M.Sturken, D.Thomas, S.J.Ball-Rokeach. Technological visions: The hope and fears that shape new technologies (pp.19-33). PA: Temple University Press.

SHERRY TURKLE

1 "Spinning" Technology

What We Are Not Thinking about When We Are Thinking about Computers

THE STRUCTURE OF SPIN

IN THE decades since computers first entered everyday life, authors from the academy and popular media have told many stories about their social impact. Perhaps because academics and journalists are subject to similar market forces, their narratives have shared a tendency to hyperbole. In scholarly circles, studies about technology that report strong effects are more likely to get published; in the popular press, technology stories need to be newsworthy. There is pressure to make complex technologies with complex effects into good or bad news.

Consequently, by the 1990s, writing about computers was dominated by critics and utopians. Titles such as *The Road Ahead*, *What Will Be*, and *Being Digital* conjured images of untold riches, while computer critics, writing about the same technologies, invoked imminent threat with titles that suggested addiction and soul death: *Trapped in the Net*, *Caught in the Net*, *Failure to Connect*, and *Silicon Snake Oil*.[1] Even the postmillennial bursting of the Internet bubble did not so much temper discourse as spawn a new round of apocalyptic pronouncements and comeback narratives. Most recently, the trend toward hype that began with critics and utopians has broadened. It has become a cultural commonplace to use oversimplification about technology as the functional equivalent of political spin—the practice of spinning turns complexity into simple narratives, whether in the realm of political or technological commentary. Contradictory effects are edited out for the news cycle.

The editing that spin requires is facilitated by the use of a simple rhetorical device. This is to portray the object at hand as a monolithic thing, in this case, "The Computer" with a capital C. (In the case of "The Internet," conventionalized spelling has always and quite conveniently endowed it with a capital *I*.) The fact that computers are everywhere, regulating daily rhythms and routines—yet often hidden to view (in the toaster, the bank

machine, the alarm clock, the car)—seems to encourage unitary depiction. However, this rhetorical move comes at a cost. The fictive unity of "The Computer" makes it easier to speak of technology as an intentional agent and encourages us to acquiesce in sweeping generalizations about the effects or impact of computer technology on society.

The legal theorist James Boyle, writing about cyberspace and the law, humorously characterized the limitations of seeing the Internet as a causal agent:

> Some time ago, for my sins, I got into some journalists' Rolodexes as a law professor who knew something about the Net. Now, whenever a web-designing cult commits collective suicide, a child is accosted by a pervert in a chat room, or a murderer persuades his victim to turn up by sending an email message, I get a flood of calls looking for the "Internet angle." The trouble is that there rarely is an Internet angle. The murderers, sexual predators and crackpot religions are largely independent of the communications technology they happened to use. One reporter was particularly persistent in trying to get me to cough up an appropriate sound bite. Searching for an analogy, I asked her whether, if I called her up and asked her out on a blind date and murdered her, she would think it was a "telephone-related murder"? She rang off shortly thereafter, probably more convinced of my emotional instability than by my argument.[2]

As a psychologist, I myself get fewer calls about Internet-induced murder than about Internet-induced depression and addiction. But I have had many experiences that give me common cause with Boyle's annoyance. Spinning technology demands the Internet angle in the service of a clean story line. My closest analogy to Boyle's experience with the persistent reporter (one which I unfortunately did not handle with his wit and flair) came in the course of working on a television documentary about the effects of the Internet on family life. One of the case studies in the program was of a mother of three who left her family for a man she met online. I was interviewed at length about the case. During the interview, I explained that the Internet is a powerful medium through which people are sometimes able to work on their personal lives. I felt that what was most central in this story was the troubled relationship of this woman to her family. She described herself as lonely, unhappy, and unable to cope with family issues. When she discovered the Internet, she began to correspond with sympathetic online voices, real people who offered her the companionship she so desperately desired. Eventually, she left home in order to live with one of those real people, a man she claims makes her happy. The Internet made this man known to her. It did not motivate her to want him. In the final editing of the

television documentary, my remarks were limited to comments regarding the "compelling" nature of the Internet. My credentials as an Internet expert were used to support the thesis that this woman suffered an addiction to the Internet stronger than that caused by tobacco, alcohol, or heroin.

The language of Internet addiction limits our perspective, deters our asking crucial questions about why some people are able to use online experiences to work through problems and move toward constructive solutions whereas others use online experiences to act out in unconstructive ways. In acting out we stage our old conflicts in new settings; we reenact our pasts in fruitless repetitions. In contrast, working through usually involves a moratorium on action and a deepening of life reflection. Internet relationships provide rich spaces for both acting out and working though. To understand the dynamics of online experience we need to know about people's specific emotional challenges and resources. And we need to know more about specific opportunities and difficulties provided by particular Internet social settings.[3] These questions demand highly detailed answers; online experiences are not generic nor are what people bring to them. When we treat computer-mediated conversation as analogous to heroin (a substance that will always disempower and ultimately destroy its users), such specific psychological and social questions are made to seem irrelevant. But these questions, about the differences among different kinds of Internet users and different kinds of Internet use, are exactly the ones that need close investigation.

In my own studies of Internet social experience, I have found that the people who make the most of their "lives on the screen" are those who approach online life in a spirit of self-reflection.[4] They look at what they are doing with their virtual selves and ask what these actions say about their desires, perhaps unmet, as well as their need for social connection, perhaps unfilled. They use what they learn about themselves in their online lives to improve the "rest of their lives." Neither domain (virtual nor physically embodied) is treated as exclusively real. If we stigmatize virtual media as addictive (and, like drugs, in need of strict control), we will not learn about how to more widely nurture self-reflection within them. A parent whose child is on heroin needs to get the child off the drug. A parent whose child spends a great deal of time on the Internet needs, first and foremost, to be curious about what he or she is doing there. Is the child forming online relationships that are serving developmental purposes? Is the child having specific online experiences that are likely to serve as stepping-stones for emotional or intellectual growth? Do the child's online activities point to

things that might be missing in the rest of his or her life? *When contemplating a child at a networked computer, it is more constructive to think of the Internet as a Rorschach than as a narcotic.*

The debate about whether the Internet causes depression, which so preoccupied the media in the late 1990s, depended on a reification of the Internet, on treating it as though it were a single thing.[5] We were not well-served by the terms of the debate. The Internet is a mode of communication. It makes sense to analogize Internet speech to conversation. If we ask, "What is the psychological effect of conversation?" most of us would probably step away from the demand that there be a single correct response. We would answer that some conversations are toxic, others banal, others somewhat hurtful or helpful, and that once in a very long while, a conversation can be life-transforming. This would be true of face-to-face conversations and it would be true of telephone conversations. But it would seem absurd to group all of these different conversations together and conclude that "conversation use" is, on average, mildly depressing. Yet, the prevalent narrative of the "depressing Internet" does just that. This narrative has all the signs of spin, a simplified story that impedes our ability to understand the diverse and complicated ways that computational technology has entered our lives.

Computer technology is in its childhood, perhaps its adolescence. Unfortunately, we behave as though we are trapped in adolescence along with it, with an adolescent preference for absolutes, for seeing things in black and white. In the midst of our tales of love and hate, the computer is clearly being used as a projective screen for other concerns. Often, in our preoccupation with what the computer can do or what the computer is becoming lie unstated questions about what is happening to us, about what we are becoming as we forge increasingly intimate relationships with this machine.

BEHIND THE SPIN

What are we thinking about when we are thinking about computers? What are we trying to not think about when we are thinking about computers? What fears, what anxieties, stand behind the spin?

- *Behind the spin lie our concerns about technology going out of control and about the human costs of technological change.*

possibility of their autonomy, the idea that they might be out of our control.[6] One cultural response is to create narratives about technology that help to rationalize how it became so powerful or why we feel so weak, for example, by investing stories about technology with a familiar mythic narrative. Earlier generations retold the story of the Industrial Revolution as the second "Fall of Man." These days the narrative of the Fall works its rhetorical power in stories of the "good" and "bad" computer.

In the original Genesis story, Adam and Eve gain knowledge by eating the apple. This delicious fruit has dangerous implications they cannot foresee from their position of ignorance and inexperience. Henceforth, they are expelled from Paradise and destined to lead lives that are, to steal a phrase, "nasty, brutish, and short." The story of the Fall of Man provides a narrative template for a view of our pretechnological universe as idyllic, pastoral, and less physically and mentally regimented than our current mode of life. Historian Lewis Mumford's classic essay on the introduction of clocks in the Benedictine monasteries is written in this genre. The monasteries "helped to give human enterprise the regular collective beat and rhythm of the machine; for the clock is not merely a means of keeping track of the hours, but of synchronizing the actions of men."[7] Mechanical time, according to Mumford, is alien to human life and its specific, natural regularities: "the beat of the pulse, the breathing of the lungs, these change from hour to hour with mood and action, and in the longer span of days, time is measured not by the calendar but by the events that occupy it."[8]

Similarly, when literary critic Sven Birkerts discusses computers and reading in *The Gutenberg Elegies*, he sees the Fall of Man in the history of information technology. For Birkerts, "since World War II we have stepped, collectively, out of an ancient and familiar solitude and into an enormous web of imponderable linkages."[9] And "we feel imprisoned in a momentum that is not of our own making."[10] Precomputer humankind had an elongated time, time that allowed the mind to wander in useful, productive, and unregimented ways, time to read, to ponder, and to think. These days, for Birkerts, with the knowledge *of* computers and the knowledge available *through* computers, we are socialized differently, regimented more, forced to think in nuggets and infobits. In sum, we do not read.

Writers such as Mumford and Birkerts draw attention to how technology has had more than its intended instrumental effects; it has also had subjective effects, often profound and usually unintended. Technology does

of Man narrative casts us as the ignorant architects of our own undoing. In this narrative, we make our artifacts but they in turn cast us out into worlds to which we are not suited. The narrative of the Fall reduces the dynamic relationship of people and technology to a story in which technology is the cruel, decisive actor. It was a God with ultimate power who expelled humans from the Garden of Eden. The new narratives of the Fall put technology into that position. They rationalize human passivity in the face of anxiety about technology. They give a sense of inevitability to people's feelings of impotence in the face of our creations.

- *Behind the spin lie competing views of modernist progress with its attendant inequalities of ownership and power.*

Faith in technology is a centerpiece of the modernist conception of progress. In the standard modernist narrative, technology propels us onward and upward. For those who subscribe to this story, computers have to be good (or rather, very, very good) or the modernist project might not be, and then, where would *we* be? Conversely, for those who want to challenge notions of progress (inevitably linked to powerful technologies), computers *have* to be bad because they are represented as the technological ultimate. In Marx's writing technology occupies a complex role: it is both an engine and a platform for the ruling class, a means of dividing people as well as making communism practicable. These days, many utopian and dystopian stories about computers carry the weight of concerns about who owns technology and who is victimized by it. From the position of the haves, technology empowers; from the position of the have-nots, technology imprisons.

In *Mindstorms: Children, Computers, and Powerful Ideas*, mathematician and educator Seymour Papert puts forth a technologically utopian vision for the haves: "In my vision, the child programs the computer and, in doing so, both acquires a sense of mastery over a piece of the most modern and powerful technology and establishes an intimate contact with some of the deepest ideas from science, from mathematics, and from the art of intellectual model building."[11] The language is potent, full of promise. The child gains mastery. The machine is powerful, but the child's contact is joyful and intimate. In contrast, Birkerts writes about our encounter with the machine in the language of the disenfranchised: "Our historically sudden transition into an electronic culture has thrust us into a place of unknowing."[12]

Papert's child is clearly not one of Birkerts's victims, those thrust into a place of unknowing. Papert's child, quite precisely, will reach a place of greater knowing. Papert assumes that his empowered child owns and *controls* technology, while in Birkerts's world passive children and adults are acted upon by "linkages," by forces not of their own making. These versions of the computer future are not research hypotheses as much as political manifestos. Papert wants to mold a computer culture that will conform to his dreams. Birkerts yearns for a predigital world of greater transparency and human control. What keeps the language hot is that both sides are filling old bottles with new wine, recasting the debate on industrialization and its human toll as one about virtuality and its discontents.

- *Behind the spin lie our anxieties about the soul of the new machine and about the mechanization of mind.*

The Marxist tradition sees the costs of industrialization as going far beyond new divisions of power. For Marx, the technologies of the Industrial Revolution also brought a blurring of human and machine. He saw the machine coming to possess "skill and strength . . . with a soul of its own in the mechanical laws acting through it." At the same time that material forces were becoming endowed with life, human life was being "stultif[ied] into a material force."[13]

Marx's language captures an anxiety that stands behind many of our current anxieties about computers: the fear that computers are making people more machine-like while the machines gain "souls." As I have said, an unstated question lies behind our preoccupation about the future of computing. That question is not what computers will be like in the future, but what *we* will be like, what kind of people *we* are becoming. I sit on a park bench with a mother of a six-year-old girl who is playing a question-and-answer game with a computer-controlled robot. The child talks back to the machine when it chides her for a wrong answer or congratulates her for a right one. "My God," says the mother, "she treats that thing like a person. Do you suppose she thinks that people are machines?"

Conversations about computers that play chess, about robotics, about computers that might display judgment, creativity, or affect can lead to heated discussions about the limits of machines and the uniqueness of people. They can lead to such statements as "Simulated thinking might be thinking, but simulated love is never love." The underlying anxiety here lies not in whether machines will come to think like people, but whether people have always thought like machines. For some, the programmed computer suggests that there might be something illusory in our own sense of autonomy and self-determination. For others, it provides an occasion to reject this view and make explicit a commitment to an idea of the human as essentially

"not computer." These disagreements are not about technology. They are about people. Mind and yet not mind, the computer is an evocative object that we use to take our own measure.

At different points in history, debates about human nature, about free will and determinism, have been played on different stages, in theology, in psychology, and in philosophy. In the twenty-first century, they will, in part, be played out in debates about machines that think. When we are thinking about computers, we are thinking about ourselves. The increasing complexity of today's computational objects makes us increasingly insecure about our own uniqueness, an anxiety that has made us vulnerable to spin.

WHAT SPIN DEFLECTS

Spin is distracting. Overheated debates about computer addiction and Internet depression keep us from confronting issues raised by contemporary technology that are resistant to the oversimplifications of spin.

• *Spin deflects our new confusions between the real and the simulated.*

Today's children grow up granting new capacities and privileges to the machine world on the basis of its animation. They endow computational objects with properties, such as having intentions and ideas, that were previously reserved for living beings. They devise a new category, "sort of alive," to describe computational creatures, thus blurring the boundary between artifact and flesh. Two stories about children's relationships with computational artifacts serve as illustrations.

The first story describes a moment on a vacation in Italy with my then seven-year-old daughter. On a boat ride in the postcard-blue Mediterranean, she saw a creature in the water, pointed to it excitedly, and said, "Look, Mommy, a jellyfish. It looks so realistic." I told this story to a Disney executive who responded to it by describing the reaction of the first visitors to Animal Kingdom, Disney's theme park in Orlando, which had the uniqueness of being populated by real, that is, biological animals. The first visitors to the park expressed disappointment that the animals were not realistic enough. They did not exhibit the lifelike behavior of the more active robotic animals at Walt Disney World, only a few miles away.

The second story is drawn from my ethnographic work studying children and play. I was at an afterschool center in the mid-1990s, observing a group of seven-year-olds playing with a set of plastic transformer toys

that could take the shape of armored tanks, robots, or people. The transformers could also be put into intermediate states so that a robot arm could protrude from a human form or a human leg from a mechanical tank. Two of the children were playing with the toys in these intermediate states (that is, in their intermediate states somewhere between being people, machines, and robots). A third child insisted that this was not right. The toys, he said, should not be placed in hybrid states. You should play them as all-tank or all-people. He was getting upset because the other two children were making a point of ignoring him. An eight-year-old girl comforted the upset child. "It's okay to play them when they are in between. It's all the same stuff," she said, "just yucky computer cy-dough-plasm."

When Piaget interviewed children in the 1920s and 1930s about which objects were alive and which were not, he found that children honed their definition of life by developing increasingly sophisticated notions about motion, the world of *physics*. In contrast, when I began to study the nascent computer culture in the early 1980s, children argued about whether a computer was alive through discussions about its *psychology*.[14] Did the computer know things on its own or did it have to be programmed? Did it have intentions, consciousness, and feelings? Did it cheat? Did it know it was cheating? Faced with intelligent machines, children took a New World of objects and imposed a New World Order.

In the course of the 1990s, that order was strained to the breaking point. Today, children will talk about computers as "just machines" but describe them as sentient and intentional. The very notion of a machine has been reconfigured to include an object with a psychology. Faced with the objects of the culture of simulation, children still try to impose order, but they do so in the manner of theoretical bricoleurs or tinkerers, making do with whatever materials are at hand, making do with whatever theory can fit a prevailing circumstance. Different children comfortably hold different theories, and individual children are able to cycle through different theories at a rapid pace.

My current collection of comments made by children about computational objects suggests a range of theories on the nature of life. When they play with programmable toy robots constructed of Lego bricks, children's classifications include: the robots are in control but not alive; would be alive if they had bodies; are alive because they have bodies; would be alive if they had feelings; are alive the way insects are alive but not the way people are alive. When confronted with Sim creatures (screen objects in a popular

game in which the player builds a simulated city), children come forth with a different set of theories: the Sim creatures are not alive because they are just in the computer; could be alive if they got out of the computer; are alive until you turn off the computer and then they're dead; are not alive because nothing in the computer is real; are alive but not real; are not alive but almost-alive; would be alive if they spoke; are not alive because they don't have bodies; are alive because they can have babies; would be alive if they could get out of the computer and onto America Online. What is most notable is the striking heterogeneity of theory, the fluidity of categories.

The new fluidity marks a psychological, cultural, and moral shift that is resonant with new scientific realities. We are at a crossroads at which progress in nanotechnology, genetic engineering, artificial life, and robotics is bringing us closer to technologies of self-replication and natural selection.[15] As they reach adulthood, today's children are not going to approach the issues raised by these technologies with a sensibility that depends on there being one answer that must serve all purposes. They are getting used to cycling through the cy-dough-plasm to far more fluid ways of thinking about life.

- *Spin deflects thinking about what kinds of relationships it is appropriate to have with a machine.*

In the late 1990s, Rodney Brooks, the director of the MIT Artificial Intelligence Lab, developed "Bit," a robot baby. Bit, marketed in 2000 as Hasbro's "My Real Baby," makes baby sounds and has baby facial expressions, shaped by mechanical musculature under its artificial skin. Most significant, this computationally complex doll has baby "states of mind." Bounce the doll when it is happy, and it gets happier. Bounce it when it is grumpy and it gets grumpier. At the MIT Media Lab, Rosalind Picard's research group develops "affective computers," machines that are programmed to assess their users' emotional states and respond with "emotional states" of their own. The Sony Corporation has developed a pet robot dog, AIBO; Matsushita has introduced a robot cat, Tama, designed as a health companion for the elderly. Interactive dolls, affective machines, and robot pets are *relational artifacts*. They are designed to evoke a sense of connection on the part of their human owners. These owners are not simply users, they are conceived of as companions.

During the over two decades in which I have explored people's relationships with computers, and, indeed, throughout the first part of this essay, I have used the metaphor of computer as Rorschach. In this paradigm, the

technology serves as a screen that enables people to project their thoughts and feelings, their very different cognitive styles. With relational artifacts, the Rorschach model of a computer/human relationship breaks down significantly. The computational object no longer presents itself as affectively neutral. People are learning that to relate successfully to a computer one has to assess the machine's emotional state. The important questions no longer relate to how the machine works in terms of any underlying mechanical process. Rather, getting along with the technology means taking the computer at interface value, much as one would another person. Perhaps most important, today's children learn very early that some artifacts demand *emotional* nurturance.

Among the first of these relational artifacts to be deployed in the marketplace were virtual pets (such as Tamagotchis) and digital dolls (such as Furbies). What makes them different from earlier computational toys and games is that they have a "life cycle," and therefore demand children's care and nurturance. For example, in order to grow and be healthy, Tamagotchis (little screen creatures) need to be fed, cleaned, and amused. Furbies (cuddly owl-like creatures) simulate learning and loving. Furbies arrive in the child's life speaking "Furbish." They "learn" to speak English. They play hide and seek, communicate with each other, join together in song, and say, "I love you." Furbies add the dimensions of human-like conversation and tender companionship to the mix of what children can anticipate from computational objects. In my research on children and Furbies, I have found that when children play with these new objects they want to know what their state is—not for the sake of getting something right, but rather to make the Furbies happy. Children want to understand Furby language, not to win in a game *over* a Furby, but to have a feeling of mutual recognition. Children are concerned less with how Tamagotchis and Furbies work, or what they really know, and more with the toys' health and well-being. In sum, a new generation of objects pushes on our evolutionary buttons to respond to interactivity by experiencing ourselves as being with kindred others.

In my previous research on children and computer toys, children described the lifelike status of machines in terms of their cognitive capacities (the toys could "know" things, "solve" puzzles). In my studies on children and Furbies, I have found that children describe these new toys as sort of alive because of the quality of their emotional attachments to the Furbies and because of their fantasies about the idea that the Furby might be emotionally attached to them. So, for example, when I ask the question, "Do you think the Furby is alive?" children answer not in terms of what the Furby

can do, but how they feel about the Furby and how the Furby might feel about them.

> Ron (6): Well, the Furby is alive for a Furby. And you know, something this smart should have arms. It might want to pick up something or to hug me.
>
> Katherine (5): Is it alive? Well, I love it. It's more alive than a Tamagotchi because it sleeps with me. It likes to sleep with me.
>
> Jen (9): I really like to take care of it. So, I guess it is alive, but it doesn't need to really eat, so it is as alive as you can be if you don't eat. A Furby is like an owl. But it is more alive than an owl because it knows more and you can talk to it. But it needs batteries so it is not an animal. It's not like an animal kind of alive.

Traditionally, rag dolls and stuffed animals invited children's projections. The child made of the inert object what he or she wanted it to be, *needed* it to be at a particular developmental moment. Today's robotic pets and dolls do not so much invite projection, as demand engagement. They are not just there to evoke children's emotions; they tell the child what *they* need. In that sense, for the child, they are very much alive, in the sense of having intentions and a personal agenda. Children learn to have expectations of emotional attachments to computers, not in the way we have expectations of emotional attachment to our cars and stereos, but in the way we have expectations about our emotional attachments to people. In the process, the very meaning of the word *emotional* may change.

Over the past five decades, research in artificial intelligence has not succeeded in creating a machine as intelligent as a person; it has not even come close to that. It has succeeded, however, in contributing to a certain evolution of our language in terms of how we use the word *intelligence.* Nowadays, we commonly talk about intelligent machines—machines that play chess or assess mortgage applications. While these feats are wondrous, in the past intelligence indicated a far more complex range of cognitive skills and an ability to perceive the world and its meaning. We now face the prospect of a similar evolution of language in the way we use the words *affect* and *emotion*. Today, children talk about an "animal kind of alive" and a "Furby kind of alive." Will they soon come to talk about a "people kind of love" and a "computer kind of love"? Traditionally, an understanding of a "people kind of love" has been tied to the human experience of the body, of growing up in a family, of loss, of the fragility and the finiteness of life. In our nascent computer culture, "love" might come to mean something else altogether.

Unlike the old AI debates of the 1960s to the 1980s, in which researchers argued about whether machines could be really intelligent, the new discussions about relational artifacts sidestep essentialist arguments about what is inherent in them and instead force us to consider what they evoke in us. When we are asked to care for an object, when the cared-for object thrives and offers us its attention and concern, we experience that object as intelligent, but more important, we feel a connection to it.[16] Rather than debating about whether the new relational artifacts really have emotions, we are challenged to reflect on the issues that are raised by our emotions toward them.[17]

Traditionally, children have had to *project* states of mind onto their toys and dolls. In order to do this, they used as their models the infinitely complex and fluid states of mind of people. We know very little about the psychological implications of children having strong emotional connections with objects that have a limited number of states, even if that limited number of states is sufficient to supply an illusion of life or a deeply gratifying experience. Suppose that one spin-off of the Brooks doll project (let's say, to be launched for Christmas 2010) is a baby stimulator that would hold the attention of a child so that it was as happy interacting with the stimulator as with people. Although we know very little for sure about the implications of such a person/machine relationship, it is possible that it might pose psychological risk to some children, seducing them into the pleasures of a psychological space that offers a simplicity and predictability that the world of people does not.

Another issue to consider is how interacting with relational artifacts may affect people's way of thinking about themselves, their sense of human identity. Children have traditionally defined what makes people special in terms of a theory of "nearest neighbors." So, when the nearest neighbors (in children's eyes) were their pet dogs and cats, people were special because they had reason. The Aristotelian definition of "Man as a rational animal" made sense even for the youngest children. But when, in the 1980s, it seemed to children that smart computers (which spoke, obeyed commands, did math problems, and played tic-tac-toe) were the nearest neighbors, children's approach to the problem changed. In the course of the 1980s, people became special not because they were *rational* animals but because they were *emotional* machines. So, in 1983, a ten-year-old told me: "When there are the robots that are as smart as the people, the people will still run the restaurants, cook the food, have the families. I guess they'll still be the only ones who'll go to Church." *Now in a world where machines present themselves as emotional, what is left for us?*

I have argued that spinning technology enables us to displace our anxieties. If we take strong positions about computers we are sometimes able to avoid direct talk about social inequality, technology out of control, and our disillusionment with myths of progress. Now I am suggesting yet another level of displacement, closer to the dynamics of a fetish. In the psychodynamic understanding of a fetish, attention is commanded by a compelling object so that the fetishist does not need to confront taboo wishes and/or repressed sexual desires. Online pornography and Internet addiction may be safe, "acceptable" causes for concern while there are some things that we don't want to think about *because we find them unthinkable.* And most central among these may be the question "What kind of relationship is it appropriate to have with a machine?" *The question is real enough to be worth fleeing from—not because we have built machines that have intelligence or emotions, but because of the emotions that our machines evoke in us.* But, as with all histories that involve fetishes—objects about which we feel passionate because we cannot face the underlying issues from which they shield us—we ultimately will have nowhere to hide.

NOTES

Acknowledgments: I acknowledge the help of my research assistants, Jennifer Audley, Olivia Dasté, Rachel Prentice, and Robert Briscoe. This material is based upon work supported by the National Science Foundation under Grant No. 0115668. Any opinions, findings, and conclusions or recommendations expressed in this material are mine and do not necessarily reflect the views of the National Science Foundation.

1. Bill Gates, *The Road Ahead* (New York: Viking Penguin, 1995); Michael Dertouzos, *What Will Be* (New York: HarperCollins, 1997); Nicholas Negroponte, *Being Digital* (New York: Alfred A Knopf, 1995); Gene I. Rochlin, *Trapped in the Net: The Unanticipated Consequences of Computerization* (Princeton, N.J.: Princeton University Press, 1997); Clifford Stoll, *Silicon Snake Oil: Second Thoughts on the Information Highway* (New York: Doubleday, 1995); Jane M. Healy, *Failure to Connect: How Computers Affect Our Children's Minds—For Better and Worse* (New York: Simon and Schuster, 1998); Kimberly S. Young, *Caught in the Net: How to Recognize the Signs of Internet Addiction and a Winning Strategy for Recovering* (New York: John Wiley and Sons, 1998).

2. James Boyle, "Foucault in Cyberspace: Surveillance, Sovereignty and Hard-Wired Censors," *University of Cincinnati Law Review* 177 (1997). See also <*http://www.wcl.american.edu/pub/faculty/boyle/Boylebio.htm*> (visited June 30, 2002).

3. In one study of the Internet and depression, the extent to which Internet resources were shared with people in an individual's "offline" life was another important and very specific variable. See R. Kraut, S. Kiesler, B. Boneva, J. Cummings, V. Helgeson, and A. Crawford. "Internet Paradox Revisited" *Journal of Social Issues* 58 (2002): 49–74.

4. Sherry Turkle, *Life on the Screen: Identity in the Age of the Internet* (New York: Simon and Schuster, 1995).

5. The debate about the Internet and depression is an interesting case of how academics and journalists each seemed under pressure to report a complex unfolding story as a relatively simple news story, the trademark of spin. The original study was conducted at Carnegie Mellon University. See R. Kraut, M. Patterson, V. Lundmark, S. Kiesler, T. Mukophadhyay, and W. Scherlis, "Internet Paradox: A Social Technology That Reduces Social Involvement and Psychological Well-being?" *American Psychologist*, 53, no. 9 (1998). Further work from this study, the HomeNet study, would clarify that the paradox of the Internet as a social technology is that it increases social well-being only when used in conjunction with traditional social technologies. See Kraut et al., "Internet Paradox Revisited."

6. Langdon Winner, *Autonomous Technology* (Cambridge, Mass.: MIT Press, 1977).

7. Lewis Mumford, "The Monastery and the Clock," in *Technics and Civilization* (New York: Harcourt, Brace and World, 1934), 13–14.

8. Ibid., 62.

9. Sven Birkerts, *The Gutenberg Elegies* (New York: Fawcett Columbine, 1994), 15.

10. Ibid., 20.

11. Seymour Papert, *Mindstorms: Children, Computers, and Powerful Ideas* (New York: Basic Books, 1980), 5.

12. Birkerts, *The Gutenberg Elegies*, 21.

13. Karl Marx, quoted in Simon Schaffer, "Babbage's Intelligence: Calculating Engines and the Factory System," *Critical Inquiry* 21 (Autumn 1994): 206.

14. Sherry Turkle, *The Second Self: Computers and the Human Spirit* (New York: Simon and Schuster, 1984).

15. On this point, see, for example, Bill Joy, "Why the Future Doesn't Need Us," *Wired* 8, no. 4 (April 2000).

16. Even with computers that are far from the relational artifacts I am describing here, people anthropomorphize machines and tend to treat them as if they were people. For example, if users do a task on computer A and then are asked to rate the experience on computers A and B, they give the experience a higher rating on computer A than on computer B. In other words, people seem to not want to insult the computer to its "face." Byron Reeves and Clifford Nass, *The Media Equation* (Stanford, Calif.: CLSI, 1966).

17. A discussion of this issue goes beyond the scope of this essay, but I am thinking particularly of David Winnicott's ideas about the transitional object. See David Winnicott, *Playing and Reality* (New York: Basic Books, 1971).