third person, blessed with lots of financial savvy, might well refuse to think in terms of a financial center of gravity and instead connect all these ideas in a more egalitarian style, concentrating on the balance of the overall distribution of assets among stocks, bonds, T-bills, cash accounts, gold, and so forth (**Figure 2.1**).
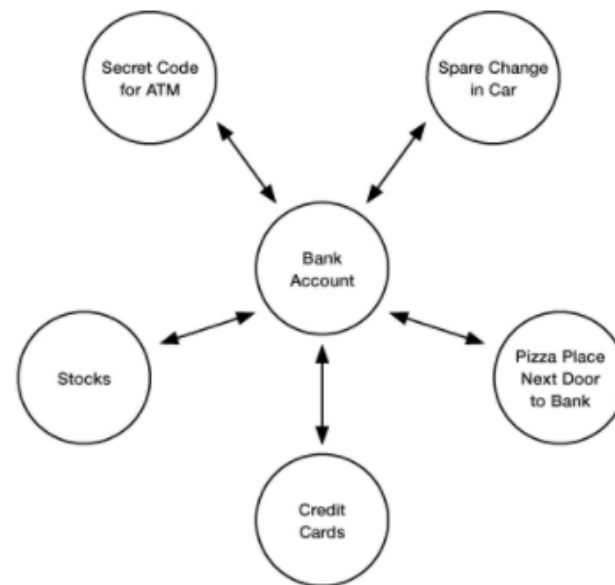
Financial Assets

Liquid Assets

Checking Account

Savings Account

Piggy Bank

Semi-liquid Assets

Stocks

Bonds

T-Bills

Illiquid Assets

Home Equity

Insurance Policy

Figure 2.1. **Structured memory versus associative memory**

Even more important for interactivity considerations is the idiosyncratic nature of many of these associations. Some people have completely different connections; some people have connections in common but put different weights on those connections. Someone who invested heavily in Enron will have strong emotional associations with stocks; another person who held lots of dotcom stocks in the early 2000s will have different emotional associations. A person who recalls grandfather's old safe with its pile of grand stock certificates will associate stock with certificates; the absence of those certificates from modern stock trading might induce a certain nervousness not shared by others. And what if grandfather had often intoned in his deep, resonant voice, "Stocks, my child—you can't go wrong with a solid portfolio!" How would that fond memory distort the web of associations in a person's mind? And what if grandfather had died penniless?

It is this network of associations that constitutes human memory and human understanding. We each build our own network, node by node, connection by connection, as we learn and grow. Because we all live in the same universe, our networks often share gross similarities, but the differences in our experiences ensure that each network's particular structure is unique to its builder. This explains why we so often misunderstand each other. You and I might have a roughly similar overall understanding of the stock market, but your associations are so different from mine that we can come to stunningly different conclusions. You can explain your reasoning with determination and patience, but if my mental network doesn't coincide closely with yours, I just won't get your point.

These discrepancies of experience and understanding are just part of the human condition; we accept them, shrug our shoulders, and mumble, "De gustibus non est disputandum." ("There's no arguing about taste.") If the audience rejects an artist's work, the artist can dismiss the audience members as obtuse cretins who are simply unable to perceive his or her vision (network). Too bad for them.

The revolutionary value of interactivity lies in its ability to get past this limitation. Imagine the teaching process not as expository lecture, but as interactive conversation. The teacher probes the student's network, noting carefully the deeper significance of the questions the student asks. The teacher uses that information to infer the structure of that network. Here is where the teacher's second-person insight comes into play; a good teacher can quickly reconstruct the student's network and identify the misplaced node or incorrectly weighted association. With the problem identified, the teacher can work to shift the student's network. Initially, the student will resist, attempting to fit the teacher's observations into the

network in a manner that doesn't stress or distort it. But the teacher presses on, and suddenly the student's network snaps into place. "Aha!" says the student.

This is the power of interactivity: Interaction reveals the discrepancy between the artist's and the audience's networks and makes it possible for the artist to address that discrepancy. The result is an ability to reach people with tremendous impact. That's what makes interactivity so powerful and what justifies interactive storytelling's loss in narrative finesse.

To use interactivity effectively, you must understand the human truth that people see and hear what they want to see and hear, and then you must come to understand those desires. Being right is not good enough; you must somehow see your truth through other people's eyes.

Second-person insight, like so many artistic gifts, involves a certain degree of mental aberration. To be of any value, the artistic expression must be unconventional, or at least nonobvious. At the same time, you must see your truth from many points of view. You must be able to see how your truth fits into many different networks of knowledge. It's a weird way to think, perhaps within the reach of only a gifted/cursed few.

Ego Control

Another requirement for the interactive artist is an iron determination to subordinate your own desires and interests to those of your audience. You must push down the artistic egotism that glories in self-expression, replacing it with the audience's perception.

So you want me to abandon my own artistic drive and instead just "give 'em what they want." Sounds more like Barnum & Bailey than Michelangelo.

Absolutely not. I'm not suggesting that you should abandon your own artistic interests—after all, that's what you have to offer your audience. Yes, you want to speak your truth, but that's the easy part; the hard part is making them hear it. Ergo, you must silence the shouts of your ego so that you can hear the whispers of your audience's needs.

Perhaps a metaphor will help. Imagine the king of a medieval country deciding how much of the country's wealth should be dedicated to his own comfort and pleasure. "As the king, I'm the most important decision maker in this country, so it's vital that I be cushioned against the distracting vexations and tribulations of life. It's my job to concentrate on the highest-level decisions. It is better for all if I wear the finest clothes, eat the best foods, and live in the most luxurious palace in the country. Some of the peasants might starve, but it's all for the greater good."

You can instantly see through the selfishness of this argument, but how does it differ from this one: "As the artist, my ideas are the most important in the world, so it's vital that I be cushioned against the distracting desires and interests of my audience. It's my job to concentrate on the grandest artistic ideals. It is better for all if I heed my own voice, aspire to my own goals, and pursue my own interests. Some of the audience might not understand my work, but it's all for the greater good."

This argument doesn't apply to all art—just to interactive art. Artists in

other fields are perfectly justified in neglecting the needs and desires of their audiences because their audiences are so large that those needs and desires average out to meaningless gray murk. The great Greek sculptor Polyclitus once proved this point with a simple exercise. He showed a work in progress to a series of critics and asked each what could be done to improve the work. Then he carried out all their suggestions. The result was an ugly monstrosity. A work of expository art must have a single unifying vision; all those audience ideas and variations only muddy the waters.

Interactive art is profoundly different because it's experienced individually by millions of people. Millions of people have seen reproductions of Michelangelo's *The Creation of Adam* on the ceiling of the Sistine Chapel, and every single one of them has seen exactly the same thing because there's just one image. But millions of people can play an interactive storyworld, and each one can experience something that nobody else has ever experienced. That's the whole idea of interactivity: It responds to each person individually. Accordingly, you cannot hide your ego behind the argument that the audience's needs and wishes are all averaged together. You must face each player individually.

Degrees of Interactivity

Interactivity is not a Boolean quantity like mortality (either you have it or you don't); it's a numeric quantity like weight (you can have more or less of it). My favorite example of a low-interactivity phenomenon is the refrigerator light. You open the door and the refrigerator light turns on; you close the door and it turns off. That's interactivity! (The refrigerator light "listens" to the door switch being opened, "thinks" with the simple-minded logic of "Switch open, turn on light!" and "speaks" by turning on

the light.) But it's dumb interactivity. It might entertain a 3-year-old for a little while, but even a 4-year-old quickly outgrows the insipid interactivity of the refrigerator light.

At the other end of the scale, sex is an example of the most intense interactivity. Powerful lovemaking is the deepest interaction two people can have; is it any wonder that society adorns it with so many mores?

Lesson 9

Your designs should aspire to the ideal of metaphorically having sex with your users.

Three factors determine the degree of interactivity in storytelling: speed, depth, and choice.

Speed

Of the three factors that determine the degree of interactivity, speed is the simplest to understand. At the bottom end of the scale, slow applications destroy interactivity. At the opposite of the scale, the faster the speed, the greater the opportunity for interactivity. Three examples demonstrate this point: the VisiCalc spreadsheet, the BASIC programming language, and the Internet.

The first example of the impact speed has on interactivity is the spreadsheet. VisiCalc was the first spreadsheet for personal computers, and computer historians agree that this program did more to launch the PC revolution than any other program. But VisiCalc wasn't the first spreadsheet—not by a long shot. Plenty of spreadsheet programs were available for big mainframe computers, but they were batch-processing programs. You punched your data onto punch cards, submitted your job

to the computer center, and then picked up your output the next day.

You studied the printouts, made a few changes in your data, punched up new cards, and resubmitted the job. If you were lucky, or you stayed at the computer center until 3 a.m. when nobody else was submitting jobs, you could get your turnaround time down to a few hours, in which case you could run through half a dozen scenarios in one night.

VisiCalc wasn't as powerful as mainframe spreadsheets; after all, it had to run on a tiny microcomputer. Moreover, a PC's small screen showed only a fraction of a typical spreadsheet; the "real" spreadsheets at computer centers could print results on sheets of paper so big that you could see everything at once. VisiCalc had just one advantage over conventional mainframe spreadsheets: If you changed a number, it processed the change immediately and presented the results in a flash. In terms of features, display, and overall computational power, VisiCalc was a loser. Its interactivity was thousands of times faster than mainframe spreadsheets, however, and that made all the difference in the world.

The second example of the impact speed has on interactivity is the BASIC programming language, developed at Dartmouth in the late 1960s. A number of languages that emphasized simplicity had been designed for students, but something quite unexpected made BASIC stand out: its interactivity. BASIC was an interpreted language, not a compiled language. Most computer languages are compiled. You type up your program, submit it to the compiler (a program that translates your program into machine language), and then run your program to see how it works. The compilation step could take several minutes in the old days, so after submitting your program to the compiler, you would take a coffee break before returning to see how it came out.

It probably had a few bugs, so you would fix one or two bugs, submit it again, and go have another cup of coffee. Repeat this process all day long and your eyes were bulging out of their sockets from the caffeine—and you made only minor progress on your program.

But BASIC is interpreted: It's designed to be run immediately, without compiling. You type up your program and run it; the results appear immediately. If there are bugs, which is usually the case in a first-cut program, you make a change and run the program again. This process is so quick and easy that you never quit for a cup of coffee; you just sit in front of the computer, lost in intense interaction with it.

As a result, BASIC took the programming world by storm. Within just a few years, everybody was using it to teach students. It's actually a crummy language (mostly because it's interpreted, not compiled) with all sorts of problems, and it teaches bad habits. The single factor of rapid interactivity, however, put it way ahead of everything else.

On a more modern note, the third example of the impact speed has on interactivity is the Internet, aka the "World Wide Wait." Back in the 1990s, and well into the new century, people used modems on telephone lines to use the Internet. It was slow and frustrating to wait for web pages to load. I will never forget the sense of exhilaration the first time I sat down and worked with a broadband connection—the web came alive. That reduction in turnaround time made a huge difference.

We have an even better example of the value of interactivity with digital cameras. In the bad old days, when we used film cameras, first you took all your photographs. Once the film roll was full, you sent it off to be developed. You'd get your pictures back a while later and look them over. Many weren't quite right, and often you'd curse yourself for messing up a

great photo opportunity.

With digital cameras, you take the shot and immediately see how it came out. The faster turnaround allows you to interact with the imagery, try different approaches, and choose the best.

Lesson 10

Fast turnaround is always better than slow turnaround.

Depth

Some of the activities performed on computers are mindless: Searching through a few dozen websites to find a bit of information doesn't take a lot of concentration. A video game might move at a frantic level, but it doesn't reach deep into the most important areas of your brain. Other activities require more mental exertion and hence provide deeper interaction. A game of chess, for example, moves slowly but provides a deeper interaction than a game of tic-tac-toe.

In terms of depth as a factor that determines the degree of interactivity, *deeper* means "penetrating closer to what makes you human." Computers can easily beat you at tic-tac-toe, but that wouldn't bother you because tic-tac-toe isn't that important. But what if your girlfriend ran away with a computer? "I'm sorry, Mortimer," she says, "but you're just not as exciting, not as sensitive, not as satisfying as my Super iMac. Sure, he's plain white, but in every way that counts, he's a real man." Now that would strike you in the gut! This is an extreme case, but it serves to illustrate what I mean by penetrating closer to what makes you human.

Many dimensions of depth are available to the artist. Games confine

themselves to a few of the simplest modalities of human cognition: hand-eye coordination, puzzle solving, spatial reasoning, and resource management are the four primary challenges of games. For interactive storytelling, however, the foremost cognitive modality at play is social reasoning. The infinite complexity of the dynamics of human social relationships gives the interactive storyteller a bottomless well of material; the problem lies in getting some sort of algorithmic grasp on the problem. Reducing social machinations to mathematical form without compromising their richness, however, requires deftly combining artistic insight and mathematical fluency. This topic is addressed in the discussion on personality modeling in Chapter 14, "Personality Models."

Lesson 11

The overall quality of an interaction depends on its depth as well as its speed.

Choice

Carl von Clausewitz, in his monumental work *On War*, noted that battle is to war as cash payment is to business. A businessperson can make deals, write contracts, design and build products, obtain loans, and arrange foreign exchange, but in the end, cash payment is the decisive point; everything else is merely a preliminary step leading to that moment. A general can obtain weapons, train troops, and maneuver around with clever strategy, but in the end, battle is the deciding moment. The same idea applies to the process of thinking: Choice is to thinking as battle is to war. You can philosophize and deliberate all day long, but the end result of all your mental gymnastics has to be a choice of some sort. Your choice might not seem like much of a choice. (For example, "Do I eat lumpy

oatmeal or pickled prunes for breakfast?") But it's still a choice, and all your mental processes are geared toward making it, even in the absence of clear information. (For example, "When I hear footsteps behind me in the dark alley, do I run or ignore them?")

The ability to make choices, along with speed and depth, determines the degree of interactivity. The quality of any interaction depends on the *richness* of choices available to the user. Richness breaks down into two factors:

- The functional significance of each choice
- Perceived completeness: the number of choices in relation to the number of possibilities the user can imagine

Functional significance means the degree to which a choice satisfies users' desires, needs, and interests. For example, a word processor could offer a feature that randomly changes fonts and font sizes while typing, but this choice would be useless, so providing it doesn't improve interaction. A better example comes from a hypothetical game that offers the player the opportunity to wander all over a huge region—but nothing interesting happens in the huge region. The poor player wastes hours of time exploring a dead space that offers no further opportunities for interaction. Sure, the game offers zillions of choices in terms of where the player might go, but none of those choices is functionally significant.

Feature bloat is an example of the reverse of this issue. Consider, for example, the Microsoft Word feature that allows you to add borders and shading to a document. I have never used this feature, nor do I expect to ever use it. It therefore represents a choice that has no functional significance to me. From my point of view, this choice is a liability in the program. Every time I consult the Format menu, my eye must glance at

this option, and I must make a decision to ignore it. Of course, other users might love the feature, throwing in borders and shading all over the document. For them, this feature doesn't constitute a liability—it offers an additional choice that they find functionally significant. Thus, the determination of what constitutes functional significance is subjective.

For the second factor, the absolute number of choices isn't important; it's the number of choices offered compared to the number of possibilities the user can imagine. If the user has reached the climax of the story and must choose between leaving his girlfriend for the war or shirking his duty, having only two choices doesn't detract from the power of the interaction; it's difficult to imagine any other reasonable possibilities.

This brings me to the most important point in this book.

Crawford's First Law of Software Design:

<div align="center">

Always ask, what does the user *do*?

What are the verbs?

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Every piece of software is defined by the set of verbs available to the user. Those verbs constitute the design skeleton of the software. If I tell you that a secret piece of software permits the user to enter text, modify its font characteristics, and set tabs and margins, you can be pretty certain it's some sort of word processor or publishing program. If I tell you that a secret piece of software permits the user to turn right or left, move forward or backward, run, jump, duck, and fire, you know that it's a first-person shooter game. The verbs define the software and answer the question, "What does the user do?"

So What?

All my ranting and raving about interactivity fails to address an important question raised by my Alter Ego:

Who really cares about interactivity? Why bother with it?

I can offer three reasons for getting on the interactivity bandwagon: It's the medium's basis of competitive advantage, it's revolutionary, and it's powerful.

Incentive 1: Basis of Competitive Advantage

One of the great rules of competitive behavior is to place the competition in the context most advantageous to you. In military science, this rule is expressed as, "Fight on the ground of your own choosing," which means that a general should choose a battlefield best suited to the advantages and disadvantages of his own army. Political pundits always advise their candidates to "fight the campaign on your own issues, not your opponent's." Every MBA quickly learns to identify and exploit a company's "basis of competitive advantage." It's the product or service that the company can supply better than anybody else. Concentrating your efforts on that basis of competitive advantage is the only way to profit.

The computer is a medium of expression, and the artist using this medium must understand its fundamental basis of competitive advantage: interactivity. Computers can do a lot of things well: graphics, animation, music, sound effects, and text. However, other media can do these things better than computers. Sure, a computer can present

beautiful images, but a printing press can still deliver better images for less money. A $10 calendar or a $20 poster delivers better imagery than a $1000 computer. If you want animation, you can rent a DVD for a few bucks. Plus, it doesn't take a computer to play that DVD—just a DVD player costing perhaps a tenth as much as the computer. And the cost and quality of the text in a paperback book trumps what you get on a computer. In all these areas, the computer is second best. The computer might be a great development system for creating your masterpiece, but it's never the delivery system of choice—not if you want to get the best possible presentation of your work.

Interactivity is another matter entirely. No other medium can deliver true red-blooded interactivity—not movies, not audio CDs, not DVDs, and certainly not books. When it comes to interactivity, computers are the only game in town. It's the basis of competitive advantage of this medium.

Incentive 2: Revolutionary

Hey, who wants to work in a tired old field like cinema, music, or literature? Interactive storytelling is so new that nobody has any idea of what it is or how it works. If you're the adventurous type, it's the field for you. Besides, opportunities to get in on the ground floor of a new medium don't come along often. Literature was a hot new field about 2500 years ago, and the printing press opened up a lot of opportunities 500 years ago. Movies were young and wild a century ago, radio was young in the 1930s, and television had its heyday in the 1950s. I was in on the ground floor of computer games in the early 1980s, and that was fun, but nowadays it's just another case of Big Media. If you've got the creative itchies, interactive storytelling is the place to be.

Incentive 3: Power

Perhaps you're the kind of artist who lusts for the power to influence people. You have something you want to say to the world, and you don't want to whisper—you want to shout. You want your message to hit people in the gut, to knock their socks off, to take their breath away. Hearken back to the earlier section in this chapter "A Model for Human Understanding." Remember how I talked about the "Aha!" experience that people get when their network suddenly snaps into a new position? That's what any great work of art does. The audience for expository art stands at arm's length from it; people look at paintings, watch movies, read literature, and listen to music, but that's as close as they can get. Only with additional mental exertion can they reach out to the art. Interactivity draws them right into the middle of the art; they don't just witness the art, they make it happen themselves. This deeper involvement amplifies the power of the experience. Isn't that what you want?

Why not simply use the computer to enhance conventional storytelling?

The computer has been used to enhance storytelling for a long time; the movie *Jurassic Park*, for example, couldn't have been made without computers. Indeed, there's an entire field of effort known as *digital storytelling* that attends to the task of using computers to present conventional stories. Sure, the computer makes it possible to do the same old stuff faster and cheaper, and that's great for accountants and beginners. So if you want to use the computer as a tool rather than a medium, be my guest. But if your purpose is primarily artistic, you want to run with the artistic strength of the computer—its interactivity.

Conclusions

Now that I've pumped you up with revolutionary fervor, I shall cut you off at the knees with the warning that this revolutionary stuff is tough, sweaty, bloody business. The road to creating interactive storytelling in games is no cakewalk; those who attempt to travel it will face innumerable difficulties. This book doesn't walk you down that road; it can give you only general guidelines as you move forward. Remember, it's the choices you offer your player that determine the quality of the interactivity. If those choices permit players to fully engage their personal network of ideas with your own, then you can bestow an "Aha!" experience on them.