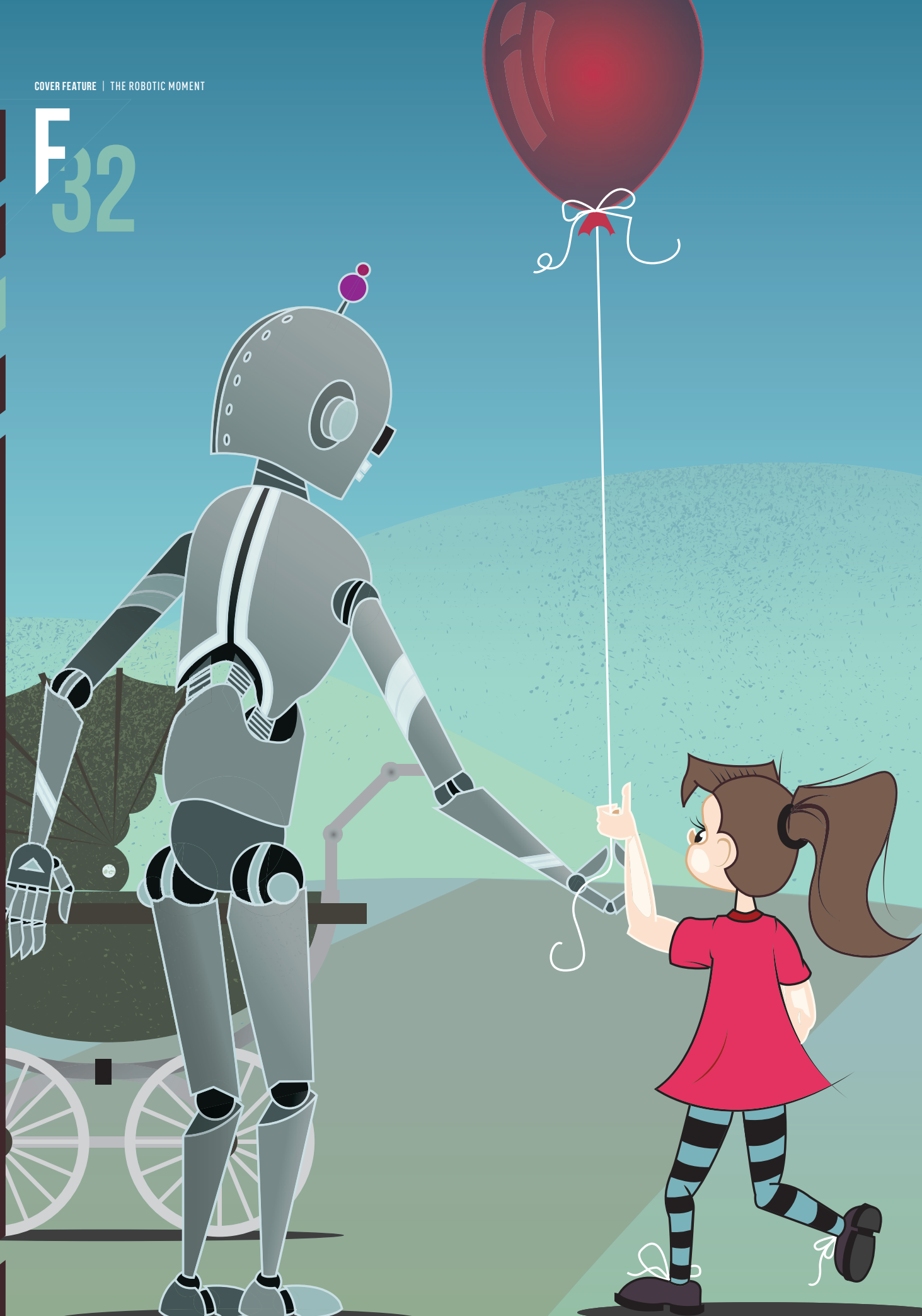# F
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MACHINES OFFER CARING BEHAVIOR. IS THAT A GOOD THING?

BY ALAN S. BROWN

Sherry Turkle, the psychologist who directs MIT's Initiative on Technology and Self, sometimes tells the anecdote about how she was once approached by a young psychology graduate student after a talk about reactions to "sociable" robots that can mimic and evoke emotions. Anne, the student, confided that she would trade in her boyfriend for a sophisticated Japanese robot if it could provide what she described as "caring behavior."

According to Turkle, who retold the anecdote during a plenary lecture to the American Association for the Advancement of Science in Boston this past February, "Anne told me that she relied on a feeling of civility in her house and did not want to be alone. She said, 'If the robot could provide the environment, I would be happy to produce the illusion that there was somebody really with me.'"

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This was exactly the type of ironic remark graduate students make. Yet Anne was not joking. According to Turkle, who has studied the psychology of human interactions with technology since the first electronic games appeared in the late 1970s, there are so many people who feel as Anne does that something must be changing fundamentally in our relationship with robots and artificial intelligence.

Today's robots are not only smarter, but increasingly able to engage us emotionally. As a result, Turkle said, humans have begun to think about their relationships with robots in new and often startling ways.

Sociable robots evoke emotions by making eye contact, tracking our motion, and remembering our names. Their faces and especially their eyes show emotion, and their voices reflect rhythms and tones of our own, mimicking an interested listener.

To demonstrate the kind of emotions a machine can evoke, researchers at University of Duisburg-Essen in Germany showed people videos of a Pleo robot dinosaur. The dinosaur sang and burbled when petted, and cried and choked when abused. The researchers measured viewers' pulses and respiration and took MRI scans, and found their responses to the dinosaur were very similar (though not as intense)

as when they were shown pictures of a woman being caressed or hurt.

Evolution, Turkle explained, has hardwired us to respond to these social cues. Turkle's research shows that people respond to these cues as if the robot has a sentient self that cares for them. This is true, even when people know they are interacting with a machine.

"If machines know how to do this," Turkle said, "we're toast."

CROSSING THE LINE

When Turkle began studying sociable robots some 15 years ago, our thoughts about robots expressed our optimism about technology. Robots were the cavalry. They would come to the rescue to save lives in war, perform delicate operations, or work in lethal environments.

Today, people increasingly expect robots to provide simple comforts, such as conversation and companionship.

Of course, no robot can do this now. Yet sociable robots and artificial intelligence software are changing our expectations.

Somewhere along the way, our attitudes crossed a line. The result is what Turkle calls "the robotic moment": instead of the normal give-and-take of friendship, we find the idea of robotic companions attractive because they offer constant attention without judgment or demands.

For an example Turkle offers her research on Apple's digital assistant, Siri. Asking Siri to locate a friend moves quickly to fantasies about finding a friend in Siri.

In those fantasies, Siri is like a best friend, but in some ways better. It will always listen to us, and never disappoint us, get angry, or cause conflicts. It is friendship without mutuality, since robots have no needs or desires of their own.

Many people view robots as safer than people. Most of Turkle's MIT colleagues believe the need for caretaker robots for the elderly is self-evident. Surprisingly, many people outside the tech professions feel the same way. In fact, more than half of health care providers surveyed by researchers at Georgia Tech said they would prefer a robot to a human in some tasks, such as housework and reminding patients to take medication.

According to Turkle, "People say things like, 'I would rather have a robot take care of my mother than a high school dropout,' or 'I know who works in those nursing homes,' or 'I prefer a robot to a teenager who doesn't know what she's doing.'"

To Turkle, this type of talk is really about our fears and disappointment in one another. "I hear hopelessness about investing in people to make them fit to take care of each other and eventually, us," she said. "We go from reservations about the health care worker who didn't finish high school to the dream of inventing a robot to care for us, just in time."

SORT OF ALIVE

This is a vast change in attitudes from the 1970s, when Turkle began investigating how children thought about such simple computerized toys as Simon, Tic-Tac-Toe, and various word games. Those games may have sharpened children's minds, but they also challenged how children thought about what makes something alive.

In the past, Turkle said, children decided something was alive when it could move on its own accord. With computer toys, physical motion did not matter. Instead, children declared that these toys were "sort of alive" because they appeared to think on their own.

"Psychology replaced physics as a criterion for aliveness," Turkle said.

This changed how children thought about what makes people—and themselves—special. In the past, children would compare people with their nearest neighbors, usually dogs, cats, or other pets. Children presumed that pets had feelings. People were special because they could think and act rationally.
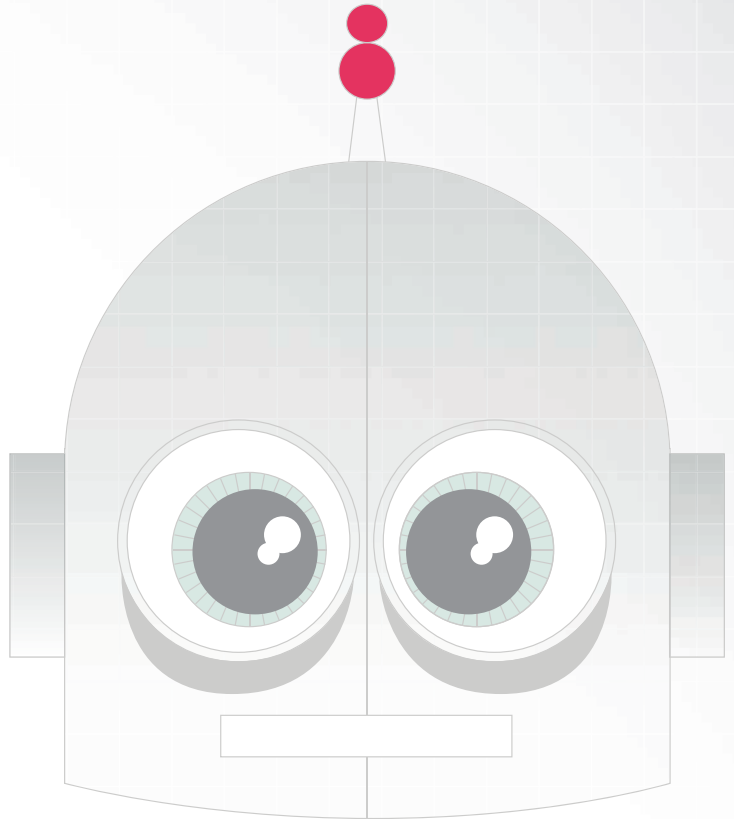
Computer toys upset this logic. In children's eyes, smart toys became our nearest neighbors because they share intelligence with people. Humans were special because they had emotions and can feel.

"One child told me, 'When computers are as smart as people, they will do a lot of the jobs. But there will still be things for people to do. They will run the restaurants and taste the food. They are the ones who will have families and love each other. They are the only ones who will go to church,'" Turkle recalled.

This was the romantic reaction to robots: While simulated thinking might be thinking, simulated feelings were never feelings. Only humans could feel.

Fast-forward 20 years and engineers began making machines that appeared to have feelings. One is a virtual pet, Tamagotchi, a keychain-size pendant that requires owners to feed and discipline it. Such toys ask us to care for them, and behave as if our actions matter, Turkle said.

Since the late 1990s, virtual pets have graduated to proper robots with hair, fur, motion, and even expres-sion. Aibo, a robotic puppy, learns tricks if we train it. My Real Baby cries out for caresses, bottles, burping, and most important of all, attention to its state of mind. It complains when it receives too little attention or is too highly stimulated.

"In the field of sociable robotics, nurturing and asking for nurturing turns out to be a killer app," Turkle said. "Once we care or teach or amuse, we become attached and then behave as if the creature cares for us."

It also changed how children define "sort of alive." Now, smart toys are not like us because they reason, but because we connect with them emotionally and fantasize about how the object might feel about us.

A five-year-old said a Furby "does not have arms, but if it did, it would want to hold me."

After interacting with MIT's Kismet robot, which is designed to mimic human facial expressions, an 11-year-old said, "It is like something that is part of you, something you could love, kind of like another person, like a baby."

This is very different from how children think about traditional dolls. Children project their needs onto a doll, Turkle said. For example, a girl who breaks her mother's mirror might put her doll in time out as a way to work out her own feelings of guilt.

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Some children are learning to confide in robots because they are safer than people.

Sociable robots, on the other hand, are about engagement, not projection. Robots that ask for attention generate bonds of attachment. Children try to meet the robot's needs to understand its unique nature and wants.

"There is a serious attempt to build relationships as if there were mutuality," Turkle said.

Turkle once asked a nine-year-old to compare a Furby with an action figure. "You don't play with a Furby, you sort of hang out with it," the child replied. "You do try to get power over it, but it has power over you too."

From the romantic reaction, where simulated feelings are never feelings, we have moved to the robotic moment, where simulated feelings will do just fine, Turkle said.

HUMAN FALLIBILITY

Some children are learning to confide in robots because they are safer than people. According to Turkle, the change is illustrated by interviews, 25 years apart, with two adolescent boys from the same Boston neighborhood.

In 1983, Bruce said no robot could help him with high school problems. He would always seek advice from his father about guys, girlfriends, and his soccer team. Although his father did not know everything, his human imperfection gave him an understanding that even a perfect robot would lack.

In 2008, Howard said the robot would come out ahead. Why? His father had limited experience, and had already given him bad advice about a girl. A robot would have had a larger database on which to draw and could have provided the right answer.

Human fallibility has gone from an endearing trait to an unnecessary liability. To Bruce, life, romance, and friendship were once the sacred spaces of the romantic reaction. To Howard, they are robot territory.

Instead of learning to attach and trust other people, Howard fantasizes about confiding in a robot that treats relationships as algorithms. He has learned to feel unsafe with fallible humans.

Adults also buy into robotic companionship. This goes beyond fantasizing about friendships with Siri. After observing hundreds of adults interacting with sociable robots, Turkle found that they behaved as if the robot had a self, even when they knew it was a machine. Turkle calls this "willful forgetting."

Her work focused on MIT's sociable robot, Kismet, whose eyes, eyebrows, ears, and lips attach to a clearly metallic frame.

"It is not about the robot deceiving anybody," Turkle said. "But because of eye contact, facial expressions, and a voice that responds to your tone and cadences, talking with Kismet provides the pleasurable feeling of being understood."

That is the hook, because people often feel that no one is listening. When we feel vulnerable, lonely, and afraid of intimacy, we're drawn to technologies—most commonly, Internet technologies—that offer the illusion of companionship without the demands of friendship.

Those technologies are seductive because they promise we will always be heard and never be alone. They will never abandon us, even when we turn away our attention to take a call, reply to a text, or watch television.

"When people voice these fantasies, they are also describing—without meaning to—a relationship you would have with a robot," Turkle said.

VOYAGE OF FORGETTING

This lack of give-and-take is the dark heart of Turkle's robotic moment.

"When we put children in the care of robots, what we forget is that children need to learn that people care for them and are there for them in a stable and consistent way," she said.

It takes people with human experience to help children learn the complex dance of words, tone, inflection, and expression that communicate emotions. People also help children make sense of their own feelings.

"These are the most precious things we give to children," Turkle said. "These are the things we are forgetting when we think about spending any significant amount of time with machines, looking in their faces, trusting in their care. Why would we play with fire with things that are so delicate?"

Turkle believes we have embarked on a voyage of forgetting the importance of human interactions. Technology is seducing us with the illusion of companionship that we can turn on and off at will, without any mutuality.

This seduction follows a pattern. First, we accept robotic companionship because it is better than nothing. Perhaps we are okay with robotic caregivers because they will be safer or better informed than humans. Then we exalt the possibilities of robots until they eclipse anything humans could ever supply.

Like many seductions, there are often hidden costs. One nine-year-old told Turkle that she loved her Aibo dog because it would remain a puppy and never die.

"She said putting her real dog to sleep was the worst thing that ever happened to her. Aibo would last forever and be better than any pet," Turkle said. "People used to buy pets to teach children about life, death, and loss. Now, this is how we're talking. The artificial offers attachment without risk."

Sometimes, those attachments are poignant. Turkle recalled going to a nursing home to observe an elderly woman who had lost her children. She was talking to Paro, a sociable robot shaped like a baby seal.

"It looked in her eyes, and seemed to be comforting her," Turkle said. "This woman was trying to make sense of her life with a machine that had no experience of the arc of a human life."

The nursing staff and attendants were all enthusiastic, but Turkle felt she had reached a turning point. The emphasis, she said, was on whether the robot would help the woman talk about her grief. No one worried whether anyone was listening.

"We are building machines that will literally let their stories fall on deaf ears," Turkle said.

Yet a robot in the hands of a therapist may have a different role. Aubrey Shick, a Carnegie-Mellon University researcher, is building a therapeutic robot, Romibo, specifically designed for the very elderly, people with dementia, and youngsters with autism. She describes Romibo as a "configurable companion."

Shick expects therapists to use Romibo as a tool to get the elderly talking and to exercise the memory of people with dementia. Therapists can use its expressive eyes and sounds to teach autistic children to interpret the emotions of other people.

"It is like a pet, if you could get the pet to do what you needed and it could talk," she explained.

Turkle agrees that robots could help the elderly in many ways. They may one day help with medications, ease someone into bed, reach for objects on high shelves, or help with the cooking.

But should they be our companions? Should they care for our children and our parents who are unable to care for themselves?

Now is the time to have this conversation, before we start to taking robotic companionship as the new normal, Turkle said. Because when something becomes normal, it is easy to think there is nothing to talk about anymore. **ME**

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