

terms of lack and inability—may inspire the work of creating, rethinking, and connecting with others, and the way that media technologies have done their part to produce and constrain those connections.

#### NOTES

1. Ricky Jay, Matthias Buchinger: "The Greatest German Living" (Los Angeles: Siglio, 2016).
2. Julie Livingston, *Debility and the Moral Imagination in Botswana* (Bloomington: Indiana University Press, 2005); Nirmala Erevelles, *Disability and Difference in Global Contexts: Enabling a Transformative Body Politic* (New York: Palgrave, 2011); Friedner, *Valuing Deaf Worlds in Urban India*; Don Kulick and Jens Rydström, *Loneliness and Its Opposite: Sex, Disability, and the Ethics of Engagement* (Chicago: University of Chicago Press, 2015).

## Afterword II

### *Dismediation—Three Proposals, Six Tactics*

MARA MILLS AND JONATHAN STERNE

Mara Mills and Jonathan Sterne, leading scholars of media technologies who have long incorporated disability into their analyses, propose "dismediation" as one avenue for the cross-pollination of disability and media studies. Referencing current scholarship in both fields, and engaging with a rich tradition of critical media studies, they argue that dismediation understands disability and media as mutually constitutive, while urging the ongoing interrogation and revision of media systems.

Disability and media are co-constituted. Yet disability studies and media studies, with their different focal points, often find themselves at cross-purposes. Popular culture seems to be "awash in representations of disability," as the editors write in the introduction to *Disability Media Studies*, but most of those representations are metaphorical, stereotypical, or spectacular. Toby Miller in this volume points out that recurring characters with disabilities in U.S. television dramas amounted to a mere 0.9% in 2015–2016. By now it is well understood that media compound and even generate disability, through stigmatizing popular representations and through means such as architectural prohibitions, toxic electronic waste, or technologies that establish bodily norms.<sup>1</sup> In the academy, media scholars have historically referenced disability in symbolic, clichéd, or otherwise uninterrogated terms. They continue to rely on concepts whose ableist genealogies have been forgotten. For this reason, disability theorists insist upon the disabling effects of *media studies* itself. Figures of disability—prosthesis, "crippling," schizophrenia—recur in canonical media theories, from Plato to Friedrich Kittler. Writing in the field is decorated with asides and object lessons about disability, as

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well as disparaging references to blindness and deafness as metaphors for ignorance and asociality. This situation has led Sharon Mitchell and David Snyder to argue that “disability underwrites the cultural study of technology writ large.”<sup>2</sup>

Disability theorists, meanwhile, have emphasized the kinds of stories told about disability in media texts rather than the operations and institutions of media. Founding scholarship in disability studies, especially by those with literary training, predominantly investigated the cultural semiotics of written texts and the visual arts.<sup>3</sup> As the contributions to this anthology demonstrate, the new generation of media scholars taking up the challenge of disability studies has largely continued to analyze textual and visual representation, albeit in the wider array of television, movies, music videos, advertisements, and comics. We reiterate the calls—in the introduction and the chapters by Miller and Mack Hagood—for an even broader approach to “media” in disability media studies.

We agree with the editors that no grand synthesis of disability studies and media studies is necessary. But there are further opportunities for conversation and cross-pollination. Below, we outline a few propositions for thinking in terms of *dismedia*, that is, disability as a constituting dimension of media, and media as a constituting dimension of disability. We suggest dismediation as a critical counterpart to “remediation” and its cousins (premediation, demediation), specifically to theorize media change and technical design from a disability studies perspective.<sup>4</sup> Dismediation centers disability and refuses universal models of media and communication. It begins from a presumption of communicative and medial *difference* and *variety* rather than seeing media as either the tools to repair a damaged or diminished condition of human communication, or themselves the cause of a fall from prior perfection. Dismediation resists rehabilitation and standardization, but without recourse to the easy celebration of glitch, error, noise, jamming, or hacking that often wields “disablement” as the most convenient Other to the smooth functioning of contemporary corporatized media. Like José Esteban Muñoz’s “disidentification,” which hovers between the embrace and refusal of identity, dismediation appropriates media technologies and takes some measure of impairment to be a given, rather than an incontrovertible obstacle or a revolution.<sup>5</sup> Dismediation recognizes that impairments

scale to disabilities unevenly within particular media systems, influenced by industrial and cultural settings. It embraces alienated or partial communication, reluctant technology adoption, targeted rather than wholesale rejection of mediation. Against the contemporary backdrop of “universal communication,” it allows for minor and separatist media.

We understand media not as a comprehensive term for all dimensions of mediation and relationality, but rather as “socially realized structures of communication,” to use Lisa Gitelman’s phrase.<sup>6</sup> In other words, all technologies may mediate to some degree (for those who work with theories of mediation), but not all technologies are media. With this definition in mind, we call for more work on verbal, sonic, architectural, and tactile modes of communication; more attention to the material phases of media, including manufacture, design, infrastructure, distribution, pricing, adoption, domestication, repair, and disposal; attention to trans-local and trans-national inequalities of affordability and availability; a take-up of insights from science and technology studies by scholars who investigate media; and a material-semiotic approach to each layer of electronic media, from algorithms and hardware to their outputs. Mediation is not one kind of thing: it is contextually determined and structured through power relations. Dismediation demands that we radically expand the methods, sites, and contexts through which disability and media are understood. An attention to dismediation requires real interdisciplinary inquiry—curiosity around questions of engineering, chemistry, biology, political economy, policy, and ecology alongside more traditional interests in culture, whether they come from interpretive, historiographic, ethnographic, or phenomenological orientations. These interdisciplinary engagements may well be fraught and conflicted—as Hagood’s chapter shows us—but they are an essential step in pluralizing the understandings of media and mediation within disability studies.

A theory of dismediation also strikes a delicate balance with regard to the epistemic authority of experience. It acknowledges the centrality and significance of the experience of disability, while also taking on board critiques of the transparency of experience, and subjects’ availability to themselves, as epistemic fundamentals for writing and researching disability. An understanding of dismediation requires that we also crip our own experiences. Testimony is necessary but necessarily insufficient. This might entail sacrificing or modifying media pleasures that require



waste and exploitation, especially given that the gadgets and applications tied to these pleasures are often sold using concepts like “mobility” and “participation”—concepts widely problematized in the disability studies literature. It might entail risking and accepting slow and broken communication, instead of holding to an ideal of perfect transparency between subjects we imagine to be homologous to one another. It would mean accepting impairments in ourselves as well as others, claiming our limits as well as our abilities. And it would entail authors claiming disability at key theoretical junctures to disrupt compulsory able-bodiedness, while granting that dimensions of our own experience will always remain opaque to us.

Dismediation takes disability as method, not simply as content for media studies.<sup>7</sup> If, as Mel Chen explains, the underlying theme of disability studies is “redefining given conditions of bodily and mental life,” dismediation foregrounds the conditions of communication. In the spirit of dismediation, we scrutinize the ways disability has been deployed as a routine, program, or resource in the history of technology. We work toward digital justice, which may take the forms of crippled or minor media or of mainstream access. We start from the premise of difference, even as we resist population-based disparities in the industrial or military production of impairment.

For a disability media studies that includes dismediation, we offer three propositions and six tactics:

#### 1. Identify and Rethink Media Theories That Are Held Up by Narrative Prostheses

David Mitchell and Sharon Snyder criticize scholars such as Donna Haraway, Katherine Hayles, and Paul Virilio for using disability in the mode of “narrative prosthesis.” Through this rhetorical technology, disability becomes merely a “crutch” or aid to representation. As a narrative prosthesis for media theorists, disability might serve as a titillation, a symbol of alienation, or a metaphor for breakdown and transformation. A canonical example from the tradition will outline the problem.

In his essay on “The Gadget Lover” in *Understanding Media*, Marshall McLuhan constructs an elaborate, ableist fantasy of the nervous system that corresponds to no accepted theory of physiology: “The

principle of self-amputation as an immediate relief of strain on the central nervous system applies very readily to the origin of the media of communication from speech to computer. Physiologically, the central nervous system, that electric network that coordinates the various media of our senses, plays the chief role. Whatever threatens its function must be contained, localized, or cut off, even to the total removal of the offending organ.”<sup>8</sup> While this frankly ridiculous passage is rarely cited in its entirety, a quick internet search of references to McLuhan’s ideas of extension and amputation finds they are still in common use. Friedrich Kittler may be correct that early technical media were developed “by and for” deaf and blind users, but he ultimately reduces the significance of this point to passive illustration: “cripples and handicaps,” he says, “lie like corpses along the technical paths to the present.”<sup>9</sup> Titillation indeed.

So too for R. Murray Schafer’s idea of “schizophonia,” which is still widely cited as a description of the putative “effects” of sound reproduction in modern culture: “The Greek prefix *schizo* means split, separated; and *phone* is Greek for voice. *Schizophonia* refers to the split between an original sound and its electroacoustical transmission of reproduction. . . . I coined the term schizophonia in *The New Soundscape* intending it to be a nervous word. Related to schizophrenia, I wanted it to convey the same sense of aberration and drama.”<sup>10</sup> Schafer’s conception of sound reproduction as the violation of a previously whole, non-technologized subject ignores centuries of prior media history, as well as the histories of the specific technologies he wrote about. Like McLuhan’s nervous system, Schafer’s schizophonia holds as its reference a self-same, undamaged, idealized human body defined by its struggle against disability, debility, and difference.

These conceptualizations of media are erroneous at the descriptive and theoretical levels. Their ableist phenomenologies bear no resemblance to actual documented experiences of amputation and schizophrenia; they don’t even fit with medical models of ability and disability. They are mostly rooted in these authors’ fantasies *about* people with disabilities. To Georgina Kleege’s hypothetical blind man,<sup>11</sup> we might want to add the hypothetical undamaged subject that exists prior to its encounter with media. A concept of dismedia inserts disability into critiques of the metaphysics of presence.



Those of us interested in media theory can leverage the critiques of a unified, whole, idealized body to turn universalist media theories on their head. We can combine the historicization and critique of norms in disability with the study of norming in science, technology, and medicine, all of which depend on representational technologies that render abstract human qualities as measurable quantities. In other words, we are arguing to bring together the analysis of norms and norming among writers like Lennard Davis, Rosemarie Garland-Thomson, and Susan Wendell with writers like Georges Canguilhem, Michel Foucault, and more recent work that focuses specifically on the representational dimensions of scientific instruments by writers like Jimena Canales, Robert Brain, and Alexandra Hui.<sup>12</sup> Doing so will reveal a human body that was never perfect; that always had its dependencies; whose variability is irreducible; and whose form is always partly but never completely technical. It will also reveal communication as something fraught, supplemented, and interdependent in all of its many forms. Treating media history as something other than a fall from wholeness frees us to understand our present in terms of possibilities for greater equality and variety. The same can be said for understandings of human bodies and subjects that leave wholeness behind.

All of this sounds nice, but it will take work—a lot of it. Media scholars' continued invocation of McLuhan, Schaffer, Kittler, Virilio, and Hayles on these very topics shows the depth and extensiveness of the problem. We will need new stories about media, new histories, but also new theories that do not rely on disability as their, well, crutch.

## 2. Document the Actual Centrality of Disability to Media, Engaging Closely with Disability Theories and Histories

In the words of Tobin Siebers, "the disabled body changes the process of representation itself,"<sup>13</sup> producing new techniques and technologies for communication. Yet this process is not captured by the loose theory of media-as-prosthesis, which has failed to account for the affordances of embodied difference; the politics of technical appropriation; the possibilities of design for disability (from minor media communities to "cripping" with technology); and the contradictions that lie within new media keywords such as "access," "extension," and "independence."

We also need to rethink our central concepts of the public, publicity, and the public sphere. In *The Ugly Laws*, Susan Schweik shows how the disappearance of disability from outdoor public life in the United States resulted from a patchwork of local laws that turned disability stigma into policy.<sup>14</sup> It became possible to physically police people with disabilities out of public spaces. It is perhaps a cliché of media studies and science and technology studies that technologies govern social relations (more or less effectively) as delegates for their designers or users. But we have only begun to explore that idea in terms of its consequences for disability, and we have only begun to understand how concepts of ability and disability shape widely held understandings of shared social life, political consensus, and civic action so central to our understandings of so-called liberal democracies.

We have both argued, in different ways, that there is no state of nature for the senses that is available without media, and that every media form is built around different ideas of the natures of human subjects and bodies. We have shown how ideas of disability shaped the emergence of modern sound media and how modern sound media shaped ideas of ability and disability. Jonathan's first book, *The Audible Past*, locates the origins of sound reproduction in nineteenth-century sound culture, with its peculiar conceptions of hearing, speech, and deafness. He considered Alexander Graham Bell's ear phonautograph—a device Bell credited with giving him "the idea for the telephone"—as a technology designed to eradicate cultural vestiges of deafness.<sup>15</sup> Similarly, Mara has shown how the quest for miniaturization in electronics was intimately tied to deaf stigma, aiming to hide the existence and workings of hearing aids. More broadly, her first book, *On the Phone*, shows how the modern concepts of "impairment" and "hearing loss," as well as the contributions of deaf and hard-of-hearing people, were central to the development of telecommunications technologies and signal processing in the twentieth century.<sup>16</sup> Both *On the Phone* and Jonathan's second book, *MP3*, show how telecommunications in turn impacted our current conceptions of hearing and its limits.<sup>17</sup>

But it goes further: histories of closed captioning, audio description, and subtitling demonstrate that users with disabilities are often at the forefront of innovation in media systems that make them more useful for everyone. Today, closed captioning is employed by a wide range of publics: we find it everywhere from sound-optional Facebook videos to televi-



sion screens in gyms and airports. And yet, as Greg Downey has shown, broadcasters initially resisted closed captioning because of its connection to D/deaf and hard-of-hearing people; minoritized, the technology was viewed as an expense and an inconvenience. Instead, closed captioning has greatly increased the flexibility of audiovisual media for a wide swath of users in a host of situations. Current work on the internet and accessibility by Katie Ellis, Mike Kent, Helen Kennedy, Elizabeth Elcessor, and others also shows the degree to which users in disability communities are at the forefront of adding flexibility and usefulness to media technologies, even as much of the new media discourse around the politics of access often leaves disability aside. This is a place where disability theory and media theory can have direct and significant impact on policy and activism.<sup>18</sup> The politics and economics of technology transfer also require scrutiny. As Mara has argued, disability “gains” are often appropriated without compensation or attribution, and incorporated into larger inaccessible systems—a mode of extraction she calls “technology removal.”<sup>19</sup>

### 3. Document the Centrality of Media to Disability, Engaging Closely with Media Theories and Histories

The vast majority of disability scholarship on the topic of media, outside media studies, has focused on the ways *representation* produces disability. But the central insight of media studies, to paraphrase John Durham Peters, is that representations can never be analyzed apart from their means. In other words, not only do media produce disability through their textual representations of disability, they produce disability through their very operations, their institutional existences, and their policy and juridical dimensions. Certain disabilities—compulsive machine gambling, ink allergies and other print disabilities, some forms of photosensitive epilepsy—exist as a direct consequence of media technologies.<sup>20</sup>

Media also themselves become metaphors for both reason and its various others. Today, computational metaphors fly back and forth across the porous disciplinary borders of biology, computer science (and especially machine learning), and psychology. But one can also see it in the figuration and experience of various forms of mental illness. The work of Amit Pinchevsky and John Durham Peters is especially instructive here,

as they have documented the ways in which schizophrenia and autism have been described and even experienced as media phenomena, from eroding the differences between impersonality and personal address in broadcast to the representation of autism as a communication disorder, and its inverse—the celebration of autism in some new media business environments. The very meanings and experiences of these conditions are defined through media and communication.<sup>21</sup> And as Tasha Oren’s chapter in this volume shows, even representations of autism shift in relation to the changing cultural and institutional status of autism more broadly. Mental illness and media are thus the ultimate mangle: conceptions and experience of one almost always imply ideas about the other.

Beyond these broad juxtapositions of disability studies and media studies, as the fields currently exist, we offer the following tactics for dismediation:

#### 1. Think Comparatively about Disability—as Concept and Experience—with Regard to History and Geography

Basic terms vary across contexts and even within languages: witness the differences of opinion on “people with disabilities” versus “disabled people” as descriptors, depending on whether one is working within the US or UK English-language context. In *Debility and the Moral Imagination in Botswana*, Julie Livingston discusses the Setswana word *bogole*, which does not line up neatly with the English word *disability*; instead, it encompasses impairment, illness, and senescence.<sup>22</sup> As an example of historical change, hard-of-hearing Germans called themselves *harthörig* in the eighteenth century and *schwerhörig* in the nineteenth. “Hard” in the former case meant tough, firm, or unyielding, whereas the later term refers to difficulty—implying a shift from anatomy to behavior and function. What counts as disability, and how it is experienced, are every bit as context-dependent as is terminology.

#### 2. Think Transnationally about Disability as It Results from Global Supply Chains, War, and International Laws or Standards

From Donna Haraway’s “Cyborg Manifesto” to Jack Qiu’s *Goodbye iSlave: A Manifesto for Digital Abolition*, theorists of electronics have highlighted



the North-South inequalities fueled by global media systems, with money, prestige, and knowledge disproportionately accumulating on one side, labor and waste on the other.<sup>23</sup> In his contribution to this collection, Toby Miller's analysis of "effluent citizenship" foregrounds disability within that ongoing discussion. Along the same lines, disability media studies might draw on insights from postcolonial theory, war and media studies, and the environmental justice movement to understand present-day disparities in incidences of disability (and the international attention they earn). The history and impact of international standards for thousands of human traits and functions, compiled in classification systems such as the ICD-10,<sup>24</sup> remain woefully understudied despite rampant theoretical interest in norms and medicalization. Aimee Medeiros has pointed out, as one example, that the World Health Organization employed—for three decades—pediatric growth charts based on a small study of bottle-fed babies in Ohio, with massive consequences for diagnoses of disability and malnourishment around the world.<sup>25</sup>

### 3. Allow That Technologies and Media Representations Are Actors—Socially Situated, but Sometimes Constraining Human Action or Generating Impairment at Immense Scales

This is the classic argument in Langdon Winner's "Do Artifacts Have Politics?" essay, which continues to guide research on the values embedded in technical designs—and their downstream impacts. Miller asks us to consider "how the media cause disability" in the case of electronics production and disposal. We can also consider how their presence in everyday interaction shape relations of ability and disability. For instance, Meryl Alper's *Giving Voice*, on autism and speech, considers the centrality of iPads and text-to-speech in structuring the relationships within families that have members on the spectrum. It is also the first full-length study of the iPad and touch tablets more generally, thereby placing disability at the center of an emerging media form. While there is a large body of work on technologies and power relations in several fields—feminist studies, cultural studies, science and technology studies, actor-network theory—relatively little of the canonical work directly confronts questions of ability and disability, despite common preoccupations with thinking about agency beyond the human.<sup>26</sup>

### 4. Consider the Occasions When Disability Becomes a Source of Value and Not Just a Source of Stigma, for Industries as Well as for People Who Identify as Disabled

In *Valuing Deaf Worlds in Urban India*, Michele Friedner tracks the ways deafness accrues social and economic value at businesses that employ disabled workers for reasons that include advertising benefits, affective labor, and reduced pay.<sup>27</sup> Graham Pullin's work has shown that disability itself can be fertile ground for basic research in design, as well as solving problems widely shared by people with disabilities and normate people. Similarly, while experiences of racial and sexual difference have been widely understood to be central to the history of a range of musics from jazz to electronica, we are only now beginning to understand how much disability has also shaped the history of music, for instance in the use of various disabilities as signs of "genius" and creative agency ranging from Beethoven's or Christine Sun Kim's deafness, to the blindness of Ray Charles and Stevie Wonder, to Syd Barrett's mental illness, or in the performance styles of particular musicians and artists, as documented by scholars like Jessica Holmes and George McKay.<sup>28</sup>

### 5. Diversify the Keywords and Matters of Concern for Disability Media Studies, Adding to Current Research on Access and Representation

Elizabeth Ellcessor has shown, in this volume and elsewhere, how attention to *access* in some media-theoretical and activist contexts has redefined the term away from the accessibility concerns central to disability politics. As a keyword, *access* has met with criticism from the digital justice and disability studies communities alike, for emphasizing a technical fix rather than training, production, ownership, or broader socio-economic change. We have already shown how *public* also needs to be rethought. Lisa Cartwright and Brian Goldfarb have explored the radical plasticity of sensing subjects, challenging ableist conceptions of the senses that still undergird most theories of media.<sup>29</sup> Other keywords in media studies, from *identity* to *commodity* to *environment*, will need similar rethinking.



## 6. Approach the Intersection of Media and Disability with a Wider Range of Theoretical Perspectives

Such perspectives should include affect studies, new realism, queer theory, and decolonial theory, as well as the contributions of artists and activists to our understandings of the intersections of media and disability—to name a few.<sup>30</sup> Rosemarie Garland-Thomson's work on staring and Anne Cvetkovich's work on depression are two examples, carried forward in this volume in Lopez's theorization of ethical television viewership and in Magnet and Watson's engagement with comics and temporalities of disability. The various strands of new materialism have thus far been especially resistant to disability as a concept, wrongly reducing it to ideation and identity. Given that materiality is such a central concept in media studies, perhaps a crippled materiality could be the next major breakthrough across our two fields.

### NOTES

- 1 See in this volume, for example, Toby Miller's chapter on toxic waste, Mack Hagood's and Bill Kirkpatrick's chapters on normalization, and several chapters on stigmatizing representations.
- 2 David T. Mitchell and Sharon L. Snyder, *The Body and Physical Difference: Discourses of Disability* (Ann Arbor: University of Michigan Press, 1997), 8.
- 3 What Mack Hagood calls the *sociotextual approach* includes the discursive analysis of visual "texts" in such works as Siebers, *Disability Aesthetics*; Garland-Thomson, *Extraordinary Bodies*; Sharon Snyder and David Mitchell, "Body Genres and Disability Sensations," in *Cultural Locations of Disability* (Chicago: University of Chicago Press, 2005).
- 4 See Jay David Bolter and Richard Grusin, *Remediation: Understanding New Media* (Cambridge, MA: MIT Press, 1999); Richard Grusin, *Premediation: Affect and Mediality after 9/11* (New York: Palgrave, 2010); Garrett Stewart, "Bookwork as Demediation," *Critical Inquiry* 36, no. 3 (Spring 2010): 410–57.
- 5 José Esteban Muñoz, *Disidentifications: Queers of Color and the Performance of Politics* (Minneapolis: University of Minnesota Press, 1999).
- 6 Lisa Gitelman, *Always Already New: Media, History, and the Data of Culture* (Cambridge, MA: MIT Press, 2006), 7.
- 7 Here we draw inspiration from Wendy Hui Kyong Chun, "Race and/as Technology: Or How to Do Things to Race," *Camera Obscura* 24 (2009): 7–35.
- 8 Marshall McLuhan, *Understanding Media: The Extensions of Man* (New York: McGraw-Hill, 1964), 43.
- 9 Friedrich Kittler, *Optical Media* (New York: Polity, 2010), 120.
- 10 R. Murray Schafer, *The Soundscape: Our Sonic Environment and the Tuning of the World* (Rochester, VT: Destiny Books, 1994), 90, 91.
- 11 Georgina Kleeg, "Blindness and Visual Culture: An Eyewitness Account," in *Disability Studies Reader*, 4th ed., ed. Lennard Davis (New York: Routledge, 2013), 447–55.
- 12 Jimena Canales, *A Tenth of a Second: A History* (Chicago: University of Chicago Press, 2009); Alexandra Hui, *The Psychophysical Ear: Musical Experiments, Experimental Sounds, 1840–1910* (Cambridge, MA: MIT Press, 2012); Robert Brain, *The Pulse of Modernism: Physiological Aesthetics in Fin-de-Siècle Europe* (Seattle: University of Washington Press, 2015).
- 13 Siebers, *Disability Aesthetics*, 54.
- 14 Schweik, *The Ugly Laws*.
- 15 Sterne, *The Audible Past*.
- 16 Mills, *On the Phone*.
- 17 Sterne, *MP3*.
- 18 Downey, *Closed Captioning*; Ellcessor, *Restricted Access*; Ellis and Kent, *Disability and New Media*; Helen Kennedy, *Net Work: Ethics and Values in Web Design* (New York: Palgrave MacMillan, 2012), especially the chapters on the ethics of web accessibility and users with intellectual disabilities.
- 19 Mills, *On the Phone*.
- 20 See Natasha Dow Schüll, *Addiction by Design: Machine Gambling in Las Vegas* (Princeton, NJ: Princeton University Press, 2013).
- 21 Amit Pinchevski, "Bartleby's Autism: Wandering along Incommunicability," *Cultural Critique* 78 (Spring 2011): 27–59; John Durham Peters, "Broadcasting and Schizophrenia," *Media, Culture & Society* 32, no. 1 (January 2010): 123–40; Amit Pinchevski and John Durham Peters, "Autism and New Media: Disability between Technology and Society," *New Media & Society* (2015), <http://us.sagepub.com>. See also Scott and Bates's chapter on anxiety (and depression) in this volume.
- 22 Julie Livingston, *Debility and the Moral Imagination in Botswana* (Bloomington: Indiana University Press, 2005).
- 23 Donna Haraway, "The Cyborg Manifesto," in *Cyborgs, Simians, and Women* (New York: Routledge, 1991); Jack Linchuan Qiu, *Goodbye iSlave: A Manifesto for Digital Abolition* (Urbana: University of Illinois Press, 2016).
- 24 World Health Organization, *International Statistical Classification of Diseases and Related Health Problems*, 10th ed. (1990), [www.who.int](http://www.who.int).
- 25 Aimee Medeiros, "Size Matters: The History of Growth Charts in Pediatrics," *UCLA Library*, November 6, 2015, [www.library.ucla.edu](http://www.library.ucla.edu).
- 26 Langdon Winner, *The Whale and the Reactor: A Search for Limits in the Age of High Technology* (Chicago: University of Chicago Press, 1986); Harlan Hahn, "Disability and the Urban Environment: A Perspective on Los Angeles," *Environment and Planning D: Society and Space* 4 (1986): 279–88; Michelle Murphy, *Seizing the Means of Reproduction: Entanglements of Feminism, Health, and Technoscience* (Durham, NC: Duke University Press, 2012); Akhil Gupta, *Red Tape: Bureaucracy*,



- Structural Violence, and Poverty in India* (Durham, NC: Duke University Press, 2012); Alper, *Giving Voice*. In addition to Winner's work, readers unfamiliar with the work on technology and agency should consult Madeleine Akrich, "The Description of Technical Objects," in *Shaping Technology, Building Society: Studies in Sociotechnical Change*, ed. Wiebe E. Bijker and John Law (Cambridge, MA: MIT Press, 1992), 205–24; Bruno Latour, *Aramis, or the Love of Technology* (Cambridge, MA: Harvard University Press, 1996); Jennifer Daryl Slack and J. Macgregor Wise, *Culture and Technology: A Primer*, 2nd ed. (New York: Peter Lang, 2014).
- 27 Friedner, *Valuing Deaf Worlds in Urban India*.
  - 28 Jessica Holmes, "Singing beyond Hearing," *Journal of the American Musicological Society* 69, no. 2 (2016): 542–48; George McKay, *Shakin' All Over: Popular Music and Disability* (Ann Arbor: University of Michigan Press, 2013). See also Alex Porco's chapter in this volume.
  - 29 Ellcessor, *Restricted Access*; Lisa Cartwright and Brian Goldfarb, "On the Subject of Neural and Sensory Prosthesis," in *The Prosthetic Impulse: From a Posthuman Present to a Biocultural Future*, ed. Marquard Smith and Joanne Morra, 125–54 (Cambridge, MA: MIT Press, 2006).
  - 30 Garland-Thomson, *Staring*; Cvetkovich, *Depression*.

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