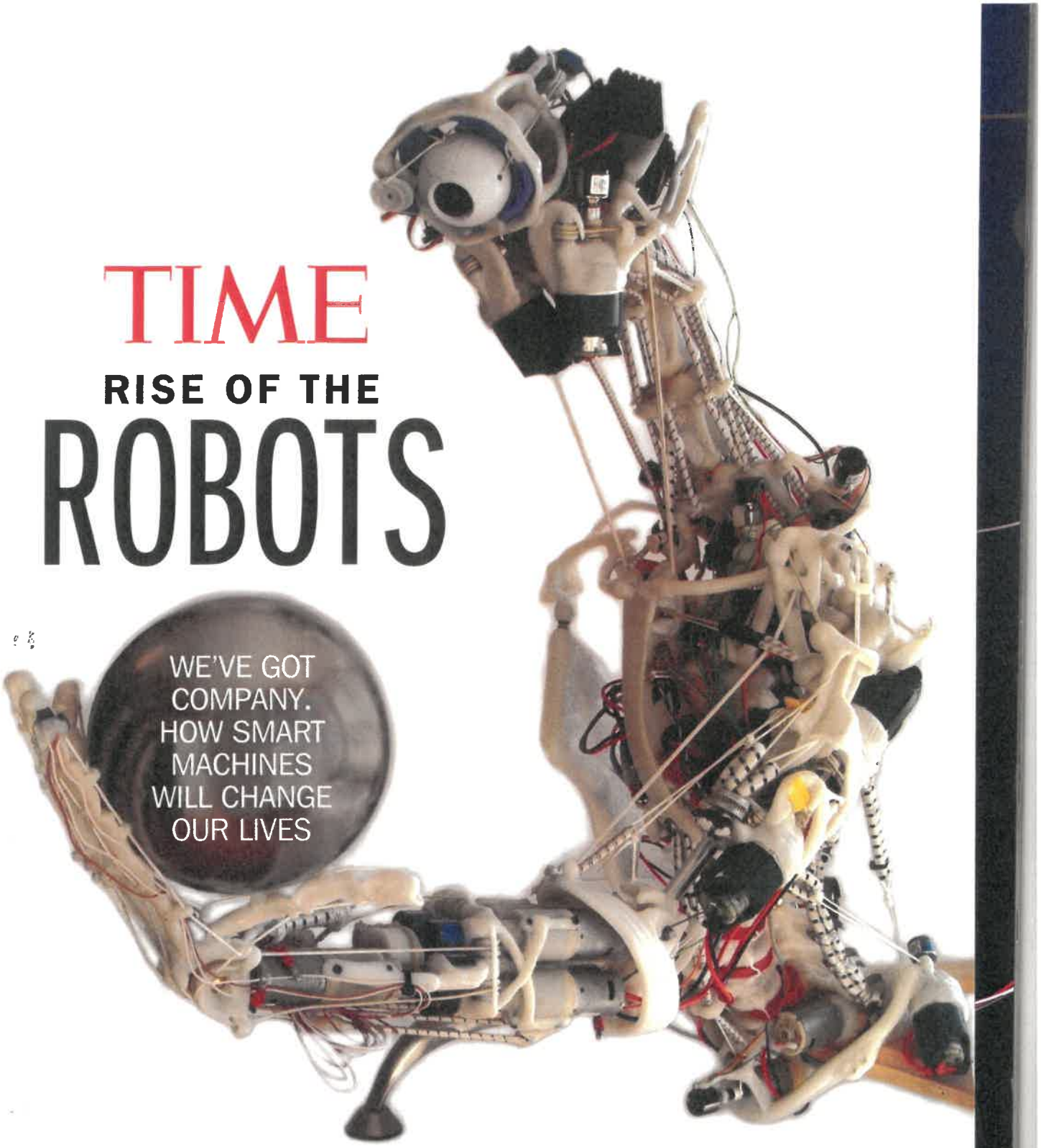

TIME

RISE OF THE ROBOTS

WE'VE GOT COMPANY. HOW SMART MACHINES WILL CHANGE OUR LIVES

BY THE EDITORS AND CONTRIBUTORS OF TIME MAGAZINE

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BE CAREFUL WHAT YOU WISH FOR

BY SHERRY TURKLE

When machines become our friends, will it mean we've become less human?

WE ARE AT WHAT I CALL A "ROBOTIC MOMENT," NOT BECAUSE WE HAVE BUILT ROBOTS worthy of our company, but because we have more or less declared ourselves ready for theirs.

For a long time, putting hope in robots has expressed an enduring technological optimism, a belief that as things go wrong, science will go right. In a world of human woes, turning to robots has always seemed like calling in the cavalry. They save lives in war zones and in operating rooms; they function in space and sea, wherever the human body may be in danger. But robots get people to hope for something more. In my work I talk to people, many hundreds of people, about their feelings about technology. And increasingly, I hear the hope that robots will do more than perform the instrumental feats of the cavalry, that they might also bring simple salvations.

These are the hopes that someday, in the not too distant future, robots will be our companions. Talking with us will be their vocation and we will take comfort in their company, in their conversation. Over the decades, I have heard these hopes grow stronger even though most people's experience with a robot companion is with something like Siri, Apple's digital assistant on the iPhone—not a robot but a screen agent for which the conversation is most likely to be "find me a restaurant" or "locate a friend."

But telling Siri to "locate a friend" can move quickly to the fantasy of finding a friend in Siri. And indeed, people tell me they look forward to the time when Siri or one of its near cousins will be something like a best friend, except in some ways better: an always-present companion, one who will never be angry, one you can never disappoint.

But when people talk this way of friendship without mutuality, of relationship on tap, you begin to hear the shape of some of my misgivings about the simple salvations of the robotic moment. Essentially, they boil down to this: for artificial companionship to become our new normal, we have to change ourselves. We may think we are only making robots, but really we are remaking human values and connections. And we remake ourselves before we make the robots. We change ourselves as we get ready for them.

One way this happens is that we assume that whenever robots take over a human function, people will be freed up to be more human. This argument has two parts. First, robots will make us more human by increasing our relational options because now we will get to relate to *them,* a new species. And second, *whatever* people do, if a robot can perform that role, it is by definition not a specifically human role. And this includes conversation and caretaking.

We imagine robots first talking to and caring for the most vulnerable, our elderly. Here, many take the necessity for robots as self-evident. Because of demography, roboticists often say, there are no people for these jobs. The trend line is clear: too many older people, not enough younger ones to take care of them. This justification for robotic companionship is brought up at conferences and in classrooms all over the world, even though, with a shift in social priorities, a lot of people might be available for elder-care jobs.

In fairness, it's not only roboticists who talk this way. In the past 15 years, the years in which I've been studying sociable robotics, I hear echoes of "there are no people for these jobs" from people who are not in the robot business at all. I've had conversations about robots with carpenters, lawyers, doctors, plumbers, teachers, and office workers. Sometimes I've given their families a sociable robot to have at home for a while, a robot dog or baby seal designed to be a companion for the elderly. When people talk about the need for robot caregivers on the grounds that there are no people available for such work, it's often in terms that suggest that the people who are available are not the right people. They might be abusive. They might

steal. They might be inept. People say things like: "I would rather have a robot take care of my mother than a high-school dropout. I know who works in those nursing homes." Or, "I would rather have a robot take care of my child than a teenager at some day-care center who doesn't know what she's doing."

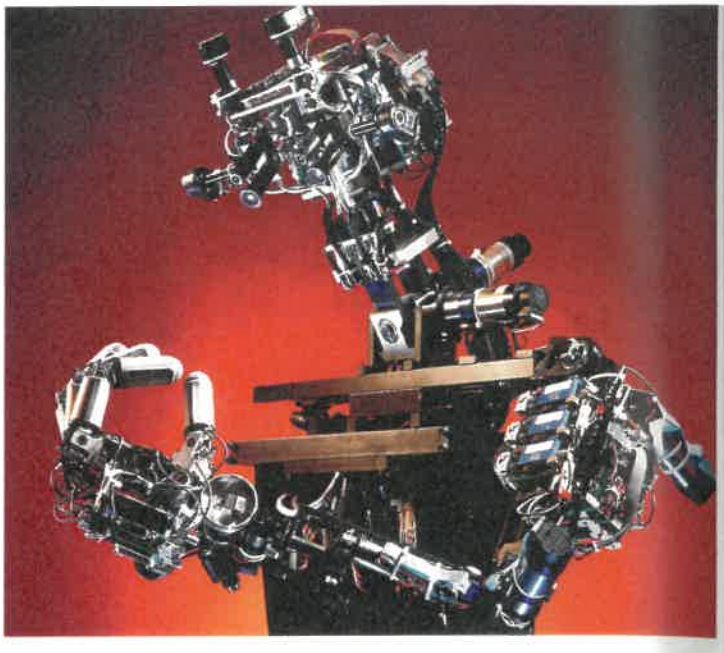
So what are we talking about when we talk about robots? We are talking about our fears of each other, our disappointments with each other. Our lack of community. Our lack of time. In these conversations I hear exhaustion because getting these things back seems beyond us. I hear hopelessness about investing in people to make them fit to take care of others. To take care of *us*, eventually. People go straight from reservations about a health-care worker who didn't finish high school to a dream of inventing a robot to care for them, just in time. We live at the robotic moment not because robots are ready for us, but because we are counting on them.

I see a different road: if we cast a shadow on the simple salvations of robotic companionship, we can better focus on the potential of robotic technology to help us in other ways—and on the importance of developing the uniquely human potential in one another and in our children.

Children have evolved dramatically in their reactions to computational objects. When children first met computer toys that played tic-tac-toe, memory games, and puzzles in the 1970s, they saw them as people's "nearest neighbors" because they shared in our intelligence. In children's eyes, what made people special, by contrast, was our emotions. A 12-year-old said, "When there are computers who are just as smart as the people, the computers will do lots of the jobs, but there will still be things for the people to do. They will run the restaurants, taste the food, and they will be the ones who will love each other and have families. I guess they'll still be the only ones who'll go to church."

This romantic reaction went beyond children. In the mid-1980s and early 1990s, faced with an increasing computer presence in daily life, people of all ages found a way of saying that although simulated thinking might be thinking, simulated feeling was never feeling, simulated love was never love. Just as people were accepting the notion of mind as program, there was a new emphasis on the soul and the spirit in the human machine.

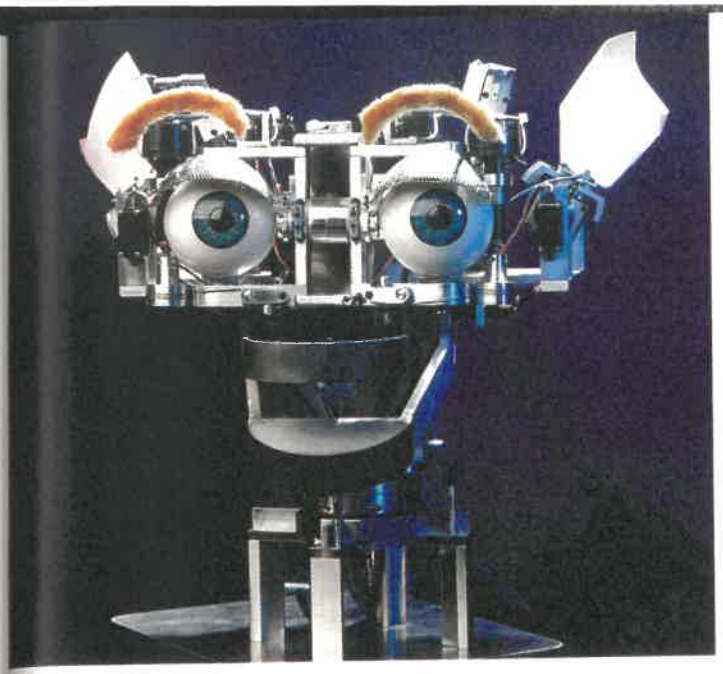
But by the late 1990s, we were meeting machines that presented themselves as having feelings and wanted us to feel for them. Interactive virtual pets



and then "sociable" robotic pets and dolls asked to be played with, cared for, even loved. Some robots asked to be taught English, others to be taught tricks. Most important, interacting with them demanded that attention be paid to their state of mind. All of this asking for attention was striking. It generated powerful bonds of attachment.

People are wired to nurture what we love but also to love what we nurture. In the field of sociable robotics, nurturance is a killer app. Once we take care of a digital "creature," or teach and amuse it, we become attached to it. And then we behave as though the "creature" cares for us in return.

The youngest children came to describe sociable objects as "sort of alive" because of their emotional connection to the objects and their fantasies about



SOCIABLE OBJECTS
Clockwise from top left: Cog and Kismet were developed to explore the boundaries of human/machine interaction; Furby and Tamagotchis evoke an emotional response and foster the illusion that they care for us in return.

what those objects might be feeling about them. A 5-year-old said, "My Furby doesn't have arms, but if it did it would want to hug me." An 11-year-old said she could never get tired of a humanoid robot: "It's not like a toy because you can't teach a toy; it's like something that's part of you, you know, something you love, kind of like another person, like a baby."

Faced with a sociable robot, children try to meet its needs, to understand its unique nature and wants. There is a serious attempt to build a relationship. And when children become convinced that a machine has feelings, they no longer see people as special because of a unique capacity for emotion.

A quarter century stands between two conversations I had with adolescent boys about the prospect of a robot confidant—the first in 1983, the second in 2008. Both young men were from the same Boston neighborhood; both were Red Sox and Patriots fans. The contrast between the two interviews illustrates the shift from the romantic reaction to the robotic moment.

In 1983, 13-year-old Bruce told me that a robot would be no help with the personal problems of high school. He was a freshman, and things were already getting complicated. He said that for anything about friendships, girls, or the guys on his soccer team, he'd want to turn to his dad. But not because his father always knew the answers. On the contrary, he talked to his dad because they shared a certain human frailty. "We both have chaos," Bruce said. For him, human imperfection made the ties that bind. Perfect robots could never understand human relationships.

Twenty-five years later, things were very different. When 15-year-old Howard compared his father with the idea of a robot confidant, the robot came out way ahead. "Its database would be larger than Dad's," he said. Every person is limited by his or her life experience, Howard said, but robots could be programmed with an unlimited number of stories. Already, his father had given him bad advice about a girl. A robot, he thought, "could have been uploaded with many experiences" that would lead to the right answer. People, Howard said, were "risky." Robots were "safe." From Bruce to Howard, human fallibility had gone from endearment to liability.

Howard is not alone. When I interview young people today, many can imagine a machine that monitors all their e-mails, Web searches, texts, and messages. This machine would know them intimately. It could be a robot. It could have a face and voice. Having such knowledge and presence, said Howard, would make the machine "good to talk to ... about life, about romantic matters, about friendship."

Life. Romantic matters. Friendship. In the first generation of my studies of the computer culture, these were sacred spaces where only people were allowed. Howard, though, thought that all of these were in robot territory. For him, a robot could be a true companion. Of course, no robot can actually do that, and yet we have taught our children to look to nonhumans for emotional support.

But while many see promise in Howard's expanded set of potential relationships, I see him willing to imprint on the wrong species. For me, the most important job of childhood and adolescence is to learn attachment to, and trust in, other people. When Howard's father gave bad advice about a girl, How-

ard didn't learn to talk to his father about it so they could do a better job of it the next time Howard had a crush. Instead, he developed a fantasy of an infallible machine that could treat relationships as algorithms. With a machine as a relational gold standard, Howard had learned not to feel safe with fallible people.

I see us embarked on a voyage of forgetting. We are forgetting crucial things about the care and conversation that can only pass between people. The word *conversation* derives from others that mean to turn toward each other, to live with each other. To converse

A ROBOTIC DOG WILL NEVER DIE; IT OFFERS ATTACHMENT WITHOUT RISK.

is not just to perform turn taking; we have to listen to someone else, to read their body language, their voice, their tone, their silences. We bring concern and experience to bear and expect the same. Howard's hoped-for artificial intelligence can do none of these things. In time, Howard might forget that any of it matters.

The voyage of forgetting begins long before we have a robot in place. It begins when we think about putting it there. When we consider putting children in the care of robots, we forget that what children need to learn is that people are there for them in a stable and consistent way. Children need to learn that it is safe to form attachments to people, a capacity they will depend on throughout their lives.

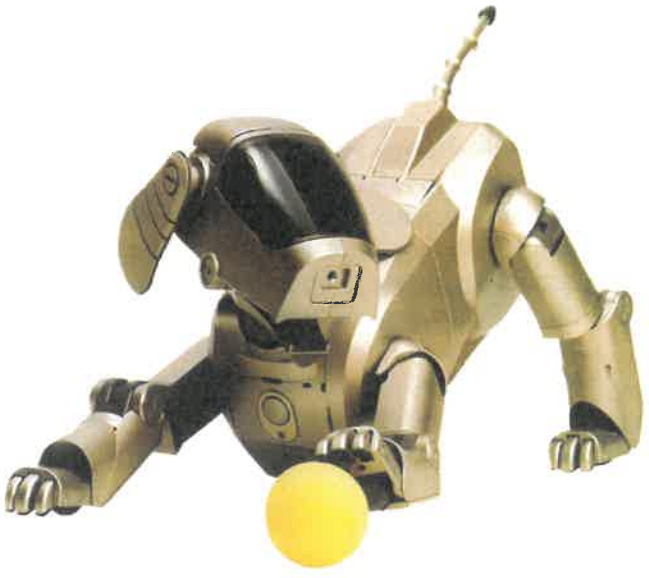
Studies show that when a mother presents a "still face"—that is, a neutral expression—her child becomes agitated and desperate, doing everything she can to get the mother back. The bonds of attachment and the fluid expression of emotion are the same for the child. When children are with people, they recognize, over time, how the movement and meaning of speech, voice, inflection, faces, bodies, and feelings all flow together, seamlessly, fluidly. Children need to learn how human emotions play in layers. And children need other people to reinforce their own expressions of that complex symphony. No robot can teach this.

These are the most precious things we give to children, and they are what we are forgetting when we think about children spending any significant time looking into robots' faces, talking with them, trusting in their care.

I see a general pattern in our discussions of robot companionship that extends from children to adults. I call it "from better than nothing to better than anything." We begin with the idea that robot companionship is better than nothing, as in "there are no people for these jobs." Then we exalt the possibilities of what simulation can offer. In time, we talk as though what we will get from the artificial is better than what life could ever provide. A robotic dog will never get sick and can be turned off when you want to put your attention elsewhere. Crucially, it will never die. Most generally, the artificial offers attachment without risk.

In 2012, I was at a taping of a radio show about Siri with a panel of technology experts and social scientists. The conversation turned to how much people like to talk to Siri, evidence of the fact that people feel disinhibited when they talk to a machine. One of the social scientists suggested that one day Siri could be a psychiatrist. It didn't seem to bother him that Siri the psychiatrist would be counseling people about their lives without having lived one. If Siri could behave like a psychiatrist, he said, then it could be a psychiatrist. If no one minded the difference between the "as if" and the real thing, then let the machine take the place of the person.

With machines like that, we'll be alone, even as we feel as if we are in good company. For me, it is reminiscent of how some of us are now, when we are with each other, at breakfast or on a walk, but we are texting or on iChat. We may be together, but in another sense we are alone. We've already allowed ourselves to get closer to machines—even when they don't deserve it—and in our use of the Net we're distancing ourselves from each other.



Our style of relating on the Net has prepared us for the robotic moment. Online, we put the emphasis on being able to share our ideas, but it is easy to forget the importance of listening, of attending to silences, of understanding the meaning of a hesitation. We call what we do online conversation, but perhaps we are content to call mere connection conversation, to the point that we may forget the difference between them. And there is a difference.

At one conference I attended, robots were called "caring machines," and when I objected, I was told it is not because the robots care but because they will take care of us. Caring is a function, not a feeling. Why are you being picky about semantics, my colleagues ask. But much is at stake here. It is important to have a conversation about these shifts in meaning before we don't know how to have such a conversation anymore. Or before we think we can have it with a machine.

One day I saw an older woman who had lost a child talking to a robotic baby seal. It seemed to be looking into her eyes and to be following the conversation. It comforted her. Many people on my team and those who worked at the nursing home thought this was amazing. But the woman was trying to make sense of her loss with a machine that had no experience with the arc of human life. That robot put on a good show, and we are vulnerable to that; we experience pretend empathy as the real thing. But robots don't empathize. They don't face death or know life.

So when this woman took comfort in her robot companion, I didn't find it amazing. I felt we had abandoned her. There were so many people there to help, but we all stood back, a room of spectators now, there only to hope that one of our elders would bond with a machine. It seemed we all had a stake in outsourcing the thing we do best—taking care of one another.

In discussions about robots for the elderly, the emphasis tends to be on whether the robot is persuasive enough to get the person to talk to it. But consider this moment in the life cycle. It isn't just that older people need to be talking. A younger generation needs to be listening. Some older cultures have a saying about young people who misbehave: "They had no one to tell them the stories." We show too little interest in what our elders have to say and build machines that ensure their stories will literally fall on deaf ears.

There are, indeed, many wonderful things robots can do to help the elderly. Robots can help older (or ill) people remain independent by reaching for cans of soup or articles of clothing on high shelves, or helping shaky hands to cook. They can help lower an unsteady body onto a bed. All these things are for the good. Some will argue that playing the role of confidant to an older person is also for the good. I think that in this case the good is that sociable robots get us into a conversation about the human specificity of conversation and emotional care.

SIMULATED LOVE *A robot, like this one that is modeled after a baby seal and responds to sensory stimuli, can be used as a therapeutic tool for people with dementia. But should it be?*

Our expectations of robots change our expectations of each other, our sense of what makes us human. The pretend self of a robot calls forth the pretend self of a person performing for it, and a steady diet of that is not a promising way for children to develop a real self. Nor is it promising for adults trying to live authentically and navigate life's real, human problems. And to say that it's just the thing for older people who are at the point of trying to make sense of their lives is demeaning. It seems to me that they, of all people, should be given occasions to talk about their real lives, filled with real people and real losses and real loves, to someone who knows what those things are.

It is time to reconsider the premise that a robot is better than nothing. Because if you are trying to solve the problem of care and companionship with a robot, you are not trying to solve it with the people you need to solve it with: friends, family, community. Caring defines us as individuals and communities. We are creatures of history, of deep psychology, of complex relationships. I don't think we want to trade that away. We are not destined to be passive. Challenging the "as-if" pleasures of the robotic moment is serious work, but it is work that we should do.

Sherry Turkle is a psychologist, professor at MIT, and author, most recently, of Alone Together: Why We Expect More From Technology and Less From Each Other. *This essay was adapted from her plenary lecture at the 2013 annual meeting of the American Association for the Advancement of Science.*