

## INTRODUCTION

# alone together

Technology proposes itself as the architect of our intimacies. These days, it suggests substitutions that put the real on the run. The advertising for Second Life, a virtual world where you get to build an avatar, a house, a family, and a social life, basically says, "Finally, a place to love your body, love your friends, and love your life."<sup>1</sup> On Second Life, a lot of people, as represented by their avatars, are richer than they are in first life and a lot younger, thinner and better dressed. And we are smitten with the idea of sociable robots, which most people first meet in the guise of artificial pets. Zhu Zhu pet hamsters, the "i" toy of the 2009–2010 holiday season, are presented as "better" than any real pet could be. We are told they are lovable and responsive, don't require cleanup, and will never die.

Technology is seductive when what it offers meets our human vulnerabilities. And as it turns out, we are very vulnerable indeed. We are lonely but fearful of intimacy. Digital connections and the sociable robot may offer the illusion of companionship without the demands of friendship. Our networked life allows us to hide from each other, even as we are tethered to each other. We'd rather text than talk. A simple story makes this last point, told in her own words by a harried mother in her late forties:

I needed to find a new nanny. When I interview nannies, I like to go to where they live, so that I can see them in their environment, not just in mine. So, I made an appointment to interview Ronnie, who had applied for the job. I show up at her apartment and her housemate answers the door: She is a young woman, around twenty-one, texting on her BlackBerry. Her thumbs are bandaged. I look at them, pained at the tiny thumb splints, and I try to be sympathetic. "That must hurt." But she just shrugs. She explains that she is still able to text: I tell her I am here to speak with Ronnie; this is her job interview. Could she please knock on Ronnie's bedroom door? The girl with the bandaged thumbs looks surprised. "Oh no," she says, "I would never do that. That would be intrusive. I'll text her." And so she sent a text message to Ronnie, no more than fifteen feet away.

This book, which completes a trilogy on computers and people, asks how we got to this place and whether we are content to be here.

In *The Second Self*, I traced the subjective side of personal computers—not what computers do for us but what they do to us, to our ways of thinking about ourselves, our relationships, our sense of being human. From the start, people used interactive and reactive computers to reflect on the self and think about the difference between machines and people. Were intelligent machines alive? If not, why not? In my studies I found that children were most likely to see this new category of object, the computational object, as "sort of" alive—a story that has continued to evolve. In *Life on the Screen*, my focus shifted from how people see computers to how they forge new identities in online spaces. In *Alone Together*, I show how technology has taken both of these stories to a new level.

Computers no longer wait for humans to project meaning onto them. Now, sociable robots meet our gaze, speak to us, and learn to recognize us. They ask us to take care of them; in response, we imagine that they might care for us in return. Indeed, among the most talked about robotic designs are in the area of care and companionship. In summer 2010, there are enthusiastic reports in the *New York Times* and the *Wall Street Journal* on robotic teachers, companions, and therapists. And Microsoft demonstrates a virtual human, Milo, that recognizes the people it interacts with and whose personality is sculpted by them. Tellingly, in the video that introduces Milo to the public, a young man begins by playing games with Milo in a virtual garden; by the end of the demonstration, things have heated up—he confides in Milo after being told off by his parents.<sup>2</sup>

We are challenged to ask what such things augur. Some people are looking for robots to clean rugs and help with the laundry. Others hope for a mechanical bride. As sociable robots propose themselves as substitutes for people, new networked devices offer us machine-mediated relationships with each other, another kind of substitution. We romance the robot and become inseparable from our smartphones. As this happens, we remake ourselves and our relationships with each other through our new intimacy with machines. People talk about Web access on their BlackBerrys as "the place for hope" in life, the place where loneliness can be defeated. A woman in her late sixties describes her new iPhone: "It's like having a little Times Square in my pocketbook. All lights. All the people I could meet." People are lonely. The network is seductive. But if we are always on, we may deny ourselves the rewards of solitude.

### THE ROBOTIC MOMENT

In late November 2005, I took my daughter Rebecca, then fourteen, to the Darwin exhibition at the American Museum of Natural History in New York. From the moment you step into the museum and come face-to-face with a full-size dinosaur, you become part of a celebration of life on Earth, what Darwin called "endless forms most beautiful." Millions upon millions of now lifeless specimens represent nature's invention in every corner of the globe. There could be no better venue for documenting Darwin's life and thought and his theory of evolution by natural selection, the central truth that underpins contemporary biology. The exhibition aimed to please and, a bit defensively in these days of attacks on the theory of evolution, wanted to convince.

At the exhibit's entrance were two giant tortoises from the Galapagos Islands, the best-known inhabitants of the archipelago where Darwin did his most famous investigations. The museum had been advertising these tortoises as wonders, curiosities, and marvels. Here, among the plastic models at the museum, was the life that Darwin saw more than a century and a half ago. One tortoise was hidden from view; the other rested in its cage, utterly still. Rebecca inspected the visible tortoise thoughtfully for a while and then said matter-of-factly, "They could have used a robot." I was taken aback and asked what she meant. She said she thought it was a shame to bring the turtle all this way from its island home in the Pacific, when it was just going to sit there in the museum, motionless, doing nothing. Rebecca was both concerned for the imprisoned turtle and unmoved by its authenticity.

It was Thanksgiving weekend. The line was long, the crowd frozen in place. I began to talk with some of the other parents and children. My question—"Do you care that the turtle is alive?"—was a welcome diversion from the boredom of the wait. A ten-year-old girl told me that she would prefer a robot turtle because aliveness comes with aesthetic inconvenience: "Its water looks dirty. Gross." More usually, votes for the robots echoed my daughter's sentiment that in this setting, aliveness didn't seem worth the trouble. A twelve-year-old girl was adamant: "For what the turtles do, you didn't have to have the live ones." Her father looked at her, mystified: "But the point is that they are real. That's the whole point."

The Darwin exhibition put authenticity front and center: on display were the actual magnifying glass that Darwin used in his travels, the very notebook in which he wrote the famous sentences that first described his theory of evolution. Yet, in the children's reactions to the inert but alive Galapagos tortoise, the idea of the original had no place. What I heard in the museum reminded me of Rebecca's reaction as a seven-year-old during a boat ride in the postcard-blue Mediterranean. Already an expert in the world of simulated fish tanks, she saw something in the water, pointed to it excitedly, and said, "Look, Mommy, a jellyfish! It looks so realistic!" When I told this story to a vice president at the Disney Corporation, he said he was not surprised. When Animal Kingdom opened in Orlando, populated by "real"—that is, biological—animals, its first visitors complained that they were not as "realistic" as the animatronic creatures in other parts of Disneyworld. The robotic crocodiles slapped their tails and rolled their eyes—in sum, they displayed archetypal "crocodile" behavior. The biological crocodiles, like the Galapagos tortoises, pretty much kept to themselves.

I believe that in our culture of simulation, the notion of authenticity is for us what sex was for the Victorians—threat and obsession, taboo and fascination. I have lived with this idea for many years, yet, at the museum, I found the children's position strangely unsettling. For them, in this context, aliveness seemed to have no intrinsic value. Rather, it is useful only if needed for a specific purpose. Darwin's endless forms so beautiful were no longer sufficient unto themselves. I asked the children a further question: "If you put a robot instead of a living turtle in the exhibit, do you think people should be told that the turtle is not alive?" Not really, said many children. Data on aliveness can be shared on a "need-to-know basis"—for a purpose. But what are the purposes of living things?

Only a year later, I was shocked to be confronted with the idea that these purposes were more up for grabs than I had ever dreamed. I received a call from a

*Scientific American* reporter to talk about robots and our future. During that conversation, he accused me of harboring sentiments that would put me squarely in the camp of those who have for so long stood in the way of marriage for homosexual couples. I was stunned, first because I harbor no such sentiments, but also because his accusation was prompted not by any objection I had made to the mating or marriage of people. The reporter was bothered because I had objected to the mating and marriage of people to robots.

The call had been prompted by a new book about robots by David Levy, a British-born entrepreneur and computer scientist. In 1968 Levy, an international chess master, famously wagered four artificial intelligence (AI) experts that no computer program would defeat him at the game in the subsequent decade. Levy won his bet. The sum was modest, 1,250 British pounds, but the AI community was chastened. They had overreached in their predictions for their young science. It would be another decade before Levy was bested in chess by a computer program, Deep Thought, an early version of the program that beat Gary Kasparov, the reigning chess champion in the 1990s.<sup>3</sup> These days, Levy is the chief executive officer at a company that develops "smart" toys for children. In 2009, Levy and his team won—and this for the second time—the prestigious Loebner Prize, widely regarded as the world championship for conversational software. In this contest, Levy's "chat bot" program was best at convincing people that they were talking to another person and not to a machine.

Always impressed with Levy's inventiveness, I found myself underwhelmed by the message of this latest book, *Love and Sex with Robots*.<sup>4</sup> No tongue-in-cheek science fiction fantasy, it was reviewed without irony in the *New York Times* by a reporter who had just spent two weeks at the Massachusetts Institute of Technology (MIT) and wrote glowingly about its robotics culture as creating "new forms of life."<sup>5</sup> *Love and Sex* is earnest in its predictions about where people and robots will find themselves by mid-century: "Love with robots will be as normal as love with other humans, while the number of sexual acts and love-making positions commonly practiced between humans will be extended, as robots will teach more than is in all of the world's published sex manuals combined."<sup>6</sup> Levy argues that robots will teach us to be better friends and lovers because we will be able to practice on them. Beyond this, they will substitute where people fail. Levy proposes, among other things, the virtues of marriage to robots. He argues that robots are, of course, "other" but, in many ways, better. No cheating. No heartbreak. In Levy's argument, there is one simple criterion for judging the worth of robots in even the most intimate domains: Does being with a robot

make you feel better? The master of today's computerspeak judges future robots by the impact of their behavior. And his next bet is that in a very few years, this is all we will care about as well.

I am a psychoanalytically trained psychologist. Both by temperament and profession, I place high value on relationships of intimacy and authenticity. Granting that an AI might develop its own origami of lovemaking positions, I am troubled by the idea of seeking intimacy with a machine that has no feelings, can have no feelings, and is really just a clever collection of "as if" performances, behaving as if it cared, as if it understood us. Authenticity, for me, follows from the ability to put oneself in the place of another, to relate to the other because of a shared store of human experiences: we are born, have families, and know loss and the reality of death.<sup>7</sup> A robot, however sophisticated, is patently out of this loop.

So, I turned the pages of Levy's book with a cool eye. What if a robot is not a "form of life" but a kind of performance art? What if "relating" to robots makes us feel "good" or "better" simply because we feel more in control? Feeling good is no golden rule. One can feel good for bad reasons. What if a robot companion makes us feel good but leaves us somehow diminished? The virtue of Levy's bold position is that it forces reflection: What kinds of relationships with machines are possible, desirable, or ethical? What does it mean to love a robot? As I read *Love and Sex*, my feelings on these matters were clear. A love relationship involves coming to savor the surprises and the rough patches of looking at the world from another's point of view, shaped by history, biology, trauma, and joy. Computers and robots do not have these experiences to share. We look at mass media and worry about our culture being intellectually "dumbed down." *Love and Sex* seems to celebrate an emotional dumbing down, a willful turning away from the complexities of human partnerships—the inauthentic as a new aesthetic.

I was further discomfited as I read *Love and Sex* because Levy had interpreted my findings about the "holding power" of computers to argue his case. Indeed, Levy dedicated his book to Anthony,\* an MIT computer hacker I interviewed in the early 1980s. Anthony was nineteen when I met him, a shy young man who found computers reassuring. He felt insecure in the world of people

\* This name and the names of others I observed and interviewed for this book are pseudonyms. To protect the anonymity of my subjects, I also change identifying details such as location and profession. When I cite the opinions of scientists or public figures, I use their words with permission. And, of course, I cite material on the public record.

with its emotional risks and shades of gray. The activity and interactivity of computer programming gave Anthony—lonely, yet afraid of intimacy—the feeling that he was not alone.<sup>8</sup> In *Love and Sex*, Levy idealizes Anthony's accommodation and suggests that loving a robot would be a reasonable next step for people like him. I was sent an advance copy of the book, and Levy asked if I could get a copy to Anthony, thinking he would be flattered. I was less sure. I didn't remember Anthony as being at peace with his retreat to what he called "the machine world." I remembered him as wistful, feeling himself a spectator of the human world, like a kid with his nose to the window of a candy store. When we imagine robots as our future companions, we all put our noses to that same window.

I was deep in the irony of my unhappy Anthony as a role model for intimacy with robots when the *Scientific American* reporter called. I was not shy about my lack of enthusiasm for Levy's ideas and suggested that the very fact we were discussing marriage to robots at all was a comment on human disappointments—that in matters of love and sex, we must be failing each other. I did not see marriage to a machine as a welcome evolution in human relationships. And so I was taken aback when the reporter suggested that I was no better than bigots who deny gays and lesbians the right to marry. I tried to explain that just because I didn't think people should marry machines didn't mean that any mix of adult people wasn't fair territory. He accused me of species chauvinism: Wasn't I withholding from robots their right to "realness"? Why was I presuming that a relationship with a robot lacked authenticity? For me, the story of computers and the evocation of life had come to a new place.

At that point, I told the reporter that I, too, was taking notes on our conversation. The reporter's point of view was now data for my own work on our shifting cultural expectations of technology—data, that is, for the book you are reading. His analogizing of robots to gay men and women demonstrated that, for him, future intimacy with machines would not be a second-best substitute for finding a person to love. More than this, the reporter was insisting that machines would bring their own special qualities to an intimate partnership that needed to be honored in its own right. In his eyes, the love, sex, and marriage robot was not merely "better than nothing," a substitute. Rather, a robot had become "better than something." The machine could be preferable—for any number of reasons—to what we currently experience in the sometimes messy, often frustrating, and always complex world of people.

This episode with the *Scientific American* reporter shook me—perhaps in part because the magazine had been for me, since childhood, a gold standard in scientific publication. But the extravagance of the reporter's hopes for robots fell into a pattern I had been observing for nearly a decade. The encounter over *Love and Sex* most reminded me of another time, two years before, when I met a female graduate student at a large psychology conference in New Orleans; she had taken me aside to ask about the current state of research on robots designed to serve as human companions. At the conference, I had given a presentation on *anthropomorphism*—on how we see robots as close to human if they do such things as make eye contact, track our motion, and gesture in a show of friendship. These appear to be “Darwinian buttons” that cause people to imagine that the robot is an “other,” that there is, colloquially speaking, “somebody home.”

During a session break, the graduate student, Anne, a lovely, raven-haired woman in her mid-twenties, wanted specifics. She confided that she would trade in her boyfriend “for a sophisticated Japanese robot” if the robot would produce what she called “caring behavior.” She told me that she relied on a “feeling of civility in the house.” She did not want to be alone. She said, “If the robot could provide the environment, I would be happy to help produce the illusion that there is somebody really with me.” She was looking for a “no-risk relationship” that would stave off loneliness. A responsive robot, even one just exhibiting scripted behavior, seemed better to her than a demanding boyfriend. I asked her, gently, if she was joking. She told me she was not. An even more poignant encounter was with Miriam, a seventy-two-year-old woman living in a suburban Boston nursing home, a participant in one of my studies of robots and the elderly.

I meet Miriam in an office that has been set aside for my interviews. She is a slight figure in a teal blue silk blouse and slim black pants, her long gray hair parted down the middle and tied behind her head in a low bun. Although elegant and composed, she is sad. In part, this is because of her circumstances. For someone who was once among Boston's best-known interior designers, the nursing home is a stark and lonely place. But there is also something immediate: Miriam's son has recently broken off his relationship with her. He has a job and family on the West Coast, and when he visits, he and his mother quarrel—he feels she wants more from him than he can give. Now Miriam sits quietly, stroking Paro, a sociable robot in the shape of a baby harp seal. Paro, developed in Japan, has been advertised as the first “therapeutic robot” for its ostensibly

positive effects on the ill, elderly, and emotionally troubled. Paro can make eye contact by sensing the direction of a human voice, is sensitive to touch, and has a small working English vocabulary for “understanding” its users (the robot's Japanese vocabulary is larger); most importantly, it has “states of mind” affected by how it is treated. For example, it can sense whether it is being stroked gently or with aggression. Now, with Paro, Miriam is lost in her reverie, patting down the robot's soft fur with care. On this day, she is particularly depressed and believes that the robot is depressed as well. She turns to Paro, strokes him again, and says, “Yes, you're sad, aren't you? It's tough out there. Yes, it's hard.” Miriam's tender touch triggers a warm response in Paro: it turns its head toward her and purrs approvingly. Encouraged, Miriam shows yet more affection for the little robot. In attempting to provide the comfort she believes it needs, she comforts herself.

Because of my training as a clinician, I believe that this kind of moment, if it happens between people, has profound therapeutic potential. We can heal ourselves by giving others what we most need. But what are we to make of this transaction between a depressed woman and a robot? When I talk to colleagues and friends about such encounters—for Miriam's story is not unusual—their first associations are usually to their pets and the solace they provide. I hear stories of how pets “know” when their owners are unhappy and need comfort. The comparison with pets sharpens the question of what it means to have a relationship with a robot. I do not know whether a pet could sense Miriam's unhappiness, her feelings of loss. I do know that in the moment of apparent connection between Miriam and her Paro, a moment that comforted her, the robot understood nothing. Miriam experienced an intimacy with another, but she was in fact alone. Her son had left her, and as she looked to the robot, I felt that we had abandoned her as well.

Experiences such as these—with the idea of aliveness on a “need-to-know” basis, with the proposal and defense of marriage to robots, with a young woman dreaming of a robot lover, and with Miriam and her Paro—have caused me to think of our time as the “robotic moment.” This does not mean that companionate robots are common among us; it refers to our state of emotional—and I would say philosophical—readiness. I find people willing to seriously consider robots not only as pets but as potential friends, confidants, and even romantic partners. We don't seem to care what these artificial intelligences “know” or “understand” of the human moments we might “share” with them. At the robotic moment, the performance of connection seems connection enough. We are poised

to attach to the inanimate without prejudice. The phrase “technological promiscuity” comes to mind.

As I listen for what stands behind this moment, I hear a certain fatigue with the difficulties of life with people. We insert robots into every narrative of human frailty. People make too many demands; robot demands would be of a more manageable sort. People disappoint; robots will not. When people talk about relationships with robots, they talk about cheating husbands, wives who fake orgasms, and children who take drugs. They talk about how hard it is to understand family and friends. I am at first surprised by these comments. Their clear intent is to bring people down a notch. A forty-four-year-old woman says, “After all, we never know how another person really feels. People put on a good face. Robots would be safer.” A thirty-year-old man remarks, “I’d rather talk to a robot. Friends can be exhausting. The robot will always be there for me. And whenever I’m done, I can walk away.”

The idea of sociable robots suggests that we might navigate intimacy by skirting it. People seem comforted by the belief that if we alienate or fail each other, robots will be there, programmed to provide simulations of love.<sup>9</sup> Our population is aging; there will be robots to take care of us. Our children are neglected; robots will tend to them. We are too exhausted to deal with each other in adversity; robots will have the energy. Robots won’t be judgmental. We will be accommodated. An older woman says of her robot dog, “It is better than a real dog. . . . It won’t do dangerous things, and it won’t betray you. . . . Also, it won’t die suddenly and abandon you and make you very sad.”<sup>10</sup>

The elderly are the first to have companionate robots aggressively marketed to them, but young people also see the merits of robotic companionship. These days, teenagers have sexual adulthood thrust upon them before they are ready to deal with the complexities of relationships. They are drawn to the comfort of connection without the demands of intimacy. This may lead them to a hookup—sex without commitment or even caring. Or it may lead to an online romance—companionship that can always be interrupted. Not surprisingly, teenagers are drawn to love stories in which full intimacy cannot occur—here I think of current passions for films and novels about high school vampires who cannot sexually consummate relationships for fear of hurting those they love. And teenagers are drawn to the idea of technological communion. They talk easily of robots that would be safe and predictable companions.<sup>11</sup>

These young people have grown up with sociable robot pets, the companions of their playrooms, which portrayed emotion, said they cared, and asked to be

cared for.<sup>12</sup> We are psychologically programmed not only to nurture what we love but to love what we nurture. So even simple artificial creatures can provoke heartfelt attachment. Many teenagers anticipate that the robot toys of their childhood will give way to full-fledged machine companions. In the psychoanalytic tradition, a symptom addresses a conflict but distracts us from understanding or resolving it; a dream expresses a wish.<sup>13</sup> Sociable robots serve as both symptom and dream: as a symptom, they promise a way to sidestep conflicts about intimacy; as a dream, they express a wish for relationships with limits, a way to be both together and alone.<sup>14</sup>

Some people even talk about robots as providing respite from feeling overwhelmed by technology. In Japan, companionate robots are specifically marketed as a way to seduce people out of cyberspace; robots plant a new flag in the physical real. If the problem is that too much technology has made us busy and anxious, the solution will be another technology that will organize, amuse, and relax us. So, although historically robots provoked anxieties about technology out of control, these days they are more likely to represent the reassuring idea that in a world of problems, science will offer solutions.<sup>15</sup> Robots have become a twenty-first-century deus ex machina. Putting hope in robots expresses an enduring technological optimism, a belief that as other things go wrong, science will go right. In a complicated world, robots seem a simple salvation. It is like calling in the cavalry.

But this is not a book about robots. Rather, it is about how we are changed as technology offers us substitutes for connecting with each other face-to-face. We are offered robots and a whole world of machine-mediated relationships on networked devices. As we instant-message, e-mail, text, and Twitter, technology redraws the boundaries between intimacy and solitude. We talk of getting “rid” of our e-mails, as though these notes are so much excess baggage. Teenagers avoid making telephone calls, fearful that they “reveal too much.” They would rather text than talk. Adults, too, choose keyboards over the human voice. It is more efficient, they say. Things that happen in “real time” take too much time. Tethered to technology, we are shaken when that world “unplugged” does not signify, does not satisfy. After an evening of avatar-to-avatar talk in a networked game, we feel, at one moment, in possession of a full social life and, in the next, curiously isolated, in tenuous complicity with strangers. We build a following on Facebook or MySpace and wonder to what degree our followers are friends. We recreate ourselves as online personae and give ourselves new bodies, homes, jobs, and romances. Yet, suddenly, in the

half-light of virtual community, we may feel utterly alone. As we distribute ourselves, we may abandon ourselves. Sometimes people experience no sense of having communicated after hours of connection. And they report feelings of closeness when they are paying little attention. In all of this, there is a nagging question: Does virtual intimacy degrade our experience of the other kind and, indeed, of all encounters, of any kind?

The blurring of intimacy and solitude may reach its starkest expression when a robot is proposed as a romantic partner. But for most people it begins when one creates a profile on a social-networking site or builds a persona or avatar for a game or virtual world.<sup>16</sup> Over time, such performances of identity may feel like identity itself. And this is where robotics and the networked life first intersect. For the performance of caring is all that robots, no matter how sociable, know how to do.

I was enthusiastic about online worlds as “identity workshops” when they first appeared, and all of their possibilities remain.<sup>17</sup> Creating an avatar—perhaps of a different age, a different gender, a different temperament—is a way to explore the self. But if you’re spending three, four, or five hours a day in an online game or virtual world (a time commitment that is not unusual), there’s got to be someplace you’re not. And that someplace you’re not is often with your family and friends—sitting around, playing Scrabble face-to-face, taking a walk, watching a movie together in the old-fashioned way. And with performance can come disorientation. You might have begun your online life in a spirit of compensation. If you were lonely and isolated, it seemed better than nothing. But online, you’re slim, rich, and buffed up, and you feel you have more opportunities than in the real world. So, here, too, better than nothing can become better than something—or better than anything. Not surprisingly, people report feeling let down when they move from the virtual to the real world. It is not uncommon to see people fidget with their smartphones, looking for virtual places where they might once again be more.

Sociable robots and online life both suggest the possibility of relationships the way we want them. Just as we can program a made-to-measure robot, we can reinvent ourselves as comely avatars. We can write the Facebook profile that pleases us. We can edit our messages until they project the self we want to be. And we can keep things short and sweet. Our new media are well suited for accomplishing the rudimentary. And because this is what technology serves up, we reduce our expectations of each other. An impatient high school senior says, “If you really need to reach me, just shoot me a text.” He sounds just like my

colleagues on a consulting job, who tell me they would prefer to communicate with “real-time texts.”

Our first embrace of sociable robotics (both the idea of it and its first exemplars) is a window onto what we want from technology and what we are willing to do to accommodate it. From the perspective of our robotic dreams, networked life takes on a new cast. We imagine it as expansive. But we are just as fond of its constraints. We celebrate its “weak ties,” the bonds of acquaintance with people we may never meet. But that does not mean we prosper in them.<sup>18</sup> We often find ourselves standing depleted in the hype. When people talk about the pleasures of these weak-tie relationships as “friction free,” they are usually referring to the kind of relationships you can have without leaving your desk. Technology ties us up as it promises to free us up. Connectivity technologies once promised to give us more time. But as the cell phone and smartphone eroded the boundaries between work and leisure, all the time in the world was not enough. Even when we are not “at work,” we experience ourselves as “on call”; pressed, we want to edit out complexity and “cut to the chase.”

### CONNECTIVITY AND ITS DISCONTENTS

Online connections were first conceived as a substitute for face-to-face contact, when the latter was for some reason impractical. Don't have time to make a phone call? Shoot off a text message. But very quickly, the text message became the connection of choice. We discovered the network—the world of connectivity—to be uniquely suited to the overworked and overscheduled life it makes possible. And now we look to the network to defend us against loneliness even as we use it to control the intensity of our connections. Technology makes it easy to communicate when we wish and to disengage at will.

A few years ago at a dinner party in Paris, I met Ellen, an ambitious, elegant young woman in her early thirties, thrilled to be working at her dream job in advertising. Once a week, she would call her grandmother in Philadelphia using Skype, an Internet service that functions as a telephone with a Web camera. Before Skype, Ellen's calls to her grandmother were costly and brief. With Skype, the calls are free and give the compelling sense that the other person is present—Skype is an almost real-time video link. Ellen could now call more frequently: “Twice a week and I stay on the call for an hour,” she told me. It should have been rewarding; instead, when I met her, Ellen was unhappy. She knew that her grandmother was unaware that Skype allows surreptitious multitasking.

Her grandmother could see Ellen's face on the screen but not her hands. Ellen admitted to me, "I do my e-mail during the calls. I'm not really paying attention to our conversation."

Ellen's multitasking removed her to another place. She felt her grandmother was talking to someone who was not really there. During their Skype conversations, Ellen and her grandmother were more connected than they had ever been before, but at the same time, each was alone. Ellen felt guilty and confused; she knew that her grandmother was happy, even if their intimacy was now, for Ellen, another task among multitasks.

I have often observed this distinctive confusion: these days, whether you are online or not, it is easy for people to end up unsure if they are closer together or further apart. I remember my own sense of disorientation the first time I realized that I was "alone together." I had traveled an exhausting thirty-six hours to attend a conference on advanced robotic technology held in central Japan. The packed grand ballroom was Wi-Fi enabled: the speaker was using the Web for his presentation, laptops were open throughout the audience, fingers were flying, and there was a sense of great concentration and intensity. But not many in the audience were attending to the speaker. Most people seemed to be doing their e-mail, downloading files, and surfing the Net. The man next to me was searching for a *New Yorker* cartoon to illustrate his upcoming presentation. Every once in a while, audience members gave the speaker some attention, lowering their laptop screens in a kind of curtsy, a gesture of courtesy.

Outside, in the hallways, the people milling around me were looking past me to virtual others. They were on their laptops and their phones, connecting to colleagues at the conference going on around them and to others around the globe. There but not there. Of course, clusters of people chatted with each other, making dinner plans, "networking" in that old sense of the word, the one that implies having a coffee or sharing a meal. But at this conference, it was clear that what people mostly want from public space is to be alone with their personal networks. It is good to come together physically, but it is more important to stay tethered to our devices. I thought of how Sigmund Freud considered the power of communities both to shape and to subvert us, and a psychoanalytic pun came to mind: "connectivity and its discontents."

The phrase comes back to me months later as I interview management consultants who seem to have lost touch with their best instincts for what makes them competitive. They complain about the BlackBerry revolution, yet accept it as inevitable while decrying it as corrosive. They say they used to talk to each other as

they waited to give presentations or took taxis to the airport; now they spend that time doing e-mail. Some tell me they are making better use of their "downtime," but they argue without conviction. The time that they once used to talk as they waited for appointments or drove to the airport was never downtime. It was the time when far-flung global teams solidified relationships and refined ideas.

In corporations, among friends, and within academic departments, people readily admit that they would rather leave a voicemail or send an e-mail than talk face-to-face. Some who say "I live my life on my BlackBerry" are forthright about avoiding the "real-time" commitment of a phone call. The new technologies allow us to "dial down" human contact, to titrate its nature and extent. I recently overheard a conversation in a restaurant between two women. "No one answers the phone in our house anymore," the first woman proclaimed with some consternation. "It used to be that the kids would race to pick up the phone. Now they are up in their rooms, knowing no one is going to call them, and texting and going on Facebook or whatever instead." Parents with teenage children will be nodding at this very familiar story in recognition and perhaps a sense of wonderment that this has happened, and so quickly. And teenagers will simply be saying, "Well, what's your point?"

A thirteen-year-old tells me she "hates the phone and never listens to voice-mail." Texting offers just the right amount of access, just the right amount of control. She is a modern Goldilocks: for her, texting puts people not too close, not too far, but at just the right distance. The world is now full of modern Goldilocks, people who take comfort in being in touch with a lot of people whom they also keep at bay. A twenty-one-year-old college student reflects on the new balance: "I don't use my phone for calls any more. I don't have the time to just go on and on. I like texting, Twitter, looking at someone's Facebook wall. I learn what I need to know?"

Randy, twenty-seven, has a younger sister—a Goldilocks who got her distances wrong. Randy is an American lawyer now working in California. His family lives in New York, and he flies to the East Coast to see them three or four times a year. When I meet Randy, his sister Nora, twenty-four, had just announced her engagement and wedding date via e-mail to a list of friends and family. "That" Randy says to me bitterly, "is how I got the news." He doesn't know if he is more angry or hurt. "It doesn't feel right that she didn't call," he says. "I was getting ready for a trip home. Couldn't she have told me then? She's my sister, but I didn't have a private moment when she told me in person. Or at least a call, just the two of us. When I told her I was upset, she sort of understood, but



laughed and said that she and her fiancé just wanted to do things simply, as simply as possible. I feel very far away from her."

Nora did not mean to offend her brother. She saw e-mail as efficient and did not see beyond. We have long turned to technology to make us more efficient in our work; now Nora illustrates how we want it to make us more efficient in our private lives. But when technology engineers intimacy, relationships can be reduced to mere connections. And then, easy connection becomes redefined as intimacy. Put otherwise, cyberintimacies slide into cybersolitudes.

And with constant connection comes new anxieties of disconnection, a kind of panic. Even Randy, who longs for a phone call from Nora on such an important matter as her wedding, is never without his BlackBerry. He holds it in his hands during our entire conversation. Once, he puts it in his pocket. A few moments later, it comes out, fingered like a talisman. In interviews with young and old, I find people genuinely terrified of being cut off from the "grid." People say that the loss of a cell phone can "feel like a death." One television producer in her mid-forties tells me that without her smartphone, "I felt like I had lost my mind." Whether or not our devices are in use, without them we feel disconnected, adrift. A danger even to ourselves, we insist on our right to send text messages while driving our cars and object to rules that would limit the practice.<sup>19</sup>

Only a decade ago, I would have been mystified that fifteen-year-olds in my urban neighborhood, a neighborhood of parks and shopping malls, of front stoops and coffee shops, would feel the need to send and receive close to six thousand messages a month via portable digital devices or that best friends would assume that when they visited, it would usually be on the virtual real estate of Facebook.<sup>20</sup> It might have seemed intrusive, if not illegal, that my mobile phone would tell me the location of all my acquaintances within a ten-mile radius.<sup>21</sup> But these days we are accustomed to all this. Life in a media bubble has come to seem natural. So has the end of a certain public etiquette: on the street, we speak into the invisible microphones on our mobile phones and appear to be talking to ourselves. We share intimacies with the air as though unconcerned about who can hear us or the details of our physical surroundings.

I once described the computer as a second self, a mirror of mind. Now the metaphor no longer goes far enough. Our new devices provide space for the emergence of a new state of the self, itself, split between the screen and the physical real, wired into existence through technology.

Teenagers tell me they sleep with their cell phone, and even when it isn't on their person, when it has been banished to the school locker, for instance, they

know when their phone is vibrating. The technology has become like a phantom limb, it is so much a part of them. These young people are among the first to grow up with an expectation of continuous connection: always on, and always on them. And they are among the first to grow up not necessarily thinking of simulation as second best. All of this makes them fluent with technology but brings a set of new insecurities. They nurture friendships on social-networking sites and then wonder if they are among friends. They are connected all day but are not sure if they have communicated. They become confused about companionship. Can they find it in their lives on the screen? Could they find it with a robot? Their digitized friendships—played out with emoticon emotions, so often predicated on rapid response rather than reflection—may prepare them, at times through nothing more than their superficiality, for relationships that could bring superficiality to a higher power, that is, for relationships with the inanimate. They come to accept lower expectations for connection and, finally, the idea that robot friendships could be sufficient unto the day.

Overwhelmed by the volume and velocity of our lives, we turn to technology to help us find time. But technology makes us busier than ever and ever more in search of retreat. Gradually, we come to see our online life as life itself. We come to see what robots offer as relationship. The simplification of relationship is no longer a source of complaint. It becomes what we want. These seem the gathering clouds of a perfect storm.

Technology reshapes the landscape of our emotional lives, but is it offering us the lives we want to lead? Many roboticists are enthusiastic about having robots tend to our children and our aging parents, for instance. Are these psychologically, socially, and ethically acceptable propositions? What are our responsibilities here? And are we comfortable with virtual environments that propose themselves not as places for recreation but as new worlds to live in? What do we have, now that we have what we say we want—now that we have what technology makes easy?<sup>22</sup> This is the time to begin these conversations, together. It is too late to leave the future to the futurists.

## ROMANCING THE MACHINE: TWO STORIES

I tell two stories in *Alone Together*: today's story of the network, with its promise to give us more control over human relationships, and tomorrow's story of so-called robots, which promise relationships where we will be in control, even if that means not being in relationships at all. I do not tell tomorrow's story to

predict an exotic future. Rather, as a dream in development, sociable robots cast new light on our current circumstances. Our willingness to consider their company says a lot about the dissatisfactions we feel in our networked lives today.

Part One, "The Robotic Moment," moves from the sociable robots in children's playrooms to the more advanced ones in the laboratory and those being developed and deployed for elder care. As the robots become more complex, the intensity of our relationships to them ramps up. I begin my story with a kind of prehistory, going back to the late 1970s and early 1980s and the introduction of the first animated, interactive computer toys into children's lives. It was a time of curiosity about the nature of these new machines. These first computational objects of the playroom provoked a change in children's way of sorting out the question of aliveness. Decisions about whether something was alive would no longer turn on how something moved but on what it knew: physics gave way to psychology. This set the stage for how in the late 1990s, the ground would shift again when children met sociable robots that asked for care. Unlike traditional dolls, the robots wouldn't thrive without attention, and they let you know how you were doing. But even the most primitive of these objects—Tamagotchis and Furries—made children's evaluation of aliveness less about cognition than about an object's seeming potential for mutual affection. If something asks for your care, you don't want to analyze it but take it "at interface value." It becomes "alive enough" for relationship.

And with this, the heightened expectations begin. Now—for adults and children—robots are not seen as machines but as "creatures," and then, for most people, the quotation marks are dropped. Curiosity gives way to a desire to care, to nurture. From there, we look toward companionship and more. So, for example, when sociable robots are given to the elderly, it is with the suggestion that robots will cure the troubles of their time of life. We go from curiosity to a search for communion. In the company of the robotic, people are alone, yet feel connected: *in solitude, new intimacies*.

Part Two, "Networked," turns to the online life as it reshapes the self. I acknowledge the many positive things that the network has to offer—enhancing friendship, family connections, education, commerce, and recreation. The triumphalist narrative of the Web is the reassuring story that people want to hear and that technologists want to tell. But the heroic story is not the whole story. In virtual worlds and computer games, people are flattened into personae. On social networks, people are reduced to their profiles. On our mobile devices,

we often talk to each other on the move and with little disposable time—so little, in fact, that we communicate in a new language of abbreviation in which letters stand for words and emoticons for feelings. We don't ask the open ended "How are you?" Instead, we ask the more limited "Where are you?" and "What's up?" These are good questions for getting someone's location and making a simple plan. They are not so good for opening a dialogue about complexity of feeling. We are increasingly connected to each other but oddly more alone: *in intimacy, new solitudes*.

In the conclusion, I bring my stories together. Relationships with robots are ramping up; relationships with people are ramping down. What road are we travelling? Technology presents itself as a one-way street; we are likely to dismiss discontents about its direction because we read them as growing out of nostalgia or a Luddite impulse or as simply in vain. But when we ask what we "miss," we may discover what we care about, what we believe to be worth protecting. We prepare ourselves not necessarily to reject technology but to shape it in ways that honor what we hold dear. Winston Churchill said, "We shape our buildings and then they shape us."<sup>33</sup> We make our technologies, and they, in turn, shape us. So, of every technology we must ask, Does it serve our human purposes?—a question that causes us to reconsider what these purposes are. Technologies, in every generation, present opportunities to reflect on our values and direction. I intend *Alone Together* to mark a time of opportunity.

I turn now to the story of the robotic moment. It must begin with objects of the playroom because it is there that a generation was introduced to the idea that machines might be partners in mutual affection. But my story is not about child's play. We are on the verge of seeking the company and counsel of sociable robots as a natural part of life. Before we cross this threshold, we should ask why we are doing so. It is one thing to design a robot for an instrumental purpose: to search for explosives in a war zone or, in a more homely register, to vacuum floors and wash dishes. But the robots in this book are designed to be with us. As some of the children ask, we must ask, Why do people no longer suffice?

What are we thinking about when we are thinking about robots? We are thinking about the meaning of being alive, about the nature of attachment, about what makes a person. And then, more generally, we are rethinking. What is a relationship? We reconsider intimacy and authenticity. What are we willing to

give up when we turn to robots rather than humans? To ask these questions is not to put robots down or deny that they are engineering marvels; it is only to put them in their place.

In the 1960s through the 1980s, debates about artificial intelligence centered on the question of whether machines could “really” be intelligent. These discussions were about the objects themselves, what they could and could not do. Our new encounters with sociable robots—encounters that began in the past decade with the introduction of simple robot toys into children’s playrooms—provoke responses that are not about these machines’ capabilities but our vulnerabilities. As we will see, when we are asked to care for an object, when an object thrives under our care, we experience that object as intelligent, but, more importantly, we feel ourselves to be in a relationship with it. The attachments I describe do not follow from whether computational objects really have emotion or intelligence, because they do not. The attachments follow from what they evoke in their users. Our new objects don’t so much “fool us” into thinking they are communicating with us; roboticists have learned those few triggers that help us fool ourselves. We don’t need much. We are ready to enter the romance.

why does  
she call it  
a romance?

## PART ONE

# The Robotic Moment

## *In Solitude, New Intimacies*

## NOTES

### AUTHOR'S NOTE: TURNING POINTS

1. Sherry Turkle, "Inner History," in Sherry Turkle, ed., *The Inner History of Devices* (Cambridge, MA: MIT Press, 2008), 2–29.
2. Sherry Turkle, *The Second Self: Computers and the Human Spirit* (1984; Cambridge, MA: MIT Press, 2005), 2.
3. Sherry Turkle, *Life on the Screen: Identity in the Age of the Internet* (New York: Simon and Schuster, 1995), 13.
4. Roger Entner, "Under-aged Texting: Usage and Actual Cost," Nielsen.com, January 27, 2010, [http://blog.nielsen.com/nielsenwire/online\\_mobile/under-aged-texting-usage-and-actual-cost](http://blog.nielsen.com/nielsenwire/online_mobile/under-aged-texting-usage-and-actual-cost) (accessed May 30, 2010).

### INTRODUCTION: ALONE TOGETHER

1. See "What Is Second Life," Second Life, <http://secondlife.com/whatis> (accessed June 13, 2010).
2. Benedict Carey and John Markoff, "Students, Meet Your New Teacher, Mr. Robot," *New York Times*, July 10, 2010, [www.nytimes.com/2010/07/11/science/11robots.html](http://www.nytimes.com/2010/07/11/science/11robots.html) (accessed July 10, 2010); Anne Tergeson and Miho Inada, "It's Not a Stuffed Animal, It's a \$6,000 Medical Device," *Wall Street Journal*, June 21, 2010, <http://online.wsj.com/article/SB10001424052748704463504575301051844937276.html> (accessed August 10, 2010); Jonathan Fildes, "'Virtual Human' Milo Comes Out to Play at TED in Oxford," *BBC News*, July 13, 2010, [www.bbc.co.uk/news/10623423](http://www.bbc.co.uk/news/10623423) (accessed July 13, 2010); Amy Harmon, "A Soft Spot for Circuitry: Robot Machines as Companions," *New York Times*, July 4, 2010, [www.nytimes.com/2010/07/05/science/05robot.html?pagewanted=all](http://www.nytimes.com/2010/07/05/science/05robot.html?pagewanted=all) (accessed July 4, 2010); Emily Veach, "A Robot That Helps You Diet," *Wall Street Journal*, July 20, 2010, <http://online.wsj.com/article/SB10001424052748704682604575369981478383568.html> (accessed July 20, 2010).

3. On this, see "The Making of Deep Blue," IBM Research, [www.research.ibm.com/deepblue/meet/html/d.3.1.html](http://www.research.ibm.com/deepblue/meet/html/d.3.1.html) (accessed June 10, 2010).
4. David L. Levy, *Love and Sex with Robots: The Evolution of Human-Robot Relationships* (New York: Harper Collins, 2007).
5. The book review is Robin Marantz Henig, "Robo Love," *New York Times*, December 2, 2007, [www.nytimes.com/2007/12/02/books/review/Henig-t.html](http://www.nytimes.com/2007/12/02/books/review/Henig-t.html) (accessed July 21, 2009). The original article about the MIT robot scene is Robin Marantz Henig, "The Real Transformers," *New York Times*, July 29, 2007, [www.nytimes.com/2007/07/29/magazine/29robots-t.html](http://www.nytimes.com/2007/07/29/magazine/29robots-t.html) (accessed July 21, 2009).
6. Levy, *Love and Sex*, 22.
7. On "alterity," the ability to put oneself in the place of another, see Emmanuel Lévinas, *Alterity and Transcendence*, trans. Michael B. Smith (London: Athlone Press, 1999).
8. Sherry Turkle, *The Second Self: Computers and the Human Spirit* (1984; Cambridge, MA: MIT Press, 2005), 183–218.
9. The way here is paved by erotic images of female robots used to sell refrigerators, washing machines, shaving cream, and vodka. See, for example, the campaign for Svetka Vodka (Steve Hall, "Svetka Launches Futuristic, Un-PC Campaign," [Andrants.com](http://Andrants.com), September 20, 2005, [www.andrants.com/2005/09/svetka-launches-futuristic-unpc.php](http://www.andrants.com/2005/09/svetka-launches-futuristic-unpc.php) [accessed September 1, 2009]) and Phillip's shaving system ("Feel the Erotic Union of Man and Shavebot," [Adfreak.com](http://Adfreak.com), August 21, 2007, <http://adweek.blogs.com/adfreak/2007/08/feel-the-erotic.html> [accessed September 1, 2009]).
10. Sharon Moshavi, "Putting on the Dog in Japan," *Boston Globe*, June 17, 1999, A1.
11. As pretends, the young women of the first Google generation (born roughly from 1987 to 1993) wore clothing widely referred to as "Baby harlot"; they listened to songs about explicit sex well before puberty. Their boomer parents had few ideas about where to draw lines, having spent their own adolescences declaring the lines irrelevant. Boomer parents grew up rejecting parental rules, but knowing that there were rules. One might say it is the job of teenagers to complain about constraints and the job of parents to insist on them, even if the rules are not obeyed. Rules, even unheeded, suggest that twelve to fifteen are not good ages to be emotionally and sexually enmeshed. Today's teenagers cannot easily articulate any rules about sexual conduct except for those that will keep them "safe." Safety refers to not getting venereal diseases or AIDS. Safety refers to not getting pregnant. And on these matters teenagers are eloquent, unembarrassed, and startlingly well informed. But teenagers are overwhelmed with how unsafe they feel in relationships. A robot to talk to is appealing—even if currently unavailable—as are situations that provide feelings of closeness without emotional demands. I have said that rampant fantasies of vampire lovers (closeness with constraints on sexuality) bear a family resemblance to ideas about robot lovers (sex without intimacy, perfect). And closeness without the possibility of physical intimacy and eroticized encounters that can be switched off in an instant—these are the affordances of online encounters. Online romance expresses the aesthetic of the robotic moment. From a certain perspective, they are a way of preparing for it. On the psy-

- chology of adolescents' desire for relationships with constraint, I am indebted to conversations with child and adolescent psychoanalyst Monica Horowitz in August 2009.
12. Commenting on the insatiable desire for robot pets during the 2009 holiday season, a researcher on social trends comments, "A toy trend would be something that reflects the broader society, that tells you where society is going, something society needs." Gerald Celente, founder of the Trends Research Institute, cited in Brad Tuttle, "Toy Craze Explained: A Zhu Zhu Pet Hamster Is Like a 'Viral Infection,'" *Time*, December 9, 2009, <http://money.blogs.time.com/2009/12/07/toy-craze-explained-a-zhu-zhu-pet-hamster-is-like-a-viral-infection> (accessed December 9, 2009).
  13. For classic psychodynamic formulations of the meaning of symptoms, see Sigmund Freud, "The Unconscious," in *The Standard Edition of Sigmund Freud*, ed. and trans. James Strachey et al. (London: Hogarth Press, 1953–1974), 14:159–204; "Introductory Lectures on Psychoanalysis," in *The Standard Edition*, vols. 15 and 16; "From the History of an Infantile Neurosis," in *The Standard Edition*, 17:1–122; "Inhibitions, Symptoms, and Anxiety," in *The Standard Edition*, 20:75–172; and Sigmund Freud and Joseph Breuer, "Studies on Hysteria," in *The Standard Edition*, 2:48–106. For Freud on dreams as wishes, see "The Interpretation of Dreams," in *The Standard Edition*, vol. IV.
  14. For an argument about the pleasures of limited worlds in another technological realm, see Natasha Schüll's work on gambling, *Addiction by Design: Machine Gambling in Las Vegas* (Princeton, NJ: Princeton University Press, forthcoming).
  15. See, for example, Bill Gates, "A Robot in Every Home," *Scientific American*, January 2007, [www.scientificamerican.com/article.cfm?id=a-robot-in-every-home](http://www.scientificamerican.com/article.cfm?id=a-robot-in-every-home) (accessed September 2, 2009).
  16. See Sherry Turkle, *Life on the Screen: Identity in the Age of the Internet* (New York: Simon and Schuster, 1995). On life as performance, the classic work is Erving Goffman, *The Presentation of Self in Everyday Life* (Garden City, NY: Doubleday Anchor, 1959).
  17. The apt phrase "identity workshop" was coined by my then student Amy Bruckman. See "Identity Workshop: Emergent Social and Psychological Phenomena in Text-Based Virtual Reality" (unpublished essay, Media Lab, Massachusetts Institute of Technology, 1992), [www.cc.gatech.edu/~ash/papers/](http://www.cc.gatech.edu/~ash/papers/) (accessed September 2, 2009).
  18. Sociologists distinguish between strong ties, those of family and close friendship, and weak ties, the bonds of acquaintanceship that make us comfortable at work and in our communities. Facebook and Twitter, friending rather than friendship—these are worlds of weak ties. Today's technology encourages a celebration of these weak ties as the kind we need in the networked life. The classic work on weak ties is Mark S. Granovetter, "The Strength of Weak Ties," *American Journal of Sociology* 78, no. 6 (May 1973): 1360–1380.
  19. See, for example, Matt Richtel, "In Study, Texting Lifts Crash Risk by Large Margin," *New York Times*, July 27, 2009, [www.nytimes.com/2009/07/28/technology/28texting.html](http://www.nytimes.com/2009/07/28/technology/28texting.html) (accessed September 1, 2009). On the pressure that friends and family members put on drivers who text, see "Driver Texting Now an Issue in Back Seat," *New York Times*, September 9, 2009, [www.nytimes.com/2009/09/09/technology/09](http://www.nytimes.com/2009/09/09/technology/09)

distracted.html (accessed September 9, 2009). As I complete this book, Oprah Winfrey has made texting while driving a personal crusade, encouraging people across America to sign an online pledge to not text and drive. See "Oprah's No Phone Zone," Oprah.com, www.oprah.com/packages/no-phone-zone.html (accessed May 30, 2010).

20. The teenage national average as of January 2010 is closer to thirty-five hundred: my affluent, urban neighborhood has a far higher number. Roger Entner, "Under-aged Texting: Usage and Actual Cost," Nielson.com, January 27, 2010, [http://blog.nielson.com/nielsenwire/online\\_mobile/under-aged-texting-usage-and-actual-cost](http://blog.nielson.com/nielsenwire/online_mobile/under-aged-texting-usage-and-actual-cost) (accessed May 30, 2010). On texting's impact on teenage life, see Katie Hafner, "Texting May Be Taking Its Toll," *New York Times*, May 25, 2009, www.nytimes.com/2009/05/26/health/26teen.html?\_r=2&8dpc (accessed July 21, 2009).

21. To find friends in the neighborhood, Loopt for the iPhone is a popular "app." 22. A witty experiment suggests that Facebook "Friends" won't even show up when you invite them to a party. Hal Niedzwiecki, "Facebook in a Crowd," *New York Times*, October 24, 2008, www.nytimes.com/2008/10/26/magazine/26lives-t.html (accessed July 27, 2010).

23. From Winston Churchill's remarks to the English Architectural Association in 1924, available at the International Centre for Facilities website at [www.icf-cebe.com/quotes/quotes.html](http://www.icf-cebe.com/quotes/quotes.html) (accessed August 10, 2010). Churchill's comment is, of course, very similar to the spirit of Marshall McLuhan. See, for example, *Understanding Media: The Extensions of Man* (1964; Cambridge, MA: MIT Press, 1994).

#### CHAPTER 1: NEAREST NEIGHBORS

1. Weizenbaum had written the program a decade earlier. See Joseph Weizenbaum, "ELIZA—a Computer Program for the Study of Natural Language Communication Between Man and Machine," *Communications of the ACM*, vol. 9, no. 1 (January 1966): 36–45.

2. See Joseph Weizenbaum, *Computer Power and Human Reason: From Judgment to Calculation* (San Francisco: W. H. Freeman, 1976).

3. For whatever kind of companionship, a classical first step is to make robots that are physically identical to people. In America, David Hanson has an Albert Einstein robot that chats about relativity. At the TED conference in February 2009, Hansen discussed his project to create robots with empathy as the "seeds of hope for our future." See [http://www.ted.com/talks/david\\_hanson\\_robots\\_that\\_relate\\_to\\_you.html](http://www.ted.com/talks/david_hanson_robots_that_relate_to_you.html) (accessed August 11, 2010). On Hanson, also see Jerome Groopman, "Robots That Care: Advances in Technological Therapy," *The New Yorker*, November 2, 2009, www.newyorker.com/reporting/2009/11/02/091102fa\_fact\_groupman (accessed November 11, 2009).

These days, you can order a robot clone in your own image (or that of anyone else) from a Japanese department store. The robot clone costs \$225,000 and became available in January 2010. See "Dear Santa: I Want a Robot That Looks Just Like Me," Ethics Soup, December 17, 2009, www.ethicsoup.com/2009/12/dear-santa-i-want-a-robot-that-looks-like-me.html (accessed January 12, 2010).

4. Bryan Griggs, "Inventor Urvelis \$7,000 Talking Sex Robot," CNN, February 1, 2010, www.cnn.com/2010/TECH/02/01/sex.robot/index.html (accessed June 9, 2010).

5. Raymond Kurzweil, *The Singularity Is Near: When Humans Transcend Biology* (New York: Viking, 2005). On radical images of our future, see Joel Garreau, *Radical Evolution: The Promise and Peril of Enhancing Our Minds, Our Bodies—and What It Means to Be Human* (New York: Doubleday, 2005).

6. For my further reflections on computer psychotherapy, see "Taking Things at Interface Value" in Sherry Turkle, *Life on the Screen: Identity in the Age of the Internet* (New York: Simon and Schuster, 1995), 102–124.

7. There is, too, a greater willingness to enter into a relationship with a machine if people think it will make them feel better. On how easy it is to anthropomorphize a computer, see Byron Reeves and Clifford Nass, *The Media Equation: How People Treat Computers, Television and New Media Like Real People and Places* (New York: Cambridge University Press, 1996). See also, on computer psychotherapy, Harold P. Erdman, Marjorie H. Klein, and John H. Greist, "Direct Patient Computer Interviewing," *Journal of Consulting and Clinical Psychology* 53 (1985): 760–773; Kenneth Mark Colby, James B. Wart, and John P. Gilbert, "A Computer Method for Psychotherapy: Preliminary Communication," *Journal of Nervous and Mental Diseases* 142, no. 2 (1966): 148–152; Moshe H. Spero, "Thoughts on Computerized Psychotherapy," *Psychiatry* 41 (1978): 281–282.

8. For my work on early computational objects and the question of aliveness, see Sherry Turkle, *The Second Self: Computers and the Human Spirit* (1984; Cambridge, MA: MIT Press, 2005). That work on aliveness continued with a second generation of computational objects in Turkle, *Life on the Screen. My inquiry, with an emphasis on children's reasoning rather than their answers, is inspired by Jean Piaget, The Child's Conception of the World*, trans. Joan Tomlinson and Andrew Tomlinson (Totowa, NJ: Littlefield, Adams, 1960).

9. On the power of the liminal, see, for example, Victor Turner, *The Ritual Process: Structure and Anti-Structure* (Chicago: Aldine, 1969), and *The Forest of Symbols: Aspects of Ndembu Ritual* (1967; Ithaca, NY: Cornell University Press, 1970). See also Mary Douglas, *Purity and Danger: An Analysis of Concepts of Pollution and Taboo* (London: Routledge and Kegan Paul, 1966).

10. Piaget, *The Child's Conception*.

11. Turkle, *The Second Self*, 33–64.

12. Children, in fact, settled on three new formulations. First, when it came to thinking through the aliveness of computational objects, autonomous motion was no longer at the heart of the matter. The question was whether computers had autonomous cognition. Second, they acknowledged that computer toys might have some kind of awareness (particularly of them) without being alive. Consciousness and life were split. Third, computers seemed alive because they could think on their own, but were only "sort of alive" because even though they could think on their own, their histories undermined their autonomy. So an eight-year-old said that Speak & Spell was "sort of alive" but not "really alive" because it had a programmer. "The programmer," he said, "gives it its ideas. So the ideas don't come from the game." These days, sociable