

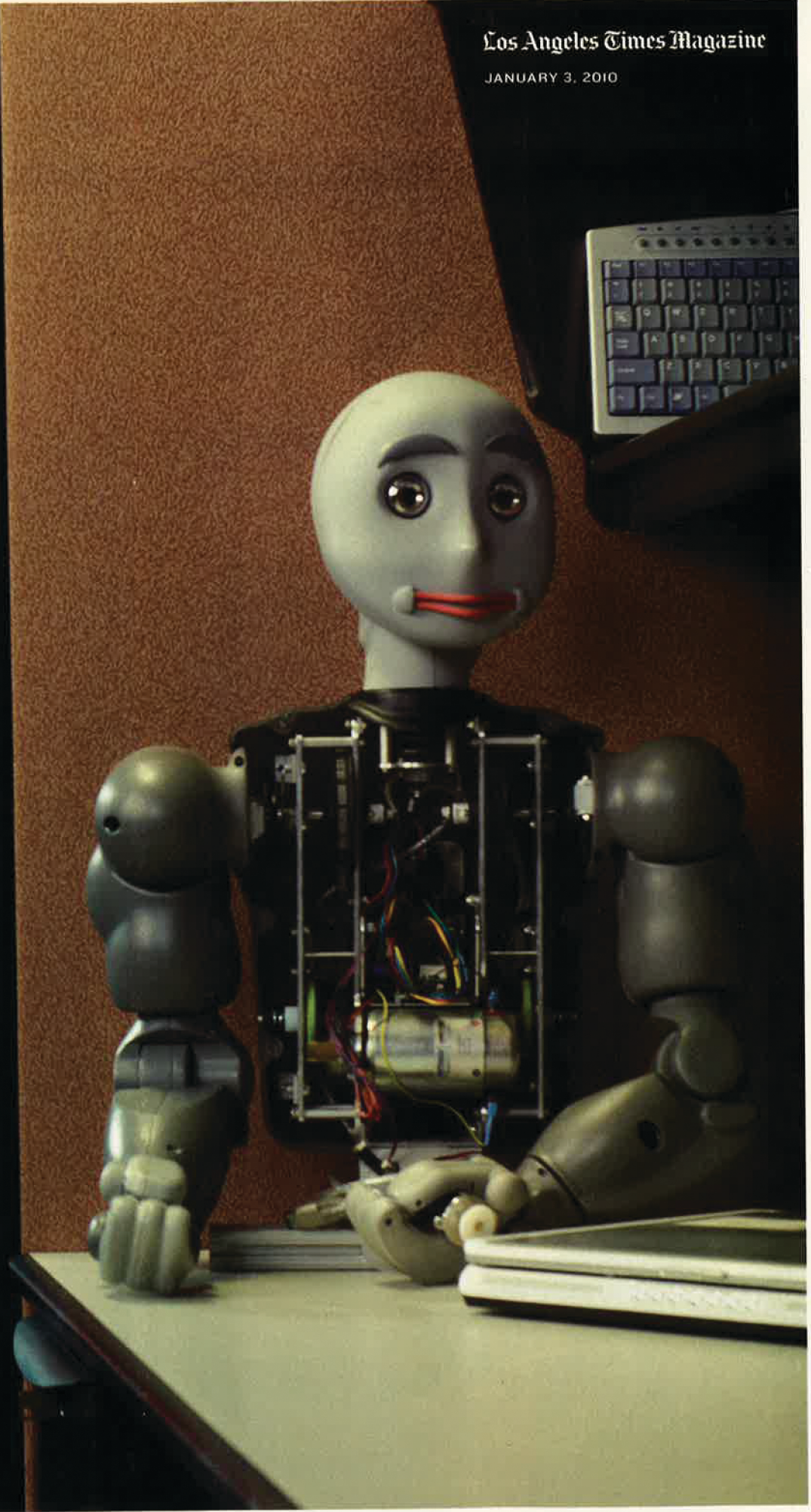


LA

VISIONARY

FIVE CATALYSTS FOR AN
ENLIGHTENED FUTURE

Los Angeles Times Magazine



VISIONARY

In our fast-food, ADD culture, lots of people are labeled visionaries. Truth is, there aren't that many of them. A genuine visionary is an alchemist, able to synthesize existing information, technology and philosophy and ignite them with a spark of radical genius. It is someone who has the perception to see past entrenched, received ideas about what is possible and conjure revolutionary concepts. In short, it is a person with the power, acumen and artistry to change our world. »→



RoboCare

Robotist MAJA MATARIĆ foresees a kinder, gentler A.I.

Having kids made Maja Mataric a different kind of mother of invention. The University of Southern California professor of computer science, neuroscience and pediatrics heads a team at the Center for Robotics and Embedded Systems, developing creatures with the *raison d'être* of helping people with special needs—be it someone with Alzheimer's, a victim of stroke or a child with autism.

"People ask, What are the implications of your work? I want to be able to answer that for my kids," says the fortysomething scientist with a ready laugh. "I want to be able to tell them not only what I do but why I do it. The why can't just be, 'because that's what the Department of Defense funds.' There has to be a greater purpose."

In a lab that seems to be some hybrid of a CSI-type headquarters and the bits and parts of a TV repair shop, Mataric and her grad students create squat, cheerful little devices that resemble something along the lines of R2-D2 of *Star Wars* fame. Made small so as not to intimidate their human users, Mataric's prototypes both instruct and encourage. People do occupational and rehabilitative exercises that are, she says, "boring, repetitive and yet vital" to recovery or regaining some functioning—or, as in the case with autism, building a foundation for future learning.

Unlike researchers in Japan, who are working to design

robots that can lift a convalescing person and, say, help him or her to the bathroom, Mataric's team purposefully builds robots that are weak and bottom heavy so they're hard to tip over. "They can pick up a piece of paper, and that's about it. If something can pick you up, it can hurt you if it screws up. My robot can't pick you up, but it also can't harm you. That is a realm I'm happy to stay in, because in terms of impact, in my lifetime, this we can do."

She says creating therapeutic robots wasn't on her mind when she began studying computer science and artificial intelligence as a graduate student at MIT. "I was interested in how we could take this idea of biologically inspired systems and actually make them capable of some kind of thinking," says the Belgrade-born Mataric (who came to this country when she was 16). Her first creation was a robot called Toto, which could navigate rabbit warrens of office cubicles like a rat in a maze. "I didn't think about any kind of helpful applications at the time, other than having the thing go around and water plants."

But an interest in neuroscience led her to investigate how the brain's pathways impact stroke patients. "At a certain point, you realize, *Oh my goodness, there are so many people who could use some help.*"

Mataric disagrees with critics who argue robots are dehumanizing, if not downright danger-

ous, and that humans should do these altruistic jobs. She sees her machines not as replacements for human care but as helpmates in an overburdened health-care system.

"It is hard to convey to people who have not looked at the nation's demographics that, yes, it would be great if people did this work, but there are not enough people to meet the coming demand," says Mataric, her accent becoming more pronounced as she emphasizes her words.

Last year, she was one of three robotics experts invited to speak before the Congressional Robotics Caucus. Even *she* was "sobered up" when faced with the ramifications of meeting the anticipated costs of caring for aging baby boomers. "We are talking billions," she notes.

Mataric imagines that one day her robots will cost about as much as a personal computer—and be as widely available. For now, she searches for funding to do the types of clinical trials needed before her robots can be available for a mass market. She suspects a not so subliminal fear of HAL-type evil entities makes finding money for this particular research a challenge.

"What is the image of a robot? Usually it's something from a doomsday movie," she says. "Even my own son said, 'I don't like robots—robots are bad!' I kept telling him, 'Honey, Mommy makes robots to help people.' Now he's got it, but it took a while." —Samantha Dunn