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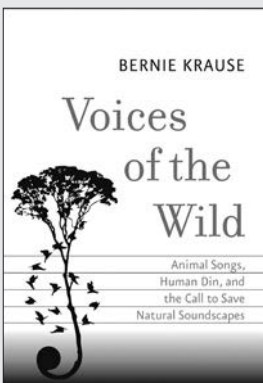
Ear to the Battleground

New Books on Hearing What Is Lost

Howard Axelrod

OF THE FIVE SENSES, VISION TENDS TO GET THE glory. We hail great innovators as visionary, praise writers for their insight, and thank friends for offering perspective. We call prophets seers, but also admire daily perspicacity and seek to avoid myopia and blind spots. Just consider the words *spectacles* and *spectacular*, and you catch a glimpse—not a whisper, a glimpse—of the divergence between vision in the optometrist's office and vision in our cultural construction of it. But while vision gets the glory, hearing has our trust. We want justice to be blind during court *hearings*. In times of crisis, more than to the insightful friend, we turn to the good listener. Perhaps this is because hearing is our most social sense, the sense we have the least control over, the sense that is the most democratic. It's easy enough on the subway to look away from someone, but it's almost impossible to hear away, to filter out one particular voice.

Yet perhaps because hearing has our trust, it doesn't receive our scrutiny. Two thought-provoking new books, *Voices of the Wild: Animal Songs, Human Din, and the Call to Save Natural Soundscapes* by Bernie Krause and *Made to Hear: Cochlear Implants and Raising Deaf Children* by Laura Mauldin, argue that the social constructs guiding our tacit assumptions about hearing have significant consequences for how we relate to one another and to the natural world. Krause, a soundscape ecologist, makes a kind of summary statement on his nearly fifty years of making field recordings in remote and sometimes endangered habitats. Mauldin examines what has become common practice, and the normative script in response to babies born deaf. A sociologist at the University of Connecticut, she spent six months doing fieldwork at a cochlear implant (CI) clinic in the New York City metropolitan area, interviewing staff workers, observing meetings,



Voices of the Wild: Animal Songs, Human Din, and the Call to Save Natural Soundscapes.

By Bernie Krause.

Yale, 2015.

184p. HB, \$20.

Made to Hear: Cochlear Implants and Raising Deaf Children.

By Laura Mauldin.

Minnesota, 2016.

224p. PB, \$25.



and following ten parents whose children were at different stages of the implantation process. Both books highlight the cultural pressures that condition hearing, criticize the often reductive and misleading authority of science, and help us to hear how we're hearing or not hearing, to consider what we're attuned to and why.

Early on in his slim volume (184 small pages of not-so-small print), Krause explains the nature of his vocation, which is recording nature's vocalizations. He seeks "new ways of evaluating the living landscapes" through the "multiple sources of sounds that reach the human ear." Those multiple sources he divides into three parts: *geophony* refers to nonbiological natural sounds, for example, water in a brook; *bio-phony* refers to "the collective sound produced by all living organisms that live in a particular biome"; and *anthrophony* refers to the sounds humans make, whether without machines, like through voices and footsteps, or with machines, like through snowmobiles and military jets. As for Krause's "new ways of evaluating," he means listening to all three types of sound together, rather than isolating just one, or even part of one, as "recordists" often do with one species. For his entire career he has staunchly resisted "a reductionist view of the acoustic world that embraced fractured and incongruous acoustic signatures—distorted snapshots of solo animals in a kind of bioacoustic zoo—[which] remained the dominant field-recording ideal."

One reward of his resistance is his "niche hypothesis," a term proposed by his colleague Ruth Happel. Krause explains: "In order to be heard, whether in urban, rural, or wild habitats, vocal organisms must find appropriate temporal or acoustic niches where their utterances are not buried by other signals." Basically, every creature has to find its own spot on the ambient radio dial, by adjusting either its pitch or the schedule of its vocalizations, or it won't be heard.

Oddly, this very problem seems to have afflicted Krause, as he struggles to articulate how his recordings might fit into larger conversations about ecology and climate change. He claims that his book is for "the uninitiated," but rather than being confident and deliberate

in his tour through the history of the field, the potential applications of his findings, and his hopes for the future of soundscape recording, his writing has the shaky pacing of someone afraid of not being heard. He often speeds up when he should slow down, for example, when he claims that "the most intriguing opportunities for study are the application of biophonies when testing for potential analgesics in human and animal health"; and he often slows down when he should speed up, for example, when he details changes in recording equipment, and even battery technology, industry intricacies which hardly seem suited to the "uninitiated."

At times, Krause can seem to be shouting over the general din, rather than speaking into the quiet he knows. I didn't appreciate until I finished the book why that was. But he really is sitting on arresting and haunting knowledge—knowledge most of us generally fail to hear.

Samples of Krause's recordings can be found at www.yalebooks.com/soundscape, and notations sprinkled throughout *Voices of the Wild* indicate when a sample corresponds to what Krause is discussing. Not wanting to interrupt my reading, I didn't stop to listen at those points. This was a mistake for two reasons. The first is that while Krause might have elaborated more on what the samples contain and why they're significant, he likely expects the reader to glean that information by listening to the recordings directly. The second reason is that this is largely possible. Krause's real achievement, his genius even, is the eloquence of the recordings—his technical prowess in producing the illusion of space and depth, his access to remote habitats, and, most importantly, the profound emotional impact of what he enables one to hear and, in later recordings, not to hear.

The best example of this is a suite of recordings Krause made in Sugarloaf State Park, Kenwood, California, in April of 2004, 2009, and 2014, recorded in the same location, at the same time on each day. In the 2004 recording, if you close your eyes, you'll likely feel transported: a polyphony of eleven bird species—ranging from golden-crowned and white-crowned sparrows to California towhees to acorn and

pileated woodpeckers—a stream running in the background, and, so surrounded, you may just picture sunlight flashing off the stream and smell the resin in the air. In the 2009 recording, there's a significant drop, as Krause points out, "in density in the birdsong," and the stream, now seemingly louder, sounds like a current washing the biodiversity away. The 2014 recording comes as a sharp rebuke to this impression: Most of the birds are now gone, and the stream is gone, too—just one or two species calling in the emptiness of the drought, a faint clicking, like a motor that can no longer start.

It is the visceral power of these recordings that Krause perhaps both under- and overestimates. Overestimates, because his readers will not hear everything he hears. Underestimates, because while the empirical data on climate change isn't just convincing but overwhelming, it isn't physical—it doesn't enter us through the senses. Listening to his recordings, I was reminded that *environment* literally means that which surrounds us. Perhaps no sense is better suited than hearing to deliver the news our brains have not wanted to hear.

THE CLEVER COVER OF LAURA MAULDIN'S *MADE TO HEAR: Cochlear Implants and Raising Deaf Children*—an image of concentric rings of sound waves making a bull's-eye of a boy's ear—suggests that the concept of hearing itself, the way we think about its role in our lives, can become a battle, with deaf children's bodies as the battlefield. And the battlefields are numerous. "As of 2012," Mauldin writes, "the FDA reports that approximately 58,000 adults and 38,000 children in the United States have been implanted," with exponential growth in the past ten years. For most in the cochlear implant (CI) industry, and for most parents of deaf children, this has been cause for celebration. But the story—or the competing stories of CI culture and Deaf culture—is not so simple.

To understand the controversy, it's important to understand how a CI works. In hearing people, sound waves get funneled by the outer ear into the eardrum, which makes tiny bones

behind the eardrum vibrate, which creates movement of the fluid in the snail-shaped structure of the inner ear called the cochlea. The motion of that fluid causes changes in the cochlea's hair cells, which send electrical impulses up the auditory nerve to the brain. CIs work by playing the role of the hair cells in the cochlea. There's an external component, a tiny microphone and processor that sit behind the ear, and an internal component, surgically implanted in a shallow well in the skull. The internal component processes the information sent by the external component, then sends that information as a digital electrical signal to silicon-covered electrodes threaded into the cochlea, which in turn fire an electrical signal to the auditory cortex. Since the cochlea sends impulses directly to the brain, Mauldin writes, "deafness has come to be redefined from a sensory (hearing) loss to a neurological (processing) problem."

This means that how CIs work socially is even more complicated than how they work physiologically. Due to her access to the inner workings of a CI clinic in New York City, and to its patients' parents, Mauldin had the opportunity to observe the process (though, as she notes, her study was limited to one well-resourced clinic, and may not be representative of clinics across the country). At this clinic, which she calls NYG, the process starts right after birth. If a newborn fails the newborn hearing screening, which is mandated in every state, and also fails the follow-up test, the audiologist at NYG informs the parents, usually in the same meeting, not just of the child's deafness but also of the possibility of CI. At a time of tremendous vulnerability, parents get what Mauldin calls "the medicalized script of deafness," which assumes "that deafness is a problem of the child's body and a condition that should be mitigated through medical intervention as quickly as possible."

What parents don't get at NYG is the "Deaf cultural script," which Mauldin explains is a product of the Deaf cultural movement, which she situates alongside "the civil, gay and lesbian, women's and disability rights movements." This Deaf script, Mauldin writes,

considers deafness “a social difference better understood within the broader framework of diversity. . . . It holds up sign language as a social technology that answers any challenge that deaf persons might face. It deplores—though not universally—hearing parents’ pursuit of pediatric implantation.”

Medical culture, Mauldin notes, doesn’t consider itself a culture with a culture’s inherent biases, whereas Deaf culture does. But here’s a vexing shortcoming of her work. While she recognizes that both “scripts” are culturally constructed, she doesn’t acknowledge that they’re not *only* culturally constructed. Without sinking to “ableism,” which designates disability “as a diminished state of being human,” is it not possible to acknowledge that deafness is an impairment? It seems hard to say no. But Mauldin raises this question in the mouth of a straw man, a father who argues that his deaf son wouldn’t be able to hail a cab without a CI. Mauldin dismembers the argument, rightly asserting “this conceptualization incorporates considerable imagination about deaf people.” But what about music? Or listening to Krause’s soundscapes? Or hearing a police siren?

Mauldin doesn’t say. But, she does make clear, she’s not arguing against CI—just against the CI script at NYG, especially the part that tells parents not to teach their children sign language. Here’s where it gets interesting. Cochlear implantation is no miracle: Implanted children can’t suddenly understand spoken language or even sounds. Long-term auditory training, before and after surgery, requires the parents—usually the mother, Mauldin repeatedly points out—to help the child develop the neural pathways for hearing. (For instance, a mother dramatizes hearing the knock at her front door, cupping her hand behind her ear, presenting a “ghost stimulus,” so her child will learn to anticipate sounds and to link those sounds with their meanings.) To develop these neural pathways, CI experts at NYG tell parents not to teach their children

sign language, which could form visual neural pathways, impeding the formation of auditory ones. However, the scientific studies on this question are mixed—Mauldin cites several on both sides—some finding that “both sign and speech facilitate mastery of one another.” But NYG insists that parents not teach their children to sign, which means that for the months and sometimes years between diagnosis and postimplantation language acquisition, child and parents cannot communicate.

The costs are enormous. Mauldin documents how mothers fight their maternal instincts, and the frustrated instincts of their children to communicate visually, with the idea that they are sacrificing for spoken communication in the future. Meanwhile, they are also blocking their children’s access to the language of Deaf culture. But the benefits of CI are enormous, too. “As I observed in multiple classrooms,” Mauldin writes rather coolly of an integrated school, “implanted children spoke and interacted like any other hearing children.”

Unconvinced that learning sign language impedes learning to speak, Mauldin asks, “What might be gained by implanting children *and* assuring them that their deafness is acceptable and even worth celebrating by exposing them to the possibilities of sign language and the values of the Deaf community?” The rhetorical answer is obvious: a great deal. But Mauldin doesn’t ask the harder question. If further studies prove that learning sign language does impede learning to speak, then what should the Deaf script become? What cost should a culture, or an individual within that culture, be willing to bear to preserve a cultural language, if technology renders that language obsolete?

And if that culture happens to be one not just of people, but of the rapidly changing natural world, its language vanishing due to climate change, what then?

These are questions Krause and Mauldin, in books that years from now may prove haunting, prompt us all to consider. ■