

*[Music by Molly Joyce 00:00 – 00:15]*

**Bonnie:** Welcome to Included: *The Disability Equity Podcast*, brought to you by the Johns Hopkins University Disability Health Research Center. This podcast challenges stereotypes of disability by sharing stories, data, and news. Each season digs deep into topics offering multiple perspectives, and will expand your view of disability. We are your hosts. I'm Bonnielin Swenor, director of the Johns Hopkins Disability Health Research Center.

**Nick:** I'm Nick Reed, assistant professor at Johns Hopkins University Bloomberg School of Public Health. On this episode of Included, we talk with Richard Einhorn, the music producer and engineer, a composer, and a hearing technology consultant. Richard is a graduate of Columbia University and has produced and engineered hundreds of recording sessions and over 30 albums of classical music. His accomplishments include producing Yo-Yo Ma's "Bach Cello Suites" which won a Grammy for best instrumental performance, and "Voices of Light", an auditorial for a silent film that became a best-selling Sony classical recording. Building off his own lived experience with hearing loss, Richard is an active advocate for adults with hearing loss across the United States and around the world. He has put significant effort into accessible user-based design of hearing technology and has served as the chair of the Hearing Loss Association of America's Board of Directors and sits on the National Deafness and Other Communication Disorders Advisory Council.

*[Music by Molly Joyce 1:47 - 1:56]*

**Nick:** Richard, thank you so much for joining us today.

**Richard Einhorn:** My pleasure. It's great to be here.

**Bonnie:** Richard, it's great to have you as our guest. Let's just jump right into it. We have so much to talk to you about. You've previously discussed your experience composing music with hearing loss, and you've talked a lot about technology and the need for more inclusive technology. Can you comment for our audience on that work for our listeners?

**Richard Einhorn:** Sure. I started to—well, to back up completely, I was born with very, very, very good hearing. The kind of "golden ears" where you drop a pin in an auditorium, and I can tell you whether or not it's appropriate to record a symphony orchestra or a rock band or a jazz band or whatever based on that. As a result, I pursued a career

in music and also in audio and music production. Around 1990, I started to develop some very, very serious hearing problems. Then I had—they were Otosclerosis which is a middle ear problem. I had an operation to fix one ear, but I didn't get the other ear fixed. It's a long, long story.

Basically, my hearing was okay. I was doing well with the ear that got fixed, but the other ear just kept deteriorating. Then in 2010, I got some kind of an infection. I experienced sudden hearing loss in my fixed ear which meant that I was relying suddenly on a very, very poor ear with basically, moderate really closer to moderate severe hearing loss. This put me over night in to the world of hearing assistance. I had always been managing to cope without any kind of devices, but overnight, I, literally, couldn't hear.

I started to play around with various technologies. I got hearing aids, of course, and they were good in some situations, but in other situations they weren't good including listening to music. I started to play around with my iPhone, and I started to play around with the equipment in my studio. I've had a working recording studio since I was a teenager. I started to put together all these different ways of using this technology as an adjunct to my hearing aids in order to be able to enjoy concerts again in order to be able to go to restaurants and have fun with my friends. A lot of these ideas weren't very well known back then in 2010. Some of the people that I knew with hearing loss knew about them, but most of the people didn't, and I started to work them out. This included things like hacking your phone so that you could use it as an external device.

In other words, a phone, especially iOS devices, have very, very high-quality audio. They're, basically, just below professional audio quality in terms of the technology that's in them. In fact, you can buy external microphones that will hook onto your iPhone and turn it into, literally, a professional recording device. They're pretty cheap. They're a couple hundred dollars. If you really trick out an iPhone with an external microphone and with good earphones, and then you use that as a remote microphone, you can get very, very, very good hearing assistance. I found that to be an invaluable tool for me.

When I first started wearing hearing aids, at that time, hearing aids were good, but they hadn't yet developed a lot of advanced features which they have now. As a result, hearing and noise or hearing a concert, even from the first row, was a very unpleasant experience. It's now better. Even so with this rig, I can hear, basically, as if it's

a recording—as if it's a field recording of music. That turned out to be very helpful. Other things that I've learned are that there's certain things that you can do with your music equipment in order to be able to hear better, and also to be able to protect your hearing. Both of those things are important.

The hearing aids that I have, for example, are custom molds. They fit in my ear perfectly. That means that if I'm in a subway or if I'm in a noisy place or if the music gets too loud, I can, literally, just turn my hearing aids off, and they become ear plugs. That is a very, very important feature of them. Another thing that you can do as a musician in order to protect your hearing or to make sure that it doesn't get too loud, especially in amplified situations, is to use what are called musicians ear plugs which, basically, adjust the balance between highs and lows such that they're a little bit more natural. If you simply use regular earplugs, regular foam earplugs, what happens is that they tend to muffle the sound. Musician earplugs compensate for that. They're not that expensive. They're about \$30 or \$40, and as a result, you can hear everything better than an intenerated volume level so that you're not hurting your hearing. Very important.

*Nick:* Richard, that phenomenal. What I think is so interesting to me about your journey and your story is—and you've talked about this in other articles—this idea that you put forth on you're not willing to compromise. Can you speak a little bit more to what that means to you?

*Richard Einhorn:* Sure. This has to do with my background and also my attitude which is that I've always taken music seriously. It's not an advocacy for me. It's not a hobby. I don't have a day job. *[Laughter]* This is what I do when I wake up in the morning, and I've been both very, very lucky and incredibly privileged to be able to work really at the top of this profession. I've worked with amazing artists like Yo-Yo Ma and Glenn Gould, and the New York Philharmonic. In performances of my own music, I've worked with Marin Alsop at the Baltimore Symphony, and with major, major orchestras including the Baltimore Symphony. If I'm going to stay in music, I want to work at that level. I want to be able to work at that level, and I will do what I need to do in order to do that as long as my hearing holds out. What I'd like to say is that what I have left is about one inch of good hearing, and I really only need about a half an inch of good hearing in order to compose. I'm good to go if I use technology.

What I do to compensate for it aside from using technology very proactively, is that when I compose music, I always have other people listen to it. I always have other people check to make sure that I haven't gone completely off the rails. My inner ear is very well developed. I've got a good musical imagination, but it can make mistakes. I make sure that I check it. I'm constantly listening to the music that I write. I break down every instrument. I play ever part individually, then I constantly am swapping instruments in and out to make sure that the entire texture makes sense internally. All these things are really important if you what you really care about is doing the absolute best job that you can to stay in music. I did this before I had hearing loss. It's a little trickier now, but I enjoy doing it, and make sure that the music that I continue to write is of the best quality that I can make.

*Nick:*

Building off of this, you've got the storied career, and you have worked throughout the music industry. We've actually spoken on this podcast to others in the music industry. We think a lot about the intersection of music and disability and how, specifically, music can be inclusive of people with disabilities. Do you have any thoughts on how we can make music more accessible and inclusive?

*Richard Einhorn:*

Yeah, I think that it's amazing 'cause I know some people who have really, really severe hearing loss, way worse than mine. Yet, their musical ability is unbelievable. I have a friend who is, for all intensive purposes, he would describe himself as deaf. I have seen him accompany singers on the piano, note perfect with beautiful sound, beautifully articulated, very, very expressive, and there are ways that he can do it with visual cues with flashing lights, with all sorts of other things. These sorts of things really need to be explored further, I think, in order to include more people with hearing disabilities in music.

There are other things as well. There are instruments that can be perceived even by people with pretty severe hearing losses. For example, Evelyn Glennie, who's a wonderful percussionist in the UK. She is, for all intensive purposes, deaf, but she hears her percussion instruments by taking her shoes off and playing barefoot. She can hear the volume levels. She can feel the vibrations and probably a little bit of sound through bone conduction. Through this, she is able to, actually, compensate and be able to do percussion concertos with orchestras, do her own personal concerts. It's amazing. I think we need more research on that and more effort on that.

My hearing loss is not on that level. The kinds of compensations I need to make are primarily ones having to do with spatial orientation and sound dynamics. In other words, I just don't hear soft sounds anymore which means I have a very limited dynamic range. The kinds of things I need to do to compensate for that are mostly imaginative, and I can do that. More severe hearing losses, I think there's a lot of work we can do to make it more accessible to people.

*Bonnie:*

Thank you for that, and that explanation which I think is so important. Richard, I appreciate your view, and we talk a lot about making spaces more inclusive on this podcast, but as Nick indicated, we're not thinking enough about connecting research to art. *[Laughter]* That's a critical part of our society, so thank you for elevating that. More broadly, in your role as a hearing loss advocate, you talk about efforts to create spaces that are more accessible. Talking about the environment, how can we make performance and music spaces more accessible to people with hearing loss so that they can attend in audience?

*Richard Einhorn:*

I think that's a great question. We're currently in a transitional period with the technology. The gold standard, I think, for public spaces and hearing assistant technology at the moment, are what are called hearing loops or induction loops. The reason why I say that is, they are a combination of a few factors. The first factor is that they are very, very easy for the person with hearing loss to use. If a person with hearing loss has a properly equipped hearing aid or cochlear implant, all they need to do is to flip a switch on their devices, and boom, they're connected to the hearing loop wherever it is. That makes it incredibly easy for them to use.

Another thing about them that's very important is that they're universal. In other words, if I go to Australia, and I go to a place which has hearing loops, I can just flip the switch on my hearing aid and hear it. Not a problem. No other technology has that kind of universal ability. The other two alternatives at the moment for public hearing assistance are FM, frequency modulation, and infrared or IR. Both of these have the problem that you need to either wear another device which is both stigmatizing and also possibly—they're not necessarily washed after every time, so there's some sanitation hygiene issues involved. In addition to that, there's sound quality issues as well. Hearing loops aren't perfect, but they are the only solution at the moment. I am very much an advocate, and in fact, most of my public advocacy began with hearing loops.

When an article was written about me at the New York Times regarding my experience with public spaces and hearing loops, but there is, as I said, we're going through a transition right now. Probably everybody who's listening to this, not only has heard of Bluetooth, but actually owns Bluetooth devices. In fact, I've actually done the math on this, and basically, there are so many Bluetooth devices out there that if you spread them evenly across the planet, every human being would have at least three or four Bluetooth devices in their possession. Bluetooth has been getting, shall we say, a little long in the tooth. It's now time for an upgrade.

It's amazing the organizations that have been spearheading the upgrade to Bluetooth and making it far more functional are the hearing aid companies because they know that hearing loops themselves, have issues. The other technologies have issues, so the hearing aid companies approach the Bluetooth organization and said, "We need a better Bluetooth." Amazingly, the Bluetooth organization turned around and said, "You know, all these things that you're talking about that people with hearing loss need, you know, we think it would be really cool for people without hearing problems to have access to this technology.

Right now, a brand-new standard has just been released called Bluetooth LE Audio. The devices are a couple of years down the road, but they will ultimately, revolutionize all sorts of our private listening, but also public listening. They will enable somebody with a pair of regular old wireless headphones to listen in a movie to their own personal sound, and also for people with hearing aids to use exactly the same technology for their personal sounds which is destigmatizing and normalizing hearing assistance. This is a major, major step forward. A really, really transformative event. I'm very, very excited about it.

*Nick:*

Wow. I agree on all fronts, and I couldn't say it better myself. I think this leads directly into what I was super excited to talk about today. For our audience, I've known Richard for a while, and we've been talking for along time about the prospect of over-the-counter hearing aids. It's been something many of us have been working on, but this week while we're just so happened to coincidentally schedule this podcast, the OTC regulations from the Food and Drug Administration dropped for hearing aids. Richard, I would just be remiss if I didn't ask you for your take on how this fundamental shift in access to technology affects the hearing loss community, the deaf and hard of hearing community, and also, perhaps, the disability community at large? I think building off of

what you just said, how changes that focus on one community are good for society in general.

*Richard Einhorn:* It is. I can't even begin to explain how thrilled I am that finally we're beginning to see over-the-counter hearing aids move forward. The legislation was passed in 2017, and because of the pandemic, it was delayed. The proposals for the guidance were delayed, and finally, finally we got the first proposal from FDA about the—it is an amazing step. You're 100 percent right, Nick. What it is, it's a way of benefiting so many communities. I'll talk about how it's going to benefit people like myself with very severe problems in a moment.

What this is going to do for people who are currently not being reached, is just extraordinary. As you know, it takes 7 to 10 years for the identification of a hearing problem to somebody doing something about it. This has been studied many times. People have done whatever they possibly can to try to get people to do something about their hearing loss to start wearing hearing aids earlier, get hearing assistance earlier. Nothing has worked. It's pretty obvious why, I think. The cost of hearing aids, and with all do respect and love to the audiologists I know, if you have a mild problem, this is not on your radar to go and to go through what is, essentially, a very, very long process to get custom fitted for a hearing aid.

Over-the-counter hearing aids directly addresses that. This is a way of putting hearing aids into the ears of people with mild to moderate hearing loss, people who perceive themselves as having this, and people who are at the beginning of their journey with hearing assistance, hearing assistance technology. What it does is it creates a continuum of assistance from mild all the way up to profound to severe. A lot of people have talked about that. What people have not talked about is that it also creates a continuum between simple personalization and the gradual increase in hearing issues. You now have an ability to go from a simple personalization, "Oh, I prefer a little bit more treble," to having something that is really audio logically valid. That really has validated science behind it to be able to compensate when those times when it's not just a mere preference, but you really do need a little bit more treble in order to be able to hear clearly the music that you wanna hear, the music that you love, the people that you love in your life. This is now a continuous spectrum from personalization right up to clinical treatments. This is exactly what should happen with all disabilities, I think.

I think we should all realize that there isn't a fine line, that we're all to some extent, somewhere on the spectrum, and we should have solutions that simply address that spectrum in a graduated way. The notion of a fine line, you either have hearing loss or you don't, is it doesn't really apply to those people who have mild. For them, this is a really, really important thing. For those of us with severe hearing loss, this is, for me, a profoundly exciting moment because we have seen an industry which, while certainly has had its share of innovations, moves very, very, very slowly and has moved very slowly in trying to interconnect the devices that we use everyday with the hearing assistance that those of us with severe problems need.

This act, the Over-the-Counter Hearing-Aid Act, will spur competition which will almost certainly spur innovation, new products, new ways of looking at products, new ways the products will look, new ways the product will interact, and interoperate with other products. That, ultimately, will benefit us the most. Because this technology will trickle up to us and, ultimately, provide us with next generation hearing assistance with an integration so that we can rapidly and quickly use our phones and other things rapidly with our hearing aids in a much more seeming less fashion. I can't be more excited about this, and I know, Nick, you share this, and I know, Bonnie, you share this as well.

*Nick:* Yes, *[laughter]* very much so. As you're talking, it's the same thing with the Bluetooth, right?

*Richard Einhorn:* Yes.

*Nick:* You told us how these very specific technologic transformations for the hearing loss community are then applied to a greater society, and it makes a huge difference. The story that I'm hearing, too, is that part of what makes OTC hearing aids a win, is that we've connected the community to the product designers. Before, they actually had a gatekeeping pathway whereas, almost like a medical model of thinking about disability where somebody in healthcare controlled whether or not you had access to products and to devices that you may want or may not want. I don't care about whether an individual wants it or not, I care about on a societal level that they can get it if they do want it, and they're well connected to the people designing it, so it takes into account their design needs. As you said, I love the way you talk about this.

*Richard Einhorn:* Right, and you're 100 percent right, and that is the point. The proposal, as I read it, basically, reorganizes the regulations and



guidance for hearing aids and hearing devices so that there's, basically, two tiers. There's a over-the-counter hearing aid category. Then the current status quo is being reorganized into a prescription category. Now, I know you also agree with this which is that nobody should, unless they really need it, should have access to the volume levels that, unfortunately, I need in order to be able to go about my daily life, unless they absolutely need it. OTC, the Over-the-Counter Hearing Aid Act specifies—the guidance specify limits on how loud the devices can be, and what they can be, and there's also a regulatory oversight process because this is a new category.

Then we move into the prescription ones, and then, yes, absolutely, those devices, really, they shouldn't be in the hands of the average consumer without somebody expert who needs to know how to use them. Getting back to the whole over the counter thing. I have a slightly eccentric take on this—which I think is slowly starting to catch on—which is that those of us who are in hearing advocacy and hearing loss research, and in clinical positions, we all think that the hearing loss compensation parts are the center of the over-the-counter hearing aid. That is the most critical part of it. I feel that that is a little bit, if I may be, because I'm part of that community, if I may say, I think we're all being a little narcissistic here.

I think that, typically, what somebody will do when these devices really get off the ground is, they will buy an over-the-counter hearing aid primarily as a lifestyle device. That they can listen to their music, their podcasts, they can do Zoom calls with their grandparents or with their grandchildren, but primarily, it's going to be that. It's going to be phone calls. It's going to be that sort of thing. Then when they need it situationally, unlike me where I need it everywhere, but when somebody with a mild hearing loss needs a little bit of extra [zets 26:30](#), a little bit of extra help, boom, they push that button. They push that button on the app or on the hearing aids, and it becomes that thing. The actual function of the hearing [aid ism 26:42](#) of it, the hearing [aidness 26:45](#) of it is not really the primary function of these devices. These are going to be lifestyle devices plus, basically, as I see it.

*Bonnie:*

Yeah, no, you know what I love about this so much is there's so much conversation right now on this idea of equity and technology and technology justice. The disability community really hasn't been included in that. What you're describing is a really great example of this. Of designing a product prioritizing inclusion of everyone in lots of ways, flexibly and universally designed these

are all themes you've elevated today in our conversation. I think that's just so exciting because this really is a critical time when we're reimagining so many things, and technology is leading the way. I think we have a lot to learn from this example, so thank you. This was an amazing explanation.

*Richard Einhorn:* Thank you. I think you're 100 percent right, Bonnie. I think that this is—this is the situation where universal design is really critical to this. Where with the Bluetooth thing, what they said was, "Oh, everybody can use this, so we should do it, and we should do it because it helps people and everybody can benefit from it." With over-the-counter hearing aids, it's exactly the same thing. This is the kind of natural inclusiveness that all of us who are working in for disability advocacy at whatever level, this is what we all want. Are there going to be hitches? Are there going to be glitches? Are there going to be things that misjudge? Of course, but the trend, the arc, the arc of this is trending towards justice. It's trending towards what we want in terms of inclusion for people with disability and difference from whatever we think of is normal, whatever the hell that is. *[Laughter]*

*Nick:* I couldn't agree more, and I see Bonnie's head just bobbing up and down *[Laughter]* there on the screen. Richard, thank you so much for taking time to sit and talk with us today. I wanna end, actually, by—is there a place our audience can go to to just learn more about your work? You have so much *[laughter]* you have so much phenomenal things going on.

*Richard Einhorn:* Sure. You can go [richardeinhorn.com](http://richardeinhorn.com) and I do have—I speak mostly about my music there. I post a lot on the Facebook group for the Hearing Loss Association for America. There're several different groups there that you can join. It's a wonderful community, and I try to do that. I also write articles. Right now, I'm focusing on some technical articles for the music community. I've been working with a UK magazine called *Sound on Sound*, but I'm going to be doing some more articles and more talks and things like that. I'll post that on my website and in the HLAA forum. Really a pleasure to speak to you guys. Really just great.

*Bonnie:* Thank you for being our guest. We learned so much.

*Richard Einhorn:* It was a real pleasure. A real joy.

*Bonnie:* You have been listening to *Included: The Disability Equity Podcast*, brought to you by the Johns Hopkins Disability Health Research Center.

*Nick:* Thank you from our *Included Podcast* team and everyone that made this podcast possible, especially Prateek Gajwani, Curtis Nishimoto, and our guests. Music is by Molly Joyce. This podcast is supported by Johns Hopkins Ten by Twenty Challenge Grant.

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