

## Hearing aids: Digital isn't always better

By Brian Kladko  
GLOBE CORRESPONDENT

A decade after digital hearing aids were supposed to revolutionize life for the hearing-impaired, many users are getting little extra benefit from the new features — even as they pay thousands of dollars more for them.

The hoopla around digital technology, some audiologists say, obscured a fundamental truth: Some people with hearing problems simply don't need sophisticated sound

About 16 out of every 1,000 US adults use a hearing aid. 77% of people with digital hearing aids expressed overall satisfaction with the devices, compared to 66% of people with analog aids.

SOURCE: Better Hearing Institute

processing to function well.

And determining who should pay for those extra features isn't easy, because the sale of hearing aids is driven more by marketing and trial-and-error than by solid scientific studies, some audiologists say.

"We really don't have good independent, verifiable research to show us that these particular features may be good," said Dennis Van Vliet, a California-based audiologist with HearUSA, a national hearing aid sales company. "We just have to go ahead

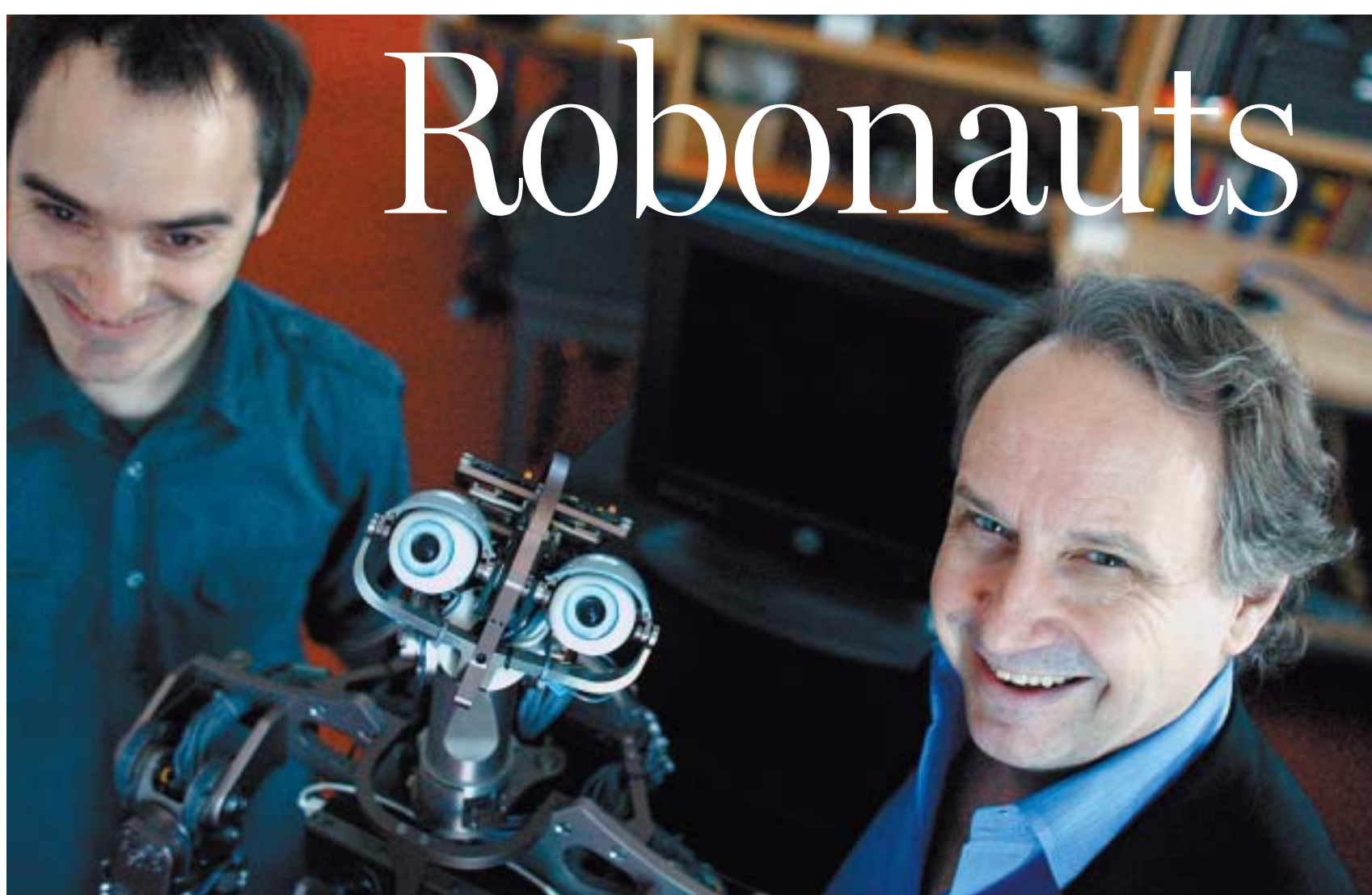
and work with the patients and try them and see what kind of success we have. . . . It really seems like a backwards way to do things."

Today's situation can be traced to not-so-reputable early days of hearing aids, when they were sold door-to-door like encyclopedias or vacuum cleaners. Now, hearing aids can be bought only through audiologists, who have degrees in the field, or hearing aid dealers, who are licensed by the state. But the top-down, sales-oriented approach persists, leaving consumers vulnerable at a time when there is an ever wider array of features to choose from.

About 16 out of every 1,000 US adults use hearing aids, which pick up sound through a microphone, amplify it, and feed it directly into a person's ear. While traditional analog aids amplified all sound waves indiscriminately, digital hearing aids convert the waves to zeros and ones that are processed by a microchip, amplifying certain frequencies and muting others.

That means a digital hearing aid can have preprogrammed sound levels, much like equalizer settings on a hi-fi system, that fluctuate to compensate for the amount of background noise — more sensitive in quiet rooms and less sensitive at

HEARING AIDS, Page C4



DOMINIC CHAVEZ/GLOBE STAFF

The humanoid robot Domo was created by graduate student Aaron Edsinger-Gonzales (left) in the MIT lab run by Rodney Brooks (right). Domo's latest task has been learning how to wield a screwdriver.

## The next generation of space explorers will look — and act — more like people than probes

By Carolyn Y. Johnson  
GLOBE STAFF

In 1989, using an insect-like robot named Genghis, Rodney Brooks pitched a bold vision for exploring space: Send up an army of small, cheap machines to rove around on a distant planet and beam back data.

The concept kicked off a new era in robotics, and eight years later, NASA sent the simple probe Sojourner rolling across the surface of Mars.

But now Genghis sits in a box, and the sophisticated machines that populate Brooks's lab

at MIT are becoming increasingly human-like: One has a sense of touch, another can find a familiar face in a crowd. Eventually a robotic torso named Domo — now learning to wield a screwdriver — will be able to master new skills by imitating people instead of undergoing software updates.

The new designs are part of a broader shift toward a vision of robots that are partners, not simply remote-controlled probes.

The change has been fueled by more powerful computers and better robotics as well as by new space policy. The Bush administration's

push for more human space flight — signed off on a few weeks ago by Congress — is increasing the demand for robot partners that can learn new tasks, use tools the same way people do, and act as a space support staff.

"The thing we were tasked by NASA is: How can robots support manned missions on the moon and Mars before people get there, while they are up there, and after they've left?" said Brooks, director of the Computer Science and Artificial Intelligence Laboratory at the Massachusetts Institute of Technology. "The danger is

ROBOTS, Page C4



FILE/ASSOCIATED PRESS/NASA



NASA/JOHNSON SPACE CENTER

Then and now The Sojourner rover (left) was part of a push to explore space with relatively simple robots, mostly controlled by people on Earth. NASA's new Robonaut will be more of a colleague than a mechanical substitute.

## Also today



REUTERS

### Dr. Knowledge

How do penguins avoid getting frozen feet? C4

### Meeting the Minds

Physics graduate student and disc jockey is about to have his reality TV debut. C2

## JUDY FOREMAN

### Health Sense

## Some comfort for the grieving: There's no wrong way to do it

Grieving used to be seen as a very straightforward process: You cried at the funeral, you were sad for a few months, then you had some "closure" and got on with your life.

Most psychologists — both pop and professional — thought that anyone who didn't cry at the funeral was heartless, while those who were still sobbing a year later were regarded as overly emotional.

Mercifully, the emerging view among mental health experts is that grieving for a lost loved one is really a disorderly, highly idiosyncratic process — that there are no set stages to go through and no "normal" or "right" ways to do it.

For Lynn Osborn, 48, of Belmont, who lost her husband to Lou Gehrig's disease four years ago after a slow, awful decline, the grieving process "has been very personal, and it's still not over yet."

"Fortunately, it never occurred to me that there was a 'right' way to grieve," said Osborn, the mother of two sets of twins, ages 8 and 11.

A vivacious woman with a passion for rowing and ballet, Osborn has become something of an expert on grief. She lost her father to a car crash 16 years ago. ("I had had breakfast with him that morning. I came home to a phone call saying he had been killed.")

Though she had much more time to prepare herself for her husband's death, it was no less terrible when it actually came than her father's had been, she said.

As the disease slowly robbed her husband, Charley, also a rower, of his ability to pick up his children, feed himself, talk, and, toward the end, even blink and smile, Lynn spoke with a psychiatrist at Massachusetts General Hospital. "I told him I felt there was a freight train coming. He said, 'There is a freight train coming. And there is nothing you can do to prepare for it.'"

Osborn said that insight proved liberating — and very different from the kind of counseling someone in her position might have received in

**'Fortunately, it never occurred to me that there was a "right" way to grieve.'**

LYNN OSBORN

HEALTH SENSE, Page C3



ESSDRAS M SUAREZ/GLOBE STAFF

Lynn Osborn with children: From left, Sarah, 8, Katie, 11 (holding picture of father), Nicky, 8, and Ellen, 11.