

Getting People With Hearing Loss in the Loop

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Compared to its big sister, vision, hearing is the Cinderella sense. Vision owns 10 times the brain real estate and is enabled by millions of photoreceptors rather than 16,000 cochlear hair cells. “Vision” (or “visual”) understandably gets 3 times more attention from psychological science than “audition” (or “auditory”)—301,396 PsycINFO abstracts versus 99,098.

Yet in two ways, hearing is remarkable. First, we can be amazed that it happens. Imagine a science fiction movie in which an alien species passes thoughts from one mind to another via pulsating air molecules. That species is us, as others’ brains instruct their vocal folds and larynx to shoot air pressure waves through space, which are collected by our outer ear, transformed into our middle ear’s mechanical vibrations, producing fluid waves in our inner ear, triggering electrical waves up the auditory nerve to our brain. Voilà! We hear—unless there is a problem somewhere in this sequence.

Second, hearing connects us. We humans are made for relationship. We need to belong (Baumeister & Leary, 1995). And hearing (for those not natively deaf and fluent in sign language) is central to the sharing of emotions and ideas and happenings. Thus, for the 1.23 billion people challenged by hearing loss (Global Burden of Disease Study 2013 Collaborators, 2015), there comes not only the cognitive effort of straining to comprehend but also an increased risk of cognitive decline, sadness, and social disengagement (Chisolm et al., 2007; Lin et al., 2013; National Council on Aging, 1999). Hearing matters.

Such is my experience, as one who has experienced and written about hearing loss and recently completed a 4-year term representing Americans with hearing loss on the advisory council to the National Institute of Health’s National Institute on Deafness and Other Communication Disorders. My avocational passion of the past 2 decades—transforming American “assistive listening” for people with hearing loss—was sparked by an ear-opening experience on Scotland’s remote Isle of Iona. In 1999, as I worshiped in its historic abbey, the

spoken words reverberated off its stone walls and, when reaching my ears, became a verbal fog.

But then my wife, Carol, noticed a hearing assistance sign with a “T”—indicating the presence of an encircling “hearing loop” that could magnetically transmit the sound from the public-address system directly to the telecoil sensors in my new hearing aids (Fig. 1). When she nudged me to turn the telecoils on, the result was stunning—the hearing equivalent of a car moving from potholed gravel onto fresh asphalt. In an instant, the indecipherable words were replaced by a clear voice speaking from the center of my head. I was (as many others have been when first experiencing a hearing loop) on the verge of tears.

My ensuing experience of British hearing loops—in places from auditoriums and places of worship to post-office windows and taxis—led me to wonder: Why was this user-friendly technology, which effectively doubles the functionality of my hearing aids, so widely available in the United Kingdom and Scandinavia and so unknown in North America (outside of a few scattered installations)?

In the United States, most hearing assistance in public places ignores the human factor. Picture someone with hearing loss struggling to hear a lecture or a movie. Instead of a simple button push that transforms their hearing aids into in-the-ear speakers, the person typically must take the initiative to locate, check out, wear, and return a conspicuous FM or infrared receiver and headset that delivers generic sound. When I asked at my local seven-screen theater how often these assistive units get used, the unsurprising answer was only “once per month per theater.” Although satisfying Americans With Disabilities Act requirements (for one such unit for every 50 seats), they nearly all sit gathering dust. Given these two alternative technologies—one compatible with hearing

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HEARING LOOP INSTALLED Switch hearing aid to T-coil

www.hearingloop.org

Fig. 1. Universal hearing access symbol. “T” indicates a hearing loop that projects to the telecoils of hearing aids or cochlear implants.

aids and the other not—it should not take a human factors psychologist (someone who designs technology with the real human user in mind) to understand which technology people are more likely to use and love.

Bringing Hearing Loops to Michigan

Back home in west Michigan, I first installed a \$200 hearing loop in my home TV room. (I connected a small loop amplifier to the TV audio out, and then encircled the room with the loop wire running from the amplifier.) With the TV speakers’ sound now in my ears, I can hear and understand—even when the TV itself is broadcasting no sound. (If someone watches TV with me, I hand them the remote to adjust their own sound, which has no effect on what I hear.) Moreover, because my hearing aids come with both a “T” setting (telecoil only) and an “MT” setting (mic + telecoil), I can simultaneously hear conversation or the doorbell.

To pilot test my vision for a looped America, I next introduced hearing loops to my community, Holland, Michigan, and its immediate surrounds, encompassing about 100,000 people. With grant support from some

local corporations, and publicity from local media, non-profit institutions were offered partial support for the cost of new installations.

The happy result: Virtually every worship place and auditorium now has a hearing loop, with gratifying comments from both consumers (“The experience of actually hearing such clear sounds was thrilling and hard to describe”) and hearing professionals (“Never in my audiology career has something so simple helped so many people at so little cost”).

Such positive word-of-mouth helped spread hearing loops to nearby cities, such as Grand Rapids, where it now can be found in most auditoriums and worship places and in both concourses and all individual gate areas of Michigan’s second largest airport. (If a flight is delayed, I can hear the explanation broadcast by my hearing aids.) Down the road, the 12,200 fixed seats of Michigan State’s basketball arena are looped—illustrating the range of applications, from a ticket window to an arena.

Spreading the Word: A Case Study in Persuasion

Given the inertia supporting the existing hearing-aid-incompatible assistive listening—which is what audio-visual equipment installers have known (and hey, it is easily installed and works for them)—how could we persuade them and hearing professionals to consider the human factor—the benefits of simplicity-of-use, inconspicuousness, and customized sound output? My response was to tell the story, with repetition, to every reachable audience, via:

- *Message simplification.* “Audio induction loop system” became, in plain English, “hearing loop.”
- *Vivid metaphors.* We explain the technology as being akin to Wi-Fi for hearing aids, as the hearing equivalent of wheelchair ramps, and as functionally placing one’s head where the mic is.
- *Website.* I created hearingloop.org, which offers information, answers FAQs, and provides audio demonstrations and links to installers. (In the past 12 months, the site has had 37,484 visits.)
- *Authoring.* Three-dozen published articles (available on hearingloop.org) have introduced hearing loops and our advocacy to hearing and audio professionals and to consumers.
- *E-mails.* My 19,885 outgoing emails with the words “hearing” and “loop” have included responses to 18,762 hearing-loop emails received.
- *Talks.* A PowerPoint-illustrated roadshow has brought our story to audiences of hearing professionals and consumers.



Fig. 2. Logo for the HLA/AAA 2010–2011 U.S. hearing loop initiative.

- *Media.* Although most efforts to interest media come to nothing, the successes include a National Public Radio interview, a *Scientific American* blog post (Myers, 2013), a *Wall Street Journal* essay (Myers, 2015), and an influential *New York Times* front page story (Tierney, 2011), which caught hearing and audio-visual industry attention and leveraged more than 10,000 website visits in the ensuing 4 days.

Building a Movement: The Pack Is Greater Than the Wolf

Although my west Michigan initiative helped launch the U.S. hearing loop movement, the greater force of this advocacy comes from its emerging collective power.

Credible (expert and trustworthy) endorsements

For this movement to gain momentum beyond my local community, it needed to be embraced by something much greater than a well-meaning hard-of-hearing professor. The genesis of a breakthrough occurred in 2002 when local billionaire Richard DeVos (the founding chair of the National Organization on Disability and, yes, Betsy DeVos’s father-in-law) wrote me two unsolicited, handwritten notes of appreciation for my efforts. In response (our political differences being irrelevant), I invited him out for coffee, where we discussed the vision of a more hearing-friendly America . . . which led to his medical philanthropy office supporting some significant installations, including the DeVos Convention Center and the DeVos Performance Hall in Grand Rapids.

By 2010, the leadership of the Hearing Loss Association of America (“the nation’s voice for people with hearing loss”) and the American Academy of Audiology

(the largest professional organization of hearing professionals) became persuaded that hearing loops were the preferred assistive listening technology. Loops, they realized, are simple, inconspicuous, free to the consumer, universally applicable across hearing-aid brands and nations, sanitary (no germs transferred from other users), scalable for ticket windows to arenas, and provide customized output. When they approached my family foundation to fund a two-year initiative, DeVos quickly affirmed my invitation to join us in cofunding the Association’s initiative, which added momentum and credibility to our outreach.

An advocacy network

The biggest credit, however, goes to the growing army of passionate hearing advocates—people who are informed, convicted, articulate, courageous, and persistent, and therefore effective. These people include a Wisconsin audiologist who retired early from her flourishing practice to become the Hearing Loss Association of America’s (HLAA) national hearing-loop advocate in 2012; a mother of a child with hearing loss, who was an early and effective advocate for hearing loops in dispersed public facilities, including museums and New York City subway booths and taxis; a former concert-management executive, who has led a successful “Loop New Mexico” initiative and has been a driving force within the current “Get in the Hearing Loop National Task Force” (Fig. 2); and a Washington-state hearing advocate who is the tireless national chair of the HLAA’s looping efforts.

Nationwide, 39 local state and city volunteer looping campaigns have coalesced behind their dream of a nation “where communication access is available at home, when traveling, and in all places of public assembly—through assistive listening technology that is directly hearing aid compatible” (Frazier, 2017). Thanks to this collective voice, the hearing industry now makes the needed telecoil receptor available in 7 in 10 new hearing aid models and all cochlear implants. Dozens of installers have been trained to provide quality loops and to resolve any issues related to magnetic interference or sound spillover to adjacent rooms. And installations are spreading—from the 3,300 home TV rooms equipped by one California audiologist . . . to the U.S. Supreme Court chamber . . . to, before long, the 775 new train cars of the San Francisco BART.

People (including the reviewers of this essay) sometimes wonder: Might newer technologies, some associated with smartphones, replace hearing loops? Bluetooth, which I also love, wirelessly connects my phone to my hearing aids—broadcasting music and phone conversation binaurally (much clearer than one-eared phone

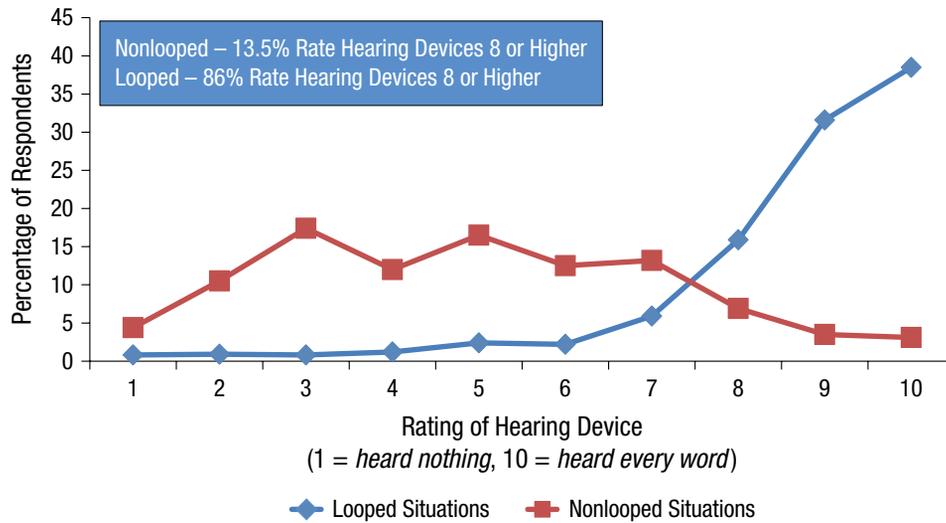


Fig. 3. Ratings of hearing ability by 866 people with hearing loss—in looped and nonlooped situations. Reproduced from Kochkin et al. (2014) with permission from Medora Inc.

conversation). But Bluetooth is a private connection from a specific phone—not a public transmission. Its range is limited. And it drains hearing aid batteries, which magnetic loop communication does not.

Might there be a future technology that (like hearing loops) costs users nothing, could serve all hearing instrument users in all countries, and is inconspicuous, simple to operate, and applicable in venues ranging from ticket windows to arenas? The hearing industry tells us that assistive technology meeting these criteria is not on the near horizon. But if and when such technology comes, we will welcome it. Our advocacy is less for hearing loops per se than for their functionality by whatever means (I once lectured to and encouraged a Johns Hopkins engineering team to pursue an alternative ultra-low-frequency, low-energy radio-wave solution).

Although inertia from the prevalent hearing-aid-incompatible assistive technology is our biggest challenge, the user verdict is in. In one survey (Kochkin et al., 2014), 866 hard-of-hearing people who had experienced hearing loops hugely preferred them to listening in nonlooped settings (Fig. 3).

Aided by social media, the tide is turning. My fantasy, when launching our local 2002 initiative, was of a nation in which hearing aids and cochlear implants could have doubled functionality (serving as both microphone amplifiers and in-the-ear speakers). Today, thanks to the efforts of consumers and hearing and audio professionals, we are approaching a cultural tipping point where that fantasy could become reality.

As one whose field has taught him to appreciate the human need to belong, and whose own experience has taught him the stresses of an inability to connect, I

celebrate this grassroots movement. My compatriots and I have also persisted through disappointments. As when ascending mountains, upward climbs have downward stretches. My submitted advocacy essays to national op-ed pages have been mostly rejected. But I persist, reminding myself that “You don’t get pellets unless you bar press.” As in so many professional and avocational realms, the world has us on a partial reinforcement schedule, and if we keep pressing the bar, often a reinforcement will eventually drop. When people believe and endure, change can happen.

Action Editor

June Gruber served as action editor and interim editor-in chief for this article.

Declaration of Conflicting Interests

The author(s) declared that there were no conflicts of interest with respect to the authorship or the publication of this article.

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