Observations From a Musician With Hearing Loss

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Abstract

Extensive personal experience with professional recording and audio signal processing technology has enabled the author to continue his music career after experiencing sudden sensorineural hearing loss. The iPhone™ is one such device that has been found useful for many music and general listening situations that would otherwise be intractable. Additional techniques and technologies are described that the author has found useful for specific situations, including music composition, rehearsal, and enjoyment.

Keywords

hearing loss, iphone, music listening, sound quality

My Hearing Loss

For the past 40 years, I've been active as a professional composer, classical record producer, and recording engineer. In June of 2010, I suddenly lost much of my hearing due to idiopathic Sudden Sensorineural Hearing Loss (SSNHL) and dropped just as suddenly into a world I barely knew existed, the world of hearing aids and hearing assistance.

Over the past 2 years, I've met many exceptional audiologists and otologists, corresponded with engineers working on hearing instrument design, and read numerous scientific articles on hearing, hearing loss, and assistive listening technologies. I've been very impressed by the level of knowledge, intelligence, and compassion in the field as well as the intense desire to help people with hearing loss manage a genuinely devastating disability.

I've also learned, through an enormous amount of trial and error, how to cope as best I can with the numerous day-to-day problems that hearing loss creates. Specifically, I've learned how to use the technologies currently available to continue to compose and enjoy music.

On June 15, 2010, my right ear was rendered permanently useless by idiopathic Sudden Sensorineural Hearing Loss. I had little warning that anything so awful was about to happen.

The day before I lost my right ear, I drove up from Manhattan to the Berkshires for a composing retreat, a week to work on some new music. During the drive to Massachusetts, I felt very dizzy and my ears were stuffed up—allergies, I assumed. When I got to the motel and set up my computer, keyboards, and listening monitors, it didn't sound right—nothing unusual, audio equipment can be finicky—but because I was tired, I called it a day, went out to dinner, and went to bed.

The next morning I woke with my ears buzzing furiously from tinnitus. I noticed immediately that I had gone deaf in one ear and I jumped out of bed. I was so dizzy I fell immediately to the floor. Somehow, I managed to get to an emergency room where I was given steroids. The doctor said that if I was lucky, my right ear would regain at least some hearing over the next 2 weeks.

I wasn't lucky; although the roaring tinnitus in both my ears finally receded to a (barely) tolerable level, no usable hearing ever came back.

Today, I have zero speech comprehension in my right ear, but that does not mean that ear is silent. I hear any sound above a soft voice as excruciatingly loud and highly distorted, a bizarre problem that has been alternately labeled severe "recruitment" or "hyperacusis." Speech sounds as if it's been processed by a ring modulator, that is, much like a robot in a bad 1960s science fiction film. Because all sound is so loud, so horribly distorted, and so disturbing, I wear a powerful earplug in my right ear whenever I leave the house, to attenuate as much of the noise as possible.

After my sudden hearing loss, I became entirely dependent on my left ear for all my hearing. Unfortunately, I'd been having serious problems with that ear for a long time. My left ear has been diagnosed with a mixed loss, mostly conductive and due to otosclerosis. My audiogram shows my hearing down about 70 dB HL overall with some high frequency loss. While surgery was an option when I still had a

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working right ear, today, no American surgeon would dare operate on my remaining ear; the risk is far too great.

Nevertheless, while my hearing is far from perfect, I can hear all the notes on the piano in my left ear, my frequency resolution remains good, and my speech comprehension is excellent.

Needless to say, my hearing loss has profoundly affected every area of my life. Without hearing assistance, I cannot hear well enough to understand moderate-level voices in a quiet room. Because I hear in only one ear (and poorly), sound localization is nearly impossible and speech-in-noise is a very serious problem. I cannot, without customized equipment, follow conversations at even a quiet restaurant or small party. Even with hearing aids, I can't understand the sound from a television set whose speakers are more than 3 ft away.

Composing With Hearing Loss

Perhaps surprisingly, because of my use of high-quality audio devices to help me hear better, many important aspects of my music career have been little affected by my hearing problems. Although my hearing is damaged, my ability to analyze what I hear is unaffected. I can still make many careful judgments about music and sound quality. Therefore, I've been able to continue the most important part of my professional career—composition—with no serious compromises.

Since professional music-writing software first became available in the mid-1980s, I've composed the vast majority of my music on computer, which I then copy out (on computer), print out, and give to musicians to play.

Before my hearing loss, I never used earphones while composing; I was hoping not to do so afterwards. I tried to listen to my high-quality studio monitors while wearing my hearing aid, but it simply didn't have the sound quality necessary for music listening with the clarity and detail I had been used to. If I took my hearing aid out, and I turned my studio monitors loud enough to hear what I was doing, not only did I run the risk of seriously disturbing my neighbors, but the volume was so loud that it overpowered the earplug in my right ear and triggered recruitment distortions.

Therefore, I would simply have to use an earphone for composing. So, for my left ear, I ordered a top of the line custom-fitted single in-ear monitor that featured four proprietary speakers and sums a stereo signal to mono. It sounded fantastic—my only regret was that I didn't order a stereo pair when I had two working ears!

Using this extraordinary technology, my composing workflow is roughly the same as it was before my hearing loss. The main problem I've encountered is that I no longer hear in stereo. Therefore, I can no longer directly perceive all the antiphonal effects I like to put into my music, where a musical motif bounces from instrument to instrument and around the performing space. However, I have a pretty good

musical imagination, so I simply write what I think will sound like an interesting spatial movement and am reasonably confident that people with normal binaural hearing will enjoy it.

Music Production and Engineering

When it comes to record production and engineering, I do not feel that my hearing is good enough today to meet my standards. I know what it takes to produce a symphony orchestra recording. I don't hear well enough to do that anymore.

Nevertheless, I still retain a lifetime of experience working in audio and have found that, with talented musical assistance, I can still be helpful during recording sessions and even in postproduction.

For example, after years of editing recordings, I am extremely fast. Therefore, while I'm listening over my earphone, I run the editing software myself while a trained assistant listens to what I'm doing over my studio monitors, looking out for bad-sounding splices and other problems that I have trouble hearing these days. It's a little awkward and a bit slower than I'm used to, but it works. Several pieces of music that I've helped edit and record since my hearing loss have been released on CD or used in a film.

Rehearsals

Music rehearsals can be a challenge because I have such difficulty understanding sound in ambient spaces. Again, my hearing aid simply cannot deliver the sound quality I require to hear critically. I need much better sounding audio technology.

As I've spoken about elsewhere (Einhorn, 2012), I've developed a simple but high-quality portable assistive listening system based on an iPhone™. Briefly, my portable sound rig consists of an iPhone™, a sound app such as SoundAmp R™ or Fire 2™, in-ear-style earphones, and a stereo cardioid microphone called a "Mikey™" (from Blue Microphones™ that snaps onto the power jack of the iPhone™).

Using this portable listening rig—which provides far better sound quality than any FM assistive listening system or "pocketalker" that I've tried, I have been able to hear extremely well even in noisy restaurants or parties. At music rehearsals, I attach the Mikey™ and earphones to the iPhone™, launch one of the sound apps, remove my hearing aid, and insert the in-ear earphone into my left ear. I sit as close as possible to the musicians and position the iPhone™/mic system in such a fashion as to get the best balance I can.

Not only can I hear well enough at rehearsals with this setup, but both of the apps I've mentioned also have decent recording capability. Often (but only with permission), I've recorded music rehearsals while I'm listening so that I can study the performance later and suggest interpretations and improvements for the next rehearsal.

Listening to Music Recordings

While I listen to audiobooks all the time over my hearing aid—via an iPhone™ transmitting wirelessly to a Bluetooth-enabled streamer compatible with my hearing aid—I rarely listen to music recordings this way. Again, the issue is sound quality.

For music, using Bluetooth coupling over my hearing aid sounds to me about as good as a small, inexpensive clock radio. There is very little bass, the high-midrange is harsh (probably deliberately harsh, an attempt to aid speech comprehension), and there is a grainy, hollow quality to the sound that is very unpleasant.

I can easily hear the difference between the quality of sound reproduction my aid provides via the Bluetooth streamer versus my in-ear earphones connected to a home stereo amp or even an iPhone™. Therefore, whenever I want to listen to music, I take my hearing aid out and use a good earphone.

I've found that any pair of 'phones costing about US\$75 will provide decent-enough sound while those in the US\$150 to US\$300 range can deliver extraordinary performance. I prefer the in-ear design (which seals the ear canal) with custom tips.

Live Performances

Hearing at concerts and plays is often difficult but, after a lot of experimentation, I have managed to find ways to hear well enough to enjoy them.

I only attend nonamplified musical events these days. While my background is in classical, I used to love rock and amplified jazz concerts. Today, I'm too afraid of losing any more of my hearing to risk going to any more. Even with classical concerts, I've cut back considerably on my concert attendance, which is a tremendous loss—there were periods in my life when I attended 5 concerts a week!—but my ear tires very easily since my sudden hearing loss.

I rarely bother to use the venue's infrared systems. The house mixes for assistive listening are often poorly balanced; the earphones are uncomfortable; and neck loops with my hearing aid don't sound good enough to me. Instead, I typically sit as close as possible to the performers and simply use my iPhone rig. This usually provides me with the best quality live sound.

As with other music-related situations, I find my hearing aid—while top of the line—unsuitable for serious music listening, except when the venue has installed a hearing loop for hearing assistance and the sound mix is good. In the United States, I have only been able to hear a t-coil/hearing loop twice at a live music event. I simply flipped the switch on my hearing aid to t-coil and heard a great sound mix piped directly into my ear. They were both extraordinary experiences. If the mix is good, inductive loops are the single best way I've found to enjoy music live since my hearing loss.

In addition to speech and telecoil programs, I have a so-called “music” program set up on my hearing aid. Apparently, this program provides a flatter frequency response and has less compression.

However, when I use this music program at live concerts, I still hear no bass to speak of and often very audible clipping of the signal, even at moderate levels. I've had my audiologist adjust the aid several times—it's also been sent back to the factory—but the problems persist. By contrast, when I use my iPhone™ rig, I hear plenty of bass and no clipping.

Conclusion

My sudden hearing loss has been a devastating experience, of a magnitude which even now, 2 years later, I can barely focus on without becoming overwhelmed by the consequences to my career and, more importantly, to my personal relationships with my family and friends.

Hearing loss has been called an invisible disability, and not only because its effects seem to be less obvious than other disabilities, such as blindness. Often, those suffering from serious hearing losses try—futilely—to hide their problems. As a result, they fail to understand conversations, fail to enjoy concerts or plays, and feel completely cutoff from family and friends.

In my experience, hiding a hearing loss is not only pointless but also counterproductive. Much of the time, I am using visible audio devices to help me hear—microphones and ear phones. This equipment works so well that often neither I nor other people pay attention to my hearing loss. My hearing problems can, to a great extent, become invisible.

True, a person coping with a bilateral sensorineural hearing loss hears very differently than I do with my unilateral hearing and mixed conductive loss. Yet my experience working with topnotch audio equipment leads me to believe that many people with mild to moderately severe hearing losses would benefit greatly by the proper use of high-quality assistive listening devices.

Unfortunately, I've met very few people in the hearing loss community who understand how to properly use this equipment or its full potential. In addition, true music-quality assistive listening equipment is rarely made available within the hearing loss community; it is certainly not available in the “music program” in the hearing aids I own. After being disappointed by the sound quality of both my aid and the devices I found in assistive catalogs, I simply adapted equipment from professional and high-end consumer audio companies.

Music-level sound quality makes an enormous difference in my ability to hear not only music but also speech, even at noisy restaurants and parties. I suspect it is possible that even those dealing with serious sensorineural hearing impairments may benefit from the level of sound quality that helps me hear well enough every day to compose and participate fully in my musical life.

The level of sophistication in contemporary professional audio is simply extraordinary. Inexpensive software packages, including a very sophisticated but affordable spectral sound editor, enable anyone with a personal computer to eliminate an extraordinary amount of background noise from a sound file, and do so in a way that leaves no audible artifacts. Recently, software with algorithms that can effectively remove all traces of room reverberation have been offered for sale. Even restaurant noise, a source of major complaints (and not only from people with hearing loss), can be effectively controlled via sophisticated electronic sound systems with the power to transform any space from a quiet sitting room into a reverberant cathedral—or any acoustic environment in between—at the touch of a button. (Lucchesi, 2012).

The potential of this exceptional audio technology has, in my experience with assistive listening devices of all kinds, barely been tapped. So many people could benefit if these

amazing advances were brought to bear on the problems those of us with serious hearing losses face every day.

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References

- Einhorn, R. (2012, May/June). No compromise. *Hearing Loss Magazine*, p. 13.
- Lucchesi, P. (2012, May 14). *Exploring Comal's revolutionary restaurant sound system*. Retrieved from <http://insidescoopsf.sfgate.com/blog/2012/05/14/exploring-comals-revolutionary-restaurant-sound-system/>