

CHAPTER TEN
Telecoils
And Wireless Assistive Listening

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Imagine a future in which hearing aids had doubled usefulness. While they would serve as sophisticated microphone amplifiers (today's common use), they would also serve as customized in-the-ear speakers for the wireless broadcast of television, PA system, and telephone sound.

Although that second possibility may sound like a futurist's dream, it actually describes the present world in which I live.

My office phone can broadcast "binaural" sound (to both my ears), even if I set it on my desk while taking phone messages.

When I watch the TV nightly news, my TV speakers will broadcast normally for anyone else in the room. Although that sound is too faint and foggy for me to hear clearly, it's not a problem. At the touch of a button, my hearing aids become the TV speakers, broadcasting crystal clear sound customized just for my ears.

When I worship at my church (or at nearly any one of my community's main churches) I need only press that same button and the clergy's voice will be broadcast privately by my hearing aids, which receive wireless sound signals rather like my laptop receiving wi-fi signals.

Although most American readers of this book will have no clue what technology enables this doubled functionality for hearing aid wearers in Britain would immediately know what I'm talking about (as would most such people in Scandinavia, and many in Australia). The simple technology has two parts. The first is the tiny and very inexpensive *telecoil* (or *t-coil*) that now comes with most new U.S. hearing aids. These little coils of copper detect magnetic signals transmitted by telephones.

Telecoils and Telephones

Unbeknown to most people, telephone handsets transmit not only sound, but also a magnetic signal. By federal mandate, all wired landline telephones manufactured in the United States since 1988 are "hearing aid compatible," as are some cell phones. That means they transmit an interference-free magnetic signal to telecoil-equipped hearing aids. The hearing aid wearer simply activates the telecoil by pushing a button (on a remote device or on the hearing aid). Suddenly, the hearing aid becomes an ear plug, receiving no room sound. Instead it receives and broadcasts a strengthened phone signal. For this reason alone, more and more hearing aids of all sizes and cost levels are now coming with telecoils. Figure 10-1 shows how small telecoils are by comparison to the dime in the picture.

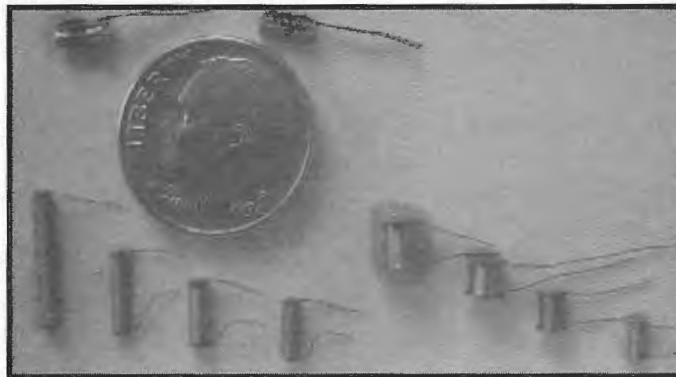


Photo courtesy of Global Coils SAGL

Figure 10-1: assorted telecoils

Hearing Loops

Enhanced phone listening was reason enough back in the late 1990s for my audiologist and hearing aid manufacturer to include telecoils in my hearing aids (for no additional charge). "I would strongly recommend that just about every hearing aid include one,"

says the influential audiology researcher-writer and American Academy of Audiology Career Award winner, Mark Ross. "It is the position of [the Hearing Loss Association of America] that telecoils be given the prominence they deserve as a valuable hearing aid feature that will allow the expanded use of assistive listening devices," concurs the Hearing Loss Association of America (HLAA). In Britain, where virtually all hearing aids distributed by the National Health Service come with telecoils, the assistive listening use of telecoils is well understood and, as I have witnessed during my annual sojourns there, widely applied.

I first experienced hearing aid compatible assistive listening at the 800-year-old Iona Abbey, off Scotland's west coast. Knowing that I was challenged to understand the spoken sound, and noticing a hearing assistance sign similar to the one in Figure 10-2, my wife nudged me to activate my telecoils. The result was dramatic, the audiological equivalent of going from a rough gravel road to fresh asphalt. Suddenly the speaker's voice seemed to be coming from the center of my head. It was what we psychologists call an unforgettable "flashbulb" experience.



Figure 10-2: symbol for availability of hearing assistance

On one visit to London, I ventured into Westminster Cathedral, where a Saturday afternoon mass was underway. The priest's voice was indecipherable to me after bouncing around the cathedral's vast stone walls. But not a problem, for when I activated my telecoils the priest's voice suddenly was broadcast by loudspeakers that were inside my ears. There was no need for me to locate and wear a

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conspicuous, hearing aid incompatible headset.

The next morning I worshiped at Westminster Abbey. Once again, the sung and spoken words were a verbal fog, until I switched on my telecoil receivers. With utter convenience and invisibility, the deliciously clear sound transmitted wirelessly via my own hearing aids. When the 50th anniversary of Queen Elizabeth's coronation was celebrated there, the program's first words were: "The whole of the church is served by a hearing loop. Users should turn their hearing aid to the setting marked T."

On an ensuing evening, a taxi drove me to a drop-off point near a theater. As I sat in the back of the taxi, the driver, from the other side of a plastic screen, gave me walking directions. I heard them clearly, because all London taxis (and now many in Edinburgh, I've discovered) have induction loops that broadcast the driver's voice to telecoil-equipped hearing aids. As I paid the driver, I marveled at the technology and asked him where the microphone was. He smiled, and pointed to a little dashboard hole.

After experiencing this new use of hearing aids in many British venues, from churches to the Royal Society of Edinburgh's auditorium and seminar room, I thought why not the USA? To begin bringing the technology home, I did what you can easily do. I obtained and installed a simple home TV room loop. (These can be purchased for \$200 or a little more from vendors listed at hearingloop.org/vendors.htm.) One simply (a) plugs the little loop amplifier into a power outlet, (b) connects it using the patch cord provided to the television's audio out port, and (c) runs the loop wire around the seating area. The wire can be run under the carpet, around the edge of the room, at the ceiling or attic level, or, as in my case, by dropping it through the baseboard and then stapling it to the basement ceiling studs. For even greater simplicity of installation, one can purchase a thin pad that slips under the cushion of one's favorite chair, which effectively loops not the room but just the chair.

Once installed, I turned on the TV, activated my telecoils, and found the corners of my mouth approaching my ear lobes. Even with the TV volume set low, sharp, strong sound was broadcasting from inside my ears, at a volume (for me alone) that I set on the loop amplifier. Unlike my previous infrared TV listening headset, which required removing my hearing aids, the new loop system harnessed my hearing aid technology, which includes a mic + telecoil (M/T) setting. Rather than blocking out the sound of the phone or doorbell

ringing, or my wife speaking, the M/T setting welcomes such sounds alongside the TV signal. Figure 10-3 shows how this is set up.

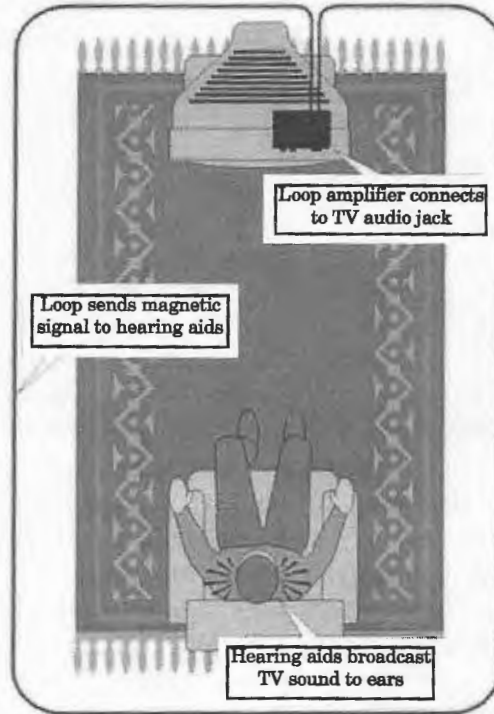


Figure 10-3: magnetic signals surround a room for TV reception

And it's not just me benefiting from this home technology. A California audiologist I know now offers a free home TV room loop with every hearing purchase. (The installations initially were done by his 17-year-old son, using fish tape to snake wire under carpet.) While looping more than 1900 homes, his practice has flourished thanks to word of mouth from his happy patients, who are enjoying doubly useful hearing aids. When he surveyed samples of his patients with and without the home loop system, he found markedly higher satisfaction with both TV listening and with hearing aids among those with the home loop. Given home loops, 63 percent indicated the highest level of satisfaction with TV listening, as did 53 percent regarding their hearing aids. For patients without a home loop system, the corresponding figures were 7 percent and 3 percent.

Looping West Michigan

In the US, the prevalent assistive listening systems are hearing aid incompatible. They require us in public venues to locate, check out, wear, and return receivers which often come with conspicuous headsets (which, by the way, loop systems can also provide for those without telecoil-equipped hearing aids).

Your local movie theaters have these. Under the Americans with Disabilities Act, public venues with fixed seating for 50 or more people must provide these receiver/headset units. But rarely if ever do you see them used. People with hearing loss *should* be willing to undergo the hassle and mild embarrassment of using these headsets. But because few of us are willing, and because their generic sound is often unsatisfactory, they mostly sit unused in closets. One manager at my city's seven-screen theater complex estimated that their units are checked out about once a month per theater. The new Nashville Music City Center considered a plea for hearing loops, but decided, "Not enough people asked for individual listening devices at the old convention center to justify the expense of looping the new one." (*The Tennessean*, August 30, 2012).

The Rochester, New York, Hearing Loss Association of America appreciates this reality: "Many people do not extend themselves to identify their need, collect personal receivers ahead of time, or wear rather noticeable headsets. Such receivers are always required for FM and infrared systems." My own church offers a good example of this. Our old infrared assistive listening system was used by one severely hard of hearing person. Within a few months after installing a new hearing loop system, I knew of ten people who were invisibly using it (most of whom approached me to express their delight).

After a community initiative, with support from two local companies and our community foundation (see hearingloop.org), most of my city's major worship and public facilities became looped, including our library auditorium, senior citizen center auditorium, city council chambers, college auditoriums, funeral homes, and so forth. Word of mouth and media publicity has since spread the technology to surrounding cities such as Grand Rapids, where the city convention center, performance hall, and airport concourses, individual gate areas, and outside waiting lounge are now all looped. Signage indicating loop capability at a drive-up bank teller is nicely represented in Figure 10-4. (See hearingloop.org for listings of West Michigan loop installations.)



Figure 10-4: driver making bank transaction at drive-up teller window can see signage indicating loop capability and thereby can switch hearing aid from “M” to “T” for clearer reception

Countless unsolicited anecdotes reveal the initiative’s human impact. One woman, who refused to use her church’s headsets, said, “It’s actually fun to go to church, and it hasn’t been that way for a long time.” After switching on her telecoil and hearing sound “like I hadn’t in years,” another woman burst into tears of joy. One pastor was initially let down when his church’s new loop system had no known users. Within eight months, however, three long absent hard-of-hearing parishioners had returned and three newcomers had sought out his newly accessible church.

The enhanced functionality of hearing aids has motivated many people to visit our area’s hearing professionals, who in turn have been supportive of West Michigan becoming a cool place for people with hearing loss. The former owner of Holland, Michigan’s largest audiology practice observed that, “Never in my audiology career has something so simple helped so many people at so little cost.” Another audiologist I know told me that, “Nearly everyone I’ve seen who has the loop system has had favorable results.”

Looping America

The West Michigan effort is being extended by hearing loss consumer groups in other communities, including Arizona, New

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Mexico, Washington, Florida, Colorado, Oregon, Illinois, Georgia and New York City. In Wisconsin, thanks to the leadership of Dr. Juliette Sterkens, the HLAA's national hearing loop advocate, more than 200 venues in cities statewide have been looped (see LoopWisconsin.com).

In Sarasota, Florida, all seventeen stage theatres are now looped. Hearing Loss Association leader Ed Ogiba (personal communication) reports that "roughly 90% find the loop a superior delivery of sound to any system they previously used. In addition, the loop does not require headsets or a neck loop which many people refuse to wear because of the stigma attached to it."

Speaking for consumers, the Hearing Loss Associations of California and Michigan are now recommending hearing aid compatible assistive listening. "In all new and extensively remodeled buildings, wherever there is a public address system, a loop should be permanently installed," declares the California association. And speaking for hearing professionals, the American Academy of Audiology joined forces with the Hearing Loss Association of America to promote a year-long national "Get in the Hearing Loop" campaign.

Thanks to the leadership of Janice Schacter (who operates New York City's Hearing Access Program) and of Manhattan's Hearing Loss Association, many of the city's major venues now are looped, as are some 450 subway information/token booths. Figure 10-5 is a picture of the New York City Transit Wall Street station, indicating the hearing loop assistance. Under a recent contract awarded to Nissan, all future New York City taxis will come with hearing loops. And more significant installations are in the works (possibly including future U.S. passenger rail and subway cars).

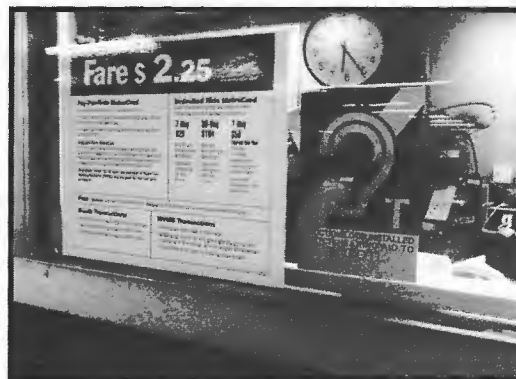


Photo courtesy of Richard Einhorn

Figure 10-5: NYC Transit Wall Street station loop signage

In the aftermath of recent media attention, including a front page *New York Times* story on the U.S. hearing loop movement, two major A-V suppliers (Listen Technologies and Williams Sound) announced plans to train and equip their hundreds of A-V dealers to do hearing loops. Other loop engineering and installation firms have also sprung up around the US. And Hearing Loop Products has trained nearly 200 people in loop installation workshops conducted across the country.

People with hearing loss, especially those who have experienced the alternatives, prefer hearing aid compatible loop systems because they:

- *do not require picking up, wearing, and return of external equipment;*
- *require purchasing and maintaining fewer receiving units and batteries;*
- *are used invisibly;*
- *work in transient situations* (ticket counters, drive-through stations, etc.);
- *entail no hygienic concerns* regarding multiple users of ear pieces;
- *enable flexible use, including direct listening* (Microphone), loop broadcast (Telecoil), or both (M/T);
- *deliver personalized sound, customized for one's own hearing loss;*
- *work with new generation cochlear implants, which also are now coming with telecoils;*
- *are hearing aid compatible, and are therefore*
- *much more likely to be used, and increasingly so after installation, which also makes them;*
- *more cost-effective on a per-user basis.*

Such considerations led Terry Portis, past executive director of the Hearing Loss Association of America, to conclude that, "Our country will never be accessible for people who are hard of hearing unless we make hearing aid compatible assistive listening a reality." Former Better Hearing Institute director Sergei Kochkin also notes that the way to increase adoption of hearing aids is to increase their utility. You can double their functionality—with simply-operated "miniaturized internal wireless receivers in every hearing aid"—and word-of-mouth advertising will promote hearing aids and the stigma of hearing instruments will decline.

New 21st Century Wireless Hearing Solutions

Hearing loops are today's easily affordable wireless hearing solution. Other wireless technologies are now becoming available. One can, for example, purchase wireless FM transmitters which communicate with receivers attached to behind-the-ear aids, though at considerable expense. Might future alternative technologies offer assistive listening that, like telecoils and loops, is *miniaturized* (can work in all aids), run on *low power* (won't require large batteries), *inconspicuous* (unlike the headsets available with hearing aid incompatible assistive listening systems, as well as with loop systems), and virtually *free* (and thus affordable to anyone)?

Why wait to work toward an American future where the functionality of hearing aids is doubled? Wireless assistive listening is available today! Looping America could increase the appeal and use of hearing aids, reduce their unit cost, decrease the stigma associated with hearing loss and hearing aids, and increase public support for Medicaid, Medicare, and insurance reimbursement for hearing aids. If consumers, hearing professionals, audio engineers, and facilities managers can mobilize around this vision, then perhaps the United States needn't forever lag other countries in supporting those of us with hearing loss.