

Your Voice Is My Command

New computer programs enable people with neurological disorders to communicate better.

BY JAMIE TALAN

Doug Maples wakes up in the morning and issues a simple voice command to his environmental control unit to turn on the lights and to power up his computer. Up pops his e-mail.

The Mississippi native, who has been a quadriplegic since he was 15, then calls out the names of hundreds of Web sites; within seconds his PC opens the pages. Doug navigates his computer world with the help of Dragon NaturallySpeaking Speech Recognition software.

His wife, Valerie, has had rheumatoid arthritis since she was a child. Her hands and fingers are extremely weak. The 48-year-old operates her Apple computer with another speech-recognition program, called MacSpeech Dictate.

A growing number of people with disabilities are using speech-recognition programs and devices to gain greater access to the world inside their computer—and out.

CONVERTING TEXT INTO SPEECH

Doug and Valerie aren't the only ones in their home who communicate with the aid of a computer. Their 16-year-old daughter, Nichole, was born with cerebral palsy. Her physical disabilities make it virtually impossible for her to use any of these off-the-shelf programs. Instead, she relies on the DynaVox VMax computer system, which is used by many people who can't speak or no longer have control of their body.

The manufacturer of DynaVox has designed a variety of devices based on software that converts visual input into spoken language. The program allows people to select words or icons, which it then converts into speech. If users don't have control of their hands, they can

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—ALAN PITT, M.D.

communicate with head or eye-tracking sensors instead. Devices such as Eyegaze Edge, Tobii, and Quick Glance calibrate eye or head movements to a computer via Webcam. The person's eye or head movement can then be used like a mouse to select letters or words or pictures on the screen. These devices also allow users to turn selected words into sound.

People with amyotrophic lateral sclerosis (ALS, also known as Lou Gehrig's disease), stroke, autism, cerebral palsy, and children with developmental delays have all benefited from these technologies.

However, such devices can cost upwards of \$5,000 to \$7,000—and may not be covered by insurance. Insurance companies that do cover them usually require a speech-evaluation report and a prescription. In contrast, speech-recog-

niton programs like Dragon and MacSpeech cost a few hundred dollars.

CONVERTING SPEECH INTO TEXT

It seems to be working for the Maples family, but they have the advantage of being computer savvy. Doug has two Masters degrees, including one in computer science. He says he doesn't use the MacSpeech software because it still relies on a mouse. In 1996, when he was introduced to Dragon, he still was capable of right forearm rotation, which he used to hold a pencil upside down and hit the keys with the eraser. He would type one letter at a time, roughly five words a minute.

Now, he can speak-type at least 20 words a minute. Doug has set up a nearby environmental control unit that uses his verbal commands to turn on the lights, answer the doorbell and the phone, open doors, and turn on his PC. If the software makes a mistake and doesn't recognize his voice, he has a backup: a sip-and-puff switch connected to the environmental



control unit that can also turn his computer on. He uses Dragon's latest software, 10.1.

Doug has added functions through a second speech-recognition program, called KnowBrainer, that works with Dragon NaturallySpeaking. When he first began using Dragon in 1996 the program cost \$14,000. It soon dropped down to \$7,000, then to \$2,000, and now the professional version is just shy of \$600. (See "Speech Recognition Programs" box for more current prices.)

"When I first began using Dragon Dictate," Doug says, "it did not allow for continuous speech. People had to speak in a staccato fashion and pause between words. It took another four or five years for me to be able to talk normally and see my words on the screen. I don't ever touch the keyboard. I do everything with my voice: control the mouse and applications, browse Web sites, and use e-mail. I can create a script to open up a new window or go to a new Web page. I can even use my voice to invoke a script that will click on whatever application I need," he says.

Before Valerie started using Dragon—and more recently MacSpeech—she typed four or five words a minute. Now she dictates 50 words a minute. Unlike Dragon, MacSpeech requires people to be able to use a mouse to correct misspelled words. Valerie also purchased a MacSpeech medical version that comes with thousands of medical terms, which she uses in preparing letters and notes about her family's health. In addition, she uses a program called Scribe that transforms her iPhone into a recorder. She then transcribes the audio using her MacSpeech program. "This

technology has become vital for people with disabilities," she says.

LEARNING TO LOVE TECHNOLOGY

But it isn't always easy transitioning from typing to speaking your words out across a screen, as Sheila Pitt learned. Sheila was an experienced horseback rider. One day while taking her horse for a walk, he tripped and fell over, throwing her to the ground and crushing her neck.

Sheila's son, Alan Pitt, M.D., a neurologist at the Barrow Neurological Institute in Arizona, had her transported there immediately. Sheila suffered a spinal cord injury that left her a quadriplegic. During her rehabilitation, Dr. Pitt realized that the best therapy for his mother was to get her back to work as an art professor at the University of Arizona.

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mother could use Dragon," Dr. Pitt says. "They said that they don't offer that kind of training." Instead, they wanted to teach her how to use a pencil with her mouth.

"So I bought her a computer and the Dragon software. I knew that she needed to integrate her e-mail and Web browsing in order to get back to teaching."

"It took me six months to interface with my e-mail at work," Sheila says.

E-mailing is only small part of her job. She is an artist and teaches woodcutting and printmaking. With limited mobility in her left arm and hand, she has returned to her drawing as well. She uses a Wacom drawing tablet to sketch. Her drawings are fed into the computer. Then her assistant, also an artist, turns the drawing into an etching. "It was overwhelming at first," explains Sheila, who relied on phone help from a nearby disabilities resource center at first.

Today, two years after her injury, she is e-mailing her students and using a drawing pad to prepare sketches for class. But Sheila is still hoping for a better mouse interface. She says that she often loses the arrow, which is frustrating.

For her son, it was a wake-up call. "We need to develop all sorts of devices to help people integrate back into their lives," Dr. Pitt says. "If you have a spinal-cord injury, even a couple of clicks can keep you from communicating with the world." Sheila hopes that the manufacturers of these products become more disability savvy. "I have learned that I must advocate for myself all the time," she says. NN

Speech Recognition Programs

PROGRAMS FOR WINDOWS

Dragon NaturallySpeaking 10: Standard (Estimated \$45), Preferred (Estimated \$85).

e-Speaking: Estimated \$14 after 30-day free trial.

Windows Speech Recognition: Free with the Vista and Windows 7 operating systems.

PROGRAMS FOR MACINTOSH

MacSpeech Dictate 1.5: Estimated \$150.

FOR MORE INFORMATION

Speech Recognition Solutions has links to tools to enhance speech recognition software: speechrecsolutions.com/links.htm

V-LINC, a nonprofit technology resource center, provides a how-to guide for selecting a speech recognition program: linc.org

Sources: ConsumerSearch, TopTenReviews.