REPROGRAMMABLE RHETORIC

REPROGRAMMABLE RHETORIC

Critical Making Theories and Methods in Rhetoric and Composition

EDITED BY
MICHAEL J. FARIS AND STEVE HOLMES

UTAH STATE UNIVERSITY PRESS
Logan

Published by Utah State University Press
An imprint of University Press of Colorado
245 Century Circle, Suite 202
Louisville, Colorado 80027

Printed in the United States of America

The University Press of Colorado is a proud member of the Association of University Presses.

The University Press of Colorado is a cooperative publishing enterprise supported, in part, by Adams State University, Colorado State University, Fort Lewis College, Metropolitan State University of Denver, University of Alaska Fairbanks, University of Colorado, University of Denver, University of Northern Colorado, University of Wyoming, Utah State University, and Western Colorado University.

∞ This paper meets the requirements of the ANSI/NISO Z39.48-1992 (Permanence of Paper).

ISBN: 978-1-64642-257-9 (paperback)
ISBN: 978-1-64642-258-6 (ebook)
https://doi.org/10.7330/9781646422586

Library of Congress Cataloging-in-Publication Data

[to come]
[to come]

CONTENTS

SECTION 1

Framing Critical Making

1

NOISE COMPOSITION

A Story of Co-Design and Relationality

Steven Hammer
Saint Joseph's University

THIS IS A STORY

This is a story about other peoples' bodies and about my own attempts to engage with bodies and persons with care, empathy, and creativity. Sometimes I tell this story as a researcher and teacher who wants to make my students more care-ful thinkers and (co)designers and citizens; sometimes I tell this story as a parent desperate to exchange expressions of love and affection with a child who does not speak traditionally, trying to untangle myself from the notion that the highest, most complex forms of expression are in the skillful arrangement and delivery of formal language. The salient characteristic of these voices, however, is that they are my own, and therefore extraordinarily limited both in understanding the experiences of others and regulating my own objectivity, if such a thing can even exist in our work. Therefore, I will attempt here to neither speak to others' experiences nor avoid emotional attachment to bodies and projects. Instead, I hope that I am able to tell stories that help convey what I have learned by listening to the bodies I find myself in relationship with.

ORIGIN STORIES

I was scheduled to teach a special topics course a few years ago, and I had long wanted to design a course in sound/musical instrument design; most of my research revolves around the ways that composition instruments shape our processes and finished works, and the ways that glitch art, dirty new media, and new materialisms can help us rethink composition, our bodies, and our perceptions of emerging technologies. I had also been able to connect with an arts organization in Philadelphia dedicated to creating an "inclusive and integrated environment" in which artists with disabilities can collaborate, learn, and network. I proposed a collaboration between members of the collective interested

https://doi.org/10.7330/9781646422586.c001

in musical instrument design and students in my special topics course, titled Physical Computing and Accessibility, and it was approved. The course description read:

> Physical computing grants us the ability to rethink the ways we interact with both digital systems and the physical world. In this course, students will first learn the basics of Arduino micro-controller hardware and programming in the context of music and sound-based art. Then, collaborating with persons with disabilities in Philadelphia, students will co-create Arduino-based instruments, apply and expand upon their knowledge of disability and accessibility, and assist in organizing a community performance event. No previous experience with physical computing or music is necessary to take this course, only interest in and commitment to working in a diverse and collaborative environment.

As I prepared the course—readings, scaffolding knowledge and skills, etc.—I wanted to first ensure that we carefully considered and reconsidered the notions of disability, noise, and bodies. This is, I hope, how I might contribute something meaningful to this collection, suggesting that before we build technologies meant to interface with bodies, we might first think very carefully and *relationally* about curatorial responsibility and ethics. The ways those bodies are framed, especially in relation to ideas central to technological concerns such as function(ality), brokenness, disability, adaptability, etc. Like so much careful work done before this project, including that of Michael McAllister, Elaine Yuen, and Stuart Bush (2012) working with many of the same participants in Philadelphia, I wanted to ensure that this course was not seen merely as an opportunity to serve (often read: save) Others, but instead as a co-design partnership.[1] That is what this chapter is really about: If we are to work with bodies—especially those bodies our culture has classified as "deficient"—how do we work with care? How do we work and co-design with people, not their diagnoses?

I mean to suggest that while teaching critical making certainly involves learning new technical skills (hardware, software, techniques, etc.), it is also an ethical practice. The ethical considerations vary contextually by course, focus, participant identity, researcher identity, and countless other factors, but here I will tell the stories of my own approach to ethical instrument co-design practices, calling out a few problematic-yet-prolific symptoms of our culture and suggesting alternatives. But this story—the story of the teacher trying to design a great course, or even the story of the researcher pointing out some problematic aspect of culture—is not where this story begins or why it is important enough to write about or pursue.

My son, Rowan, was born during a blizzard in Fargo, North Dakota as the year 2010 was nearing its end. His birth and early infancy were unremarkable from a medical-scientific perspective; he did most of the things that typical young humans do. He ate and slept, he brought joy and sleeplessness to his family, he discovered his body and began establishing relationships with other bodies and materials. And as is typical for those who find themselves in the culture of reproduction, his mother and I cautiously-but-eagerly discussed and researched questions like "What is happening at *x* months?" or "When do children start walking?" We understood that there is room for individuality, but we wondered and we talked with other parents and we valued things like early development. We inherit and (re)build norms and (re)tell stories of bodies, those that are *advanced* or *on track* or *behind*. What is *normal* and what is not, when to worry, when to seek help. After several months of life, Rowan began to *deviate*, a little at first, missing some of these checkpoints. Things like holding his head up and crawling. We compared his progress—and increasingly his *lack* of progress—to that of his older sister, wondering what was *wrong*. Doctors confirmed that his progress was indeed *deficient*, but not to worry.

When Rowan was about nine months old, we became increasingly concerned about his development and made an appointment for the following morning. But before the morning came, Rowan's seizures began. Hundreds of them per day at the beginning, so many that it became difficult to tell what was a seizure and what was not. *What was signal and what was noise.* After a few days in the hospital, a nervous doctor entered the room and said that after reviewing all the data, the team had confirmed Rowan's diagnosis as lissencephaly, or "smooth brain." He showed us scans of Rowan's brain with comparisons so we could see how it deviated from a typical brain. He handed us a warm, freshly printed handout explaining his diagnosis and prognosis and left the room.

> Diagnosis: The identification of the nature of an illness or other problem by examination of the symptoms. Origin: Late 17th century: modern Latin, from Greek, from diagignōskein "distinguish, discern," from dia "apart" + gignōskein "recognize, know." (Oxford University Press 2020a)

> Prognosis: The likely course of a disease or ailment. Origin: Mid 17th century: via late Latin from Greek prognōsis, from pro- "before" + gignōskein "know." (Oxford University Press 2020c)

This story is long and still-unfolding, but in short, we learned how Rowan's body, due to a rather mysterious and rare genetic characteristic, failed to typically position his brain tissue resulting in an observable "apartness"

(diagnosis), and how that apartness would result in more concrete or functional/social apartness: He would not walk or talk, and his death was something we were told to "start thinking about" (prognosis). The piece of paper and the words from the doctor seemed to simultaneously ease and raise concern, comfort, and frighten. Or as Eli Clare (2017) so aptly articulates, "Diagnosis wields immense power. It can provide us access to vital medical technology or shame us, reveal a path toward less pain or get us locked up. It opens doors and slams them shut" (41).

This probably reads as a pretty sad story. It felt really sad at the time. Even as I write this chapter as a means to reframe concepts like disability, the deficiency model, adaptive technologies, and so on, I experience some sadness. An honest assessment, however, in the months and years that followed his diagnosis reveals to me that that much of my sadness results from my own implicit investment in what I will call here *the myth of noiselessness*: the persistent myth that systems, networks, and the nodes that comprise them somehow hold not only the potential for purity and functionality, but that this is their typical and preferred state of being. In other words, some[2] of my sadness was less rooted in empathy for Rowan's present state of wellness and more tied to the mourning of his typical development and abilities. That is rather difficult to admit, but it is honest and bears influence to my ideas here.

In this chapter, I will talk about some ideas I had to rethink to be a better parent, teacher, and instrument (co)designer. First, I will unpack the notion of the *myth of noiselessness*, problematizing what some call the deficiency model of understanding bodies and technologies. Second, I will offer a critique of "adaptive" technologies and suggest that instead of co-designing with the intention of helping deviant bodies perform traditional tasks on passive instruments, we co-design relationships between human and nonhuman bodies. Finally, I will venture deeper into instrument co-design philosophy-practices I have undertaken both with Rowan and in the Physical Computing and Accessibility course and, I hope, offer useful approaches to those interested in doing work in these contexts.

THE MYTH OF NOISELESSNESS

When I write that some of my sadness surrounding Rowan's diagnosis was a result of what I am calling *the myth of noiselessness*, I mean to say that the act of diagnosis—medically and legally changing his status of apartness—reveals a set of cultural values that both privileges and assumes that systems (from human bodies to laptops to social institutions) and their components possess the potential and preference for

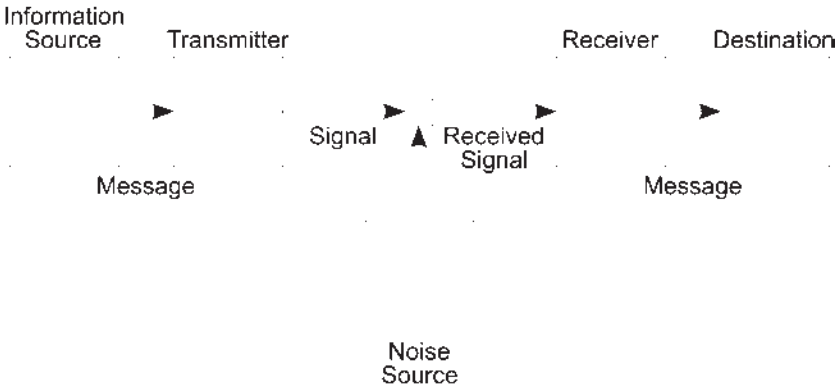

Figure 1.1. Claude Shannon's general communication model (courtesy of Wikipedia, public domain).

purity and functionality. I somehow believed that his body, maybe all bodies, had the potential for pure form and function. That these deviations were somehow unjust. A lot of people reacted this way when we told them about Rowan, that it was somehow unfair or surprising that this happened, that his body was this way. The myth of noiselessness has given folks a lot of strange ideas about what is fair and what is not.

We can see this myth performed and enforced in a variety of contexts, but perhaps we should begin with a discussion of just what noise is—or at least what it has come to mean in relation to technocultural desire and expectations. Etymologically, noise comes from the Latin *nausea*, to denote upset, malaise, seasickness, Anglo-Norman for din, disturbance, uproar, brawl, and disquiet, and Old French for quarrel or disturbance (Oxford University Press 2020b). A common working definition of noise is some variation of noise as a phenomenon that creates displeasure, or noise simply as an "unwanted or undesired sound" (Kerse 1975; Taylor 1970). These definitions, while not always useful,[3] seem fair enough for purposes of this discussion: Noise is that ever-present part of life that conflicts with our desires, that upsets some peace we have (temporarily) achieved. The problem arises, though, when we begin conceiving of noise not as "part of life" but as (a) a phenomenon separate from signal and (b) a phenomenon we can (and should) excise from that which we desire ("signal") with the right technologies.

Many discussions of noise begin with, or at least refer to, an influential paper that shaped not only conceptions of noise, but much of contemporary technoculture: Claude Shannon's (1948) article titled "A Mathematical Theory of Communication," in which he founds

information theory, introduces the bit as a unit of information, discusses entropy and redundancy, and more. But of note here is that he illustrates and describes a "general communication system" in which messages are sent as signals from source to destination. The notable character, at least to the current discussion, is the "NOISE SOURCE."

The trouble with Shannon's model as applied to noise *broadly* is the still-prevalent idea of noise as an outside entity that disrupts an otherwise noiseless network of agents and processes. Perhaps you've heard the phrase "signal-to-noise ratio." There still exists a strong separation between the notions of signal and noise, in the same way that we distinguish mind–body, public–private, and so on. The separation of noise and signal, though, at least as we move from a mathematical to rhetorical model of communication, is both arbitrary and political. In other words, *noises are signals, signals are noises.* There is no inherent characteristic of sonic (or otherwise) phenomena that makes it noise, and there is no system that is free from interruptions, disruptions, corruptions, and the corresponding work it requires to resolve them. Yet many still talk of noise as though it is a distinct and separate event agent that spoils the communication party. This is the myth of noiselessness. It is pervasive, available in nearly every advertisement for contemporary digital devices. It is the promise of functionality, the increasingly clean and polished interfaces, and the decreasing ability of users to understand or modify digital tools.

Rosa Menkman (2010) writes of this cultural obsession with noiselessness in her formulation of glitch studies:

> The dominant, continuing search for a noiseless channel has been, and will always be no more than a regrettable, ill-fated dogma. Even though the constant search for complete transparency brings newer, "better" media, every one of these new and improved technologies will always have their own fingerprints of imperfection. While most people experience these fingerprints as negative (and sometimes even as accidents) I emphasize the positive consequences of these imperfections by showing the new opportunities they facilitate. . . . The user has to realize that improving is nothing more than a proprietary protocol, a deluded consumer myth about progression towards a holy grail of perfection.

Noiselessness, for Menkman, is not only impossible in systems, but it is a rhetorically constructed myth to ensure financial and ideological investment by users. She suggests that fingerprints of imperfection, what we call glitches, are ever present and offer opportunities to both understand and create within contemporary culture, so long as we acknowledge and embrace their existence and reject the myth of noiselessness.

In the biological-medical sense, the myth of noiselessness manifests as what some call the "deficit model," in which we "know" the body insofar as it deviates from pure functionality or form. Many root this in Aristotle's *Generation of Animals*, in which he argues that both animals and humans who depart from the able-bodied male are said to be a " 'monstrosity' that, by its very essence, is less than human" (Wilson and Lewiecki-Wilson 2001, 13). This notion has been dominant in US society, and justified homophobia and misogyny in often fatal ways. Many, of course, have critiqued this model, including Rosemarie Garland-Thomson (2002), who might call this the "ability/disability system . . . [that] excludes the kinds of bodily forms, functions, impairments, changes, or ambiguities that call into question our cultural fantasy of the body as a neutral, compliant instrument of some transcendent will." (5). Garland-Thomson proposes a feminist disability theory that

> denaturalizes disability by unseating the dominant assumption that disability is something that is wrong with someone. By this I mean, of course, that it mobilizes feminism's highly developed and complex critique of gender, class, race, ethnicity, and sexuality as exclusionary and oppressive systems rather than as the natural and appropriate order of things. (6)

Robert McRuer's work on crip theory draws from a similar line of critique, investigating the ways that queer bodies have been historically—and more importantly to this discussion, *medically*—perceived as diseased, monstrous, or otherwise defective. McRuer responds with *Crip Theory*, asking that we understand compulsory able-bodiedness as linked closely to compulsory heterosexuality, and develop a critical approach that, "in contrast to an able-bodied culture that holds out the promise of a substantive (but paradoxically always elusive) ideal, crip theory would resist delimiting the kinds of bodies and abilities that are acceptable or that will bring about change" (2006, 31).

We can see this "medical" or "deficit" model, for instance, in published guidelines in which those eligible for special education benefits must provide "proof of intrinsic deficit" (Harry and Klingner 2007). Just as medical diagnoses are rooted in knowing the body via its apartness from functionality, deficit-focused conceptions legally and socially bind persons to some unattainable—or at least unsustainable—state of "health." While many of us may enjoy receiving a "clean bill of health" at least once in life, it never lasts long. All bodies fail eventually.

I mean to suggest here that, as I have written elsewhere, we must move past a model of noise that suggests it can, or should, be erased. Not only because it's not theoretically sound, but because it translates

into a culture of curation in which we value bodies insofar as they are able to conceal their imperfection. We need to move past noise as the fly in the Modernist's soup. Because in the same way that we discard and discontinue unacceptably noisy technologies, we dismiss (or fetishize) similarly deviant bodies, though we typically encode such dismissals as *toleration*, *accommodation*, and *facilitation*. We ask how technologies can bridge the gap between the deviant body and noiseless body, instead of taking seriously the desires of the bodies themselves. We need to understand and work with our bodies in a way that foregrounds and celebrates *noise* as an essential component of being and composing, rejecting models of communicative fantasy in which noise can—and should—be erased in the interest of purity.

FROM ADAPTIVE TO RELATIONAL

Rowan receives a lot of therapies. Physical and occupational. Speech and mobility. Without question, however, music therapy was the most significant in terms of responsiveness and enjoyment. *Joy*. Rowan is also a singer. Sometimes in loud "ahh" sounds and sometimes percussive pops of his lips that I like to think of as kisses. And sometimes a "da da da" that I like to think of as calling my name.[4] I brought him to his older sister's gymnastics class one day. A large and echoing space. His singing there was met with a lot of attention, much to the embarrassment of his sister. It's hard to explain the myth of noiselessness to a then seven-year-old who mostly just wants to fit in. Because we are *so* deeply entrenched in that myth that noncompliant bodies become dangerous; maybe contagious, but certainly something best performed in private or designated spaces.

But his favorite instrument is an acoustic guitar.

The guitar is an instrument, a technology, a composition tool. A political and highly disciplinary tool. And the myth of noiselessness is apparent not only in expectations of bodies, but also of our technologies, or as Marshall McLuhan (1966) understood them, the extensions of our bodies. In other words, like bodies, technologies are politically and rhetorically framed as ideally noiseless. Deviations are outliers, problems to be fixed or upgraded or replaced or relegated to the trash heaps necessary to maintain Progress.

As you might intuit, Apple is a fairly easy target for this kind of critique, from campaign slogans such as "It just works" to increasingly rapid cycles of planned obsolescence that now seem essential to the brand identity. In many ways, critics have responded appropriately

to this kind of technological rhetoric. Nearly three decades ago, Gail E. Hawisher and Cynthia L. Selfe (1991) published "The Rhetoric of Technology and the Electronic Writing Class," in which we are reminded not only that technological change influences how we write *and* teach writing, but also, and more importantly to this discussion, that our culture (both in popular consumer culture *and* in academia) most often veers sharply toward a perception of emerging technologies as empowering, democratic, hopeful, and visionary. This is often easy to spot in Apple advertisements, but perhaps it is more difficult to reflect on our own de facto endorsement of "new," "exciting," "cutting edge" tools in our classrooms.

Cynthia L. Selfe and Richard J. Selfe (1994) followed this work in "The Politics of the Interface," in which they argue that the interface of the contemporary computer—and its various components such as the ubiquitous Microsoft Word—are always political and never "just tools." They write: "Within the virtual space represented by these interfaces, and elsewhere within computer systems, the values of our culture—ideological, political, economic, educational—are mapped both implicitly and explicitly, constituting a complex set of material relations among culture, technology, and technology users" (485).

For Rowan, the acoustic guitar isn't a stringed and fretted instrument tuned to EADGBE. It's better described as a large, resonant drum with variable sustain, with optional string-holds to grasp, pull, and release. Further, his relationship with that material is guided not by a colonial-modernist notion of mastery, in which an instrument and player are distinct and locked into a human-object power dynamic. Instead, it is an immediate and honest engagement with the instrument-potentiality of any given object, and thus approaching each object as a relationship. A *relation*.

Here's where a materialist approach can be really helpful in thinking through sound, especially instrument design and performance. Various strains of object-oriented ontology, new materialism, speculative realism, affect theory, and more have influenced my thought and practice in many ways. People like Massumi, Barad, Haraway, Latour, Bryant, and others. But I want to venture outside typical intellectual channels here: So many artists and peoples have been dealing with things like entanglement and nonhuman agency for much longer than "new" materialists have been writing about them, as correctly noted in critiques of OOO by Indigenous and cultural rhetorics scholars (Powell et al. 2014).

What for many years was unjustly belittled as mere animism, several Indigenous understandings of the world rely on the same kind of

relationality, at-handness, and nonhuman agency as those proposed by scholars noted above. Consider Ojibwe knowledges, for example. Long before nonmodern[5] philosophies began considering—though often only metaphorically—the interdependence of humans and nonhumans, Ojibwe peoples articulated and lived such relationships. Eddie Benton-Banai (1996) writes extensively about the relationship between humans and wolves, beginning with the Anishinaabe creation story:

> In his travels, Original Man began to notice that all the animals came in pairs and they reproduced. And yet, he was alone. He spoke to his Grandfather the Creator and asked, "Why am I alone?" "Why are there no other ones like me?" Gitchie Manito answered, "I will send someone to walk, talk and play with you." He sent Ma-en'-gun (the wolf).
>
> With Ma-en'-gun by his side, Original Man again spoke to Gitchie Manito, "I have finished what you asked me to do. I have visited and named all the plants, animals, and places of this Earth. What would you now have me to do?" Gitchie Manito answered Original Man and Ma-en'-gun, "Each of you are to be a brother to the other. Now, both of you are to walk the Earth and visit all its places." So, Original Man and Ma-en'-gun walked the Earth and came to know all of her. In this journey they became very close to each other. They became like brothers. . . . When they had completed the task that Gitchie Manito asked them to do, they talked with the Creator once again. The Creator said, "From this day on, you are to separate your paths. You must go your different ways. What shall happen to one of you will also happen to the other. Each of you will be feared, respected and misunderstood by the people that will later join you on this Earth." And so Ma- en'-gun and Original Man set off on their different journeys. (7–8)

Yet human–nonhuman relationships move far beyond creation stories; as Mary Hermes (2005) points out, Ojibwe knowledge, learning, and naming conventions are all rooted in "relational events" rather than stable, independent identities: "Henry explained: 'For example, if I put *asema* [tobacco] out, in English I would be putting a thing on the ground. But in Ojibwe, it is an event, a relational event.' The reference to 'a relational event' is marked by the relationships the actors have with one another and the process of establishing and maintaining those relationships. It is an event specific to a time, place, and people connected to past and future events through the language and the meanings people make of the event" (51). This kind of careful relationality embedded within the very language of the Ojibwe focuses on processes and events. *Relationships. Relations.*

Ojibwe knowledge involves an understanding of "persons" as a broad category that includes, but is not limited to, human beings. Stone-person, bird-person, wind-person, animal-person, human-person (Bird-David 1999, 71). These persons interact and rely upon one another in very real ways. Further, and perhaps most salient to my concern of

understanding and designing and performing *with* instruments, A. Irving Hallowell (1964) recounted a conversation with an elder on the "aliveness" of nonhumans:

> Since stones are grammatically animate, I once asked an old man: Are *all* the stones we see about us here alive? He reflected a long while and then replied, "No! But *some* are." This qualified answer made a lasting impression on me. And it is thoroughly consistent with other data that indicate that the Ojibwa are not animists in the sense that they dogmatically attribute living souls to inanimate objects such as stones. The hypothesis which suggests itself to me is that the allocation of stones to an animate grammatical category is part of a culturally constituted cognitive "set." It does not involve a consciously formulated theory about the nature of stones. It leaves a door open that our orientation on dogmatic grounds keeps shut tight. Whereas we should never expect a stone to manifest animate properties of any kind under any circumstances, the Ojibwa recognize, *a priori*, potentialities for animation in certain classes of objects under certain circumstances. The Ojibwa do not perceive stones, in general, as animate, any more than we do. The crucial test is experience. (24)

In other words, all persons (human and nonhuman alike) have potentiality for movement, for action, for agency via interaction and relation. And whether or not a particular stone becomes a person, linguistically or cosmologically, is based on shared, interactive *experiences*.

Further, and more specific to musical instrument design, if we look to practices like the folk art known as circuit-bending, we understand that, as Bruno Latour (1993) later noted and others echoed, we have never been Modern. In other words, we have never actually been in a dominant position expressing a kind of mastery over nonhuman instruments. *We have always been co-authors.* Q. Reed Ghazala (1996) articulated the folk art known as circuit-bending as "the process of creative short-circuiting by which standard audio electronics are radically modified to produce unique experimental instruments" (11). Here's the gist: Go to the thrift shop. Buy an old Speak & Spell or Casio keyboard or Furby, anything that runs on batteries and makes sounds from digital circuits. Open it up. See its guts. While playing sounds, lick your finger and touch it. Make connections between points on the board that aren't supposed to connect. The sounds will change. Maybe the pitch, maybe the speed, maybe something strange that you don't understand. Find the connections that you like, then rewire the instrument to make these potentialities, these failures, its defining functions. Many use "body contacts" to trigger these malfunctions, using the conductive nature of the body to complete the circuit. Ghazala later reflected on this, the body literally becoming part of the instrument's circuit, noting that the distinction

between the instrument and player was lost, that a new, momentary, hybrid being (what he calls a BEAsape, or BioElectronicAudiosapian) was in that moment at play:

> I felt that a new, albeit temporary, creature was created when a musician played a body-contact instrument—in this moment when the electricity of both bodies intertwines, the same essential electricity that if interrupted would cause each body to die. I was changed and the circuit was changed, and I had trouble deciding where each of us began and ended. I simply concluded that we were something new, and we were one. (2004, 101)

We exist and communicate and compose in momentary relationships with a range of persons. Persons with biases and politics and intentions and glitches and preferences and resistances. We enter into relationships with those around us, whether we call them persons or instruments or things or actants. We become relations. And if we act on our relations with care, stones are never just stones, diagnoses lose their definitional grip, and co-design obstacles become contemplative opportunities.

TOWARD A POST-NOISE PEDAGOGY

Thus far I have attempted to develop a few ideas as a means to set the stage for instrument design undertakings. First, neither our human bodies (regardless of diagnoses) nor the nonhuman bodies around us, nor the interactions between all of those bodies, are free of noise. But that noise is opportunity: to reflect and relate and express and create. Second, that the way we think about instruments—as passive, inert objects to use and master—is highly specific to a Modernist-colonialist framework that should be abandoned immediately if we are to enter into care-ful creative relations with bodies our culture opts to merely tolerate and accommodate.

I will close this chapter by applying some of these ideas pedagogically, synthesizing my experience into a kind of teaching/design manifesto that helps direct projects surrounding instrument and interface (co)design, whether they be formal partnerships or weekend projects with Rowan.

One: noiselessness in all persons, human and nonhuman alike, is a myth. Yet it is pervasive and works to maintain existing systems dominance and exclusion. As such, we must work very hard to understand and explore all of the beautiful deviations from those myths if we want to understand anything about ourselves or the world of persons we find ourselves entangled with. We must understand where dirt is being classified and excavated. When I say dirt, I'm calling on Mary Douglas's

(1996) work in *Purity and Danger*, in which she articulates dirt as "matter out of place. . . . It implies two conditions: a set of ordered relations and a contravention of that order. Dirt then, is never a unique, isolated event. Where there is dirt there is system. Dirt is the by-product of a systematic ordering and classification of matter, in so far as ordering involves rejecting inappropriate elements" (36). We must find, embrace, and track dirt on the clean carpet of traditional instrument design and performance. This will require openness, patience, and acceptance. Look and listen for and embrace the noise in your own body as you become tired, anxious, bored, thirsty, hungry, warm, cold, older, etc. Lean into that noise, make something with that noise.

Two: instruments are relations, not vehicles toward noiselessness. Your job is not to make tools to chase the ghosts of perfection and noiselessness via so-called adaptive technologies but to explore the relationship between bodies and facilitate a meaningful experience. This chase is both fruitless (noiselessness is a destination never reached) and work to reinforce the exclusion of deviant bodies. As M. Remi Yergeau notes, "To accommodate is to retrofit; it is to assume normative bodies as default and to build spaces and infrastructures around those normative default bodies; it is to deal with deviant bodily and spatial conditions as they bubble out at the seams" (Yergeau et al. 2013). Adaptive technologies not only work to reinscribe apartness, though; they impose extraordinary limits on what kinds of instruments and sounds and expressions are possible. Instrument co-design is not a practice of fixing, saving, or otherwise easing access to typical sonic experiences; it is exploring and sitting with the potential sensory relations at hand.

Three: negotiating desire must guide our co-design processes. Bodies—human or nonhuman—all have potentiality for function/personhood and failure/glitch. They all have desires (tendencies, actions met with little or no resistance) and resistances. Co-design is a process of exploring, negotiating, and implementing the shared desires of bodies-in-relationship.

This may be a good time to illustrate with stories from the course I taught. My students and their co-designers built and performed some really beautiful instruments, but not without frustrations. When presented with the project goal—to work together to create a musical instrument using an Arduino Uno and any combination of sensors—most in the room were overwhelmed by the open-endedness of both the direction and the undefined nature of the technology. We began by talking about music, dancing and moving our bodies to music, and making music with our bodies. Trying to abandon traditional ideas of music and

dance. Thinking and talking about how our bodies *desired* to move to and make music. Co-designers shared and negotiated. Next, my students learned the basics of combining hardware and scripts to convert physical phenomena into digital sound. Most had no experience with either—and found themselves primarily learning about the possibilities (desires) and limitations (resistances) of the technology at hand. They found their own skills and abilities (programming, soldering, etc.) improving or stagnating. Co-designers met weekly to work on their instruments. Revising, rewiring, reprogramming. Negotiating desires and resistances.

PARTING STORIES

One co-design team used bowls of water to trigger bell-like tones. One team sewed flex sensors into a pair of hot-pink gloves. Another team used arcade buttons to play drum samples. Desires varied, and no team could fully realize those desires that existed in and between their imaginations. They did the best they could, given their relations and relationships, and the resistances they did not yet know how to negotiate. Our end-of-semester performance event certainly didn't produce any hit songs—in fact, there were some moments of uncomfortable bodily shifting in the audience because the music was never constructed in a familiar way, much like the kinds of art that David Sheridan, in chapter 2, illustrates and praises for prompting ontological questioning (*Is this music? Is that a musical instrument?*) and denial (*This is not music. That is not a musical instrument.*). These instruments, and their inextricable ties to their co-designers, asked everyone to reconsider what an instrument, a composition, a performance can be. And that evening performers demonstrated and talked about what it meant to feel and move and hear with their instrument, and most reported that they are probably the only person qualified to really play it and like the way it sounds. The performance of their instrument, maybe, is not an act upon an object/instrument, but an event of relationality. I am not sure I could ask for better feedback.

And like most toys given to most children, some of my instrument co-designs with Rowan have been more successful than others. Our favorite instrument is still putting our chests and necks together and sharing the vibrations. We usually last only a minute or two before we laugh at the whole performance. He also likes red buttons and low-frequency bass drums. He still loves an acoustic guitar. Pots and pans and tabletops and space blankets. But he finds instruments—the potential for sensory relationships and noise—most everywhere he goes, and I am grateful to be learning that way of being in the world.

NOTES

1. Co-design, though not directly addressed and expanded upon in this chapter, is an extraordinarily important part of these projects, especially as articulated by Elizabeth B.-N. Sanders and Pieter Jan Stappers (2008).
2. In no way do I mean to reduce the emotional complexities of illness, pain, or disability to a violation of our expectations of noiselessness. For instance, in my own experience, I feel sadness (and certainly a wide variety of emotions, including very positive feelings) for a variety of reasons including fear of loss, empathy during times of physical discomfort and pain, and so on.
3. I have written much more about the shortcomings of these conceptions of noise in the chapter "Writing Dirt, Teaching Noise" (Hammer 2018) in Courtney S. Danforth, Kyle D. Stedman, and Michael J. Faris's *Soundwriting Pedagogies*.
4. That I like to think of these performances as kisses and utterances of my name may be indicative of the practice I am critiquing here, specifically the tendency of normative bodies to map their preferences and desires onto deviant bodies.
5. By using "nonmodern," I refer to Latour's (1993) *We Have Never Been Modern* and subsequent works that dispute Modernist distinctions between culture and nature, human and nonhuman, etc.

REFERENCES

Benton-Banai, Edward. 1996. *The Mishomis Book: The Voice of the Ojibway*. Minneapolis: University of Minnesota Press.

Bird-David, Nurit. 1999. " 'Animism' Revisited: Personhood, Environment, and Relational Epistemology." *Current Anthropology* 40 (1): 67–91. doi:10.1086/200061.

Clare, Eli. 2017. *Brilliant Imperfection: Grappling with Cure*. Durham, NC: Duke University Press.

Douglas, Mary. 1996. *Purity and Danger: An Analysis of Concepts of Pollution and Taboo*. New York: Praeger.

Garland-Thomson, Rosemarie. 2002. "Integrating Disability, Transforming Feminist Theory." *NWSA Journal* 14 (3): 1–32.

Ghazala, Qubais Reed. 1996. "The Casio SK-1: Escapist Sample Shuttle." *Experimental Musical Instruments* 12 (2): 11–16.

Ghazala, Qubais Reed. 2004. "The Folk Music of Chance Electronics: Circuit-Bending the Modern Coconut." *Leonardo Music Journal* 14: 97–104. doi:10.1162/096112104306727l.

Hallowell, A. Irving. 1964. *Ojibwa Ontology, Behavior, and World View*. New York: Columbia University Press.

Hammer, Steven. 2018. "Writing Dirt, Teaching Noise." In *Soundwriting Pedagogies*, edited by Courtney S. Danforth, Kyle D. Stedman, and Michael J. Faris. Logan: Computers and Composition Digital Press/Utah State University Press. http://ccdigitalpress.org/book/soundwriting/.

Harry, Beth, and Janette Klingner. 2007. "Discarding the Deficit Model." *Educational Leadership* 64 (5): 16–21.

Hawisher, Gail E., and Cynthia L. Selfe. 1991. "The Rhetoric of Technology and the Electronic Writing Class." *College Composition and Communication* 42 (1): 55–65.

Hermes, Mary. 2005. " 'Ma'iingan Is Just a Misspelling of the Word Wolf': A Case for Teaching Culture through Language." *Anthropology & Education Quarterly* 36 (1): 43–56. doi:10.1525/aeq.2005.36.1.043.

Kerse, C. S. 1975. *The Law Relating to Noise*. London: Oyez Publishing.

Latour, Bruno. 1993. *We Have Never Been Modern*. Cambridge, MA: Harvard University Press.

McAllister, Michael, Elaine Yuen, and Stuart Bush. 2012. "Cultivating Design Partnership: A Participatory Design Exploration Engaging People with Disabilities." Presentation at Industrial Designers Society of America Education Symposium, August 15, 2012, Boston, MA. https://www.idsa.org/sites/default/files/McAllister.pdf.

McLuhan, Marshall. 1966. *Understanding Media: The Extensions of Man*. New York: Signet Books.

McRuer, Robert. 2006. *Crip Theory: Cultural Signs of Queerness and Disability*. New York: New York University Press.

Menkman, Rosa. 2010. "Glitch Studies Manifesto." *Amodern*. http://amodern.net/wp-content/uploads/2016/05/2010_Original_Rosa-Menkman-Glitch-Studies-Manifesto.pdf.

Oxford University Press. 2020a. "Diagnosis." *Lexico*. https://www.lexico.com/definition/diagnosis.

Oxford University Press. 2020b. "Noise." *Lexico*. https://www.lexico.com/definition/noise.

Oxford University Press. 2020c. "Prognosis." *Lexico*. https://www.lexico.com/definition/prognosis.

Powell, Malea, Daisy Levy, Andrea Riley-Mukavetz, Marilee Brooks-Gillies, Maria Novotny, and Jennifer Fisch-Ferguson. 2014. "Our Story Begins Here: Constellating Cultural Rhetorics." *Enculturation: A Journal of Rhetoric, Writing, and Culture* 25. http://enculturation.net/our-story-begins-here.

Sanders, Elizabeth B.-N., and Pieter Jan Stappers. 2008. "Co-Creation and the New Landscapes of Design." *CoDesign: International Journal of CoCreation in Design and the Arts* 4 (1): 5–18. doi:10.1080/15710880701875068.

Selfe, Cynthia L., and Richard J. Selfe Jr. 1994. "The Politics of the Interface: Power and Its Exercise in Electronic Contact Zones." *College Composition and Communication* 45 (4): 480–504.

Shannon, Claude E. 1948. "A Mathematical Theory of Communication." *Bell System Technical Journal* 27 (3): 379–423. doi:10.1002/j.1538-7305.1948.tb01338.x.

Taylor, Rupert. 1970. *Noise*. London: Penguin Books.

Wilson, James C., and Cynthia Lewiecki-Wilson, eds. 2001. *Embodied Rhetorics: Disability in Language and Culture*. Carbondale: Southern Illinois University Press.

Yergeau, M. Remi, Elizabeth Brewer, Stephanie Kershbaum, Sushil K. Oswal, Margaret Price, Cynthia L. Selfe, Michael J. Salvo, and Franny Howes. 2013. "Multimodality in Motion: Disability and Kairotic Spaces." *Kairos: A Journal of Rhetoric, Technology, and Pedagogy* 18 (1). http://kairos.technorhetoric.net/18.1/coverweb/yergeau-et-al/.