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Conjuring Images of a Bionic Future

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STATE OF THE ART

Dick Loizeaux recently found himself meandering through a noisy New York nightclub. This was unusual; Mr. Loizeaux, a 65-year-old former pastor, began suffering hearing loss nearly a decade ago, and nightclubs are not really his scene. “They’re the absolute worst place to hear anybody talk,” he said.

But this time was different. Mr. Loizeaux had gone to the club to test out the GN ReSound Linx, one of two new models of advanced hearing aids that can be adjusted precisely through software built into Apple’s iPhone. When he entered the club, Mr. Loizeaux tapped on his phone to switch his hearing aids into “restaurant mode.” The setting amplified the sound coming from the hearing aids’ forward-facing microphones, reducing background noise. To play down the music, he turned down the hearing aids’ bass level and bumped up the treble. Then, as he began

chatting with a person standing to his left, Mr. Loizeaux tapped his phone to favor the microphone in his left hearing aid, and to turn down the one in his right ear.

The results were striking. “After a few adjustments, I was having a comfortable conversation in a nightclub,” Mr. Loizeaux told me during a recent phone interview — a phone call he would have had difficulty making with his older hearing aids. “My wife was standing next to me in the club and she was having trouble having the same conversation, and she has perfect hearing.”

It’s only a slight exaggeration to say that the latest crop of advanced hearing aids are better than the ears most of us were born with. The devices can stream phone calls and music directly to your ears from your phone. They can tailor their acoustic systems to your location; when the phone detects that you have entered your favorite sports bar, it adjusts the hearing aids to that environment.

The hearing aids even let you transform your phone into an extra set of ears. If you’re chatting with your co-worker across a long table, set the phone in front of her, and her words will stream directly to your ears.

When I recently tried out the Linx and the Halo, another set of iPhone-connected hearing aids made by the American hearing aid company Starkey, I was floored. Wearing these hearing aids was like giving my ears a software upgrade. For the first time, I had fine-grain control over my acoustic environment, the sort of bionic capability I never realized I had craved. I’m 35 and I have normal hearing. But if I could, I’d wear these hearing aids all the time.

iPhone-connected hearing aids are just the beginning. Today most people who wear hearing aids, eyeglasses, prosthetic limbs and other accessibility devices do so to correct a disability. But new hearing aids point to the bionic future of disability devices.

As they merge with software baked into our mobile computers, devices that were once used simply to fix whatever ailed us will begin to do much more. In time, accessibility devices may even let us surpass natural human

abilities. One day all of us, not just those who need to correct some physical deficit, may pick up a bionic accessory or two.

“There is a way in which this technology will give people with hearing loss the ability to outperform their normal-hearing counterparts,” said Dave Fabry, Starkey’s vice president for audiology and professional relations.

Imagine earpieces that let you tune in to a guy who is whispering across the room, or eyeglasses that allow you to scan the price of any item in a supermarket. Google and several international research teams have been working on smart contact lenses. In the beginning, these devices might monitor users’ health — for instance, they could keep an eye on a patient’s blood pressure or glucose levels — but more advanced models could display a digital overlay on your everyday life.

Or consider the future of prosthetic limbs, which are now benefiting from advances in robotics and mobile software. Advanced prosthetic devices can now be controlled through mobile apps. For instance, the i-Limb Ultra Revolution, made by Touch Bionics, allows people to select grip patterns and download new functions for their prosthetic hands using an iPhone. The longer you use it, the smarter your hand becomes.

Hearing aids are the natural place to begin our bionic quest. About 36 million American adults report some degree of hearing loss, according to the National Institute on Deafness and Other Communication Disorders, but only about a fifth of the people who would benefit from a hearing aid use one.

That’s because hearing aids, as a bit of technology, have long seemed stuck in the past. “Most people picture large, clunky bananas that fit behind your ears and show everyone you’re getting old,” said Ken Smith, an audiologist in Castro Valley, Calif., who has fitted more than two dozen patients with the Linx.

Until recently, many hearing aids were also difficult to use. For lots of potential users, especially people with only mild or moderate hearing loss, they didn’t do enough to improve sound in noisy environments.

Talking on the phone with a hearing aid was especially problematic. While some hearing aids offered streaming capabilities to cellphones, they were all clunky. To connect to phones, they required an extra streaming “wand,” a battery pack and wireless transmitter that the user wore around his neck — a device that nobody looked good lugging around.

In 2012, Apple announced the Made for iPhone Hearing Aid program, which would let the company’s mobile operating system connect directly to hearing aids using a low-power version of Bluetooth wireless technology. Representatives of both Starkey and GN ReSound say they saw the iPhone as a way to correct many of the tech problems that had hampered hearing aids. The phone could act as a remote control, a brain and an auxiliary microphone for hearing aids, and it would finally let people make phone calls and listen to music without carrying a wireless dongle.

But more than that, the companies say, the iPhone could do something potentially revolutionary for hearing aids. “A lot of the people who could benefit from wearing a hearing aid now don’t have any excuse — they can’t say it’s too clunky or not cool,” said Morten Hansen, GN ReSound’s vice president for partnerships and connectivity.

Dr. Fabry, of Starkey, was blunter: “We thought we could make hearing aids cool.”

Aesthetically, both companies seemed to have pulled off something close. The GN ReSound and Starkey hearing aids are fantastically tiny and attractive; each is just a fraction of the size of a conventional Bluetooth headset, and when they’re set behind your ears, they’re virtually invisible. They are also quite comfortable. A few minutes after fitting each model into my ears, I had forgotten they were there.

On the other hand, neither is cheap. Starkey’s Halo starts around \$2,000 a hearing aid, while GN ReSound’s Linx begins at more than \$3,000 each. Few health insurance plans cover the cost of hearing aids; Medicare does not.

Some people who have used them, though, said the new hearing aids were well worth the price. “I fell in love with them in the first 30 seconds,”

said Todd Chamberlain, who recently began using a pair of Halos.

Mr. Chamberlain, who is 39 and works as an industrial safety officer in Ephrata, Wash., has worn hearing aids since he was 3 years old.

“I’m surprised they haven’t done this earlier — putting it all in an app, that seems so obvious these days,” he said.

Soon, we might be saying the same about all of our senses.

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