

Sirens/Cyborgs: Sound Technologies and the Musical Body

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## ABSTRACT

### Sirens/Cyborgs: Sound Technologies and the Musical Body

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This dissertation investigates the political stakes of women's work with sound technologies engaging the body since the 1970s by drawing on frameworks and methodologies from music history, sound studies, feminist theory, performance studies, critical theory, and the history of technology. Although the body has been one of the principal subjects of new musicology since the early 1990s, its role in electronic music is still frequently shortchanged. I argue that the way we hear electro-bodily music has been shaped by extra-musical, often male-controlled contexts. I offer a critique of the gendered and racialized foundations of terminology such as "extended," "non-human," and "dis/embodied," which follows these repertoires. In the work of American composers Joan La Barbara, Laurie Anderson, Wendy Carlos, Laetitia Sonami, and Pamela Z, I trace performative interventions in technoscientific paradigms of the late twentieth century.

The voice is perceived as the locus of the musical body and has long been feminized in musical discourse. The first three chapters explore how this discourse is challenged by compositions featuring the processed, broadcast, and synthesized voices of women. I focus on how these works stretch the limits of traditional vocal epistemology and, in turn, engage the bodies of listeners. In the final chapter on musical performance with gesture control, I question the characterization of hand/arm gesture as a "natural"

musical interface and return to the voice, now sampled and mapped onto movement. Drawing on Cyborg feminist frameworks which privilege hybridity and multiplicity, I show that the above composers audit the dominant technoscientific imaginary by constructing musical bodies that are never essentially manifested nor completely erased.

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*For my grandmother Milada*

## Introduction

As Jonathan Sterne reminds us, “the history of sound provides some of the best evidence for a dynamic history of the body because it traverses the nature/culture divide.”<sup>1</sup> The body in music has been a topic of rigorous musicological inquiry only since about 1990 but there are still few models addressing its various encounters with technology. In writings on electronic music in particular, the body is frequently concealed under a rhetorical apparatus that covers up muscular and choreographic processes, technological circuits, and computer algorithms, not to speak of musical decisions, interactions, and forms. Scholarship on electronic music is full of extended, embodied, disembodied, mediated, inhuman, prosthetic, intuitive, and natural systems of technologized music-making. This language not only reflects but also modulates how meaning emerges between bodies, sounds, and listeners and so it requires critical attention.

In this dissertation I demonstrate how these terminologies reproduce deeply embedded epistemological approaches to bodies and technologies stemming from diverse extra-musical contexts in the twentieth century. The study brings together critical histories of sound, audio, and technology on the one hand and feminist musicology interested in the relationship between voice and body and the role of electro-bodily performance on the other. The

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<sup>1</sup> Jonathan Sterne, *The Audible Past: Cultural Origins of Sound Reproduction* (Durham: Duke University Press, 2003), 13.

concepts of the voice/envoicing and the body/embodiment have also been magnetic for a broader set of musicologists and feminist theorists outside of musicology. I investigate how music-technological networks, histories, contexts, and practices complicate and problematize the notion of a natural voice and body, and I give equal consideration to the voices and bodies of performers and listeners. I seek to show that electronic music in fact speaks volumes about the body. To this end, I present four case studies of composition and performance by women in the United States, organized around four kinds of electro-bodily circuits: extended and processed voice, mediated voice, synthesized voice, and gesture control in musical performance.

Language that structures listening to technologized music is often organized around conceptual dualisms such as nature/culture, acoustic/electronic, original/copy, technique/technology, and others. Scholars of electronic music and sound have valuably critiqued such dualistic thinking but the strong gendered and raced underpinnings of these terminologies remain largely unaddressed. One significant contribution of this dissertation is therefore its multilayered critique of the gendered and raced biases of language surrounding technologized music.

In 1994, Suzanne Cusick notably described the “mind/body problem” in music studies, an approach that textualizes music and erases bodily participation from music-making in response to the Modernist phobia of

feminizing and racializing the artform.<sup>2</sup> Although the neglect of human presence, agency, and participation from musicology has seen some remedy since then in the form of musicological studies of performance and listening in classical and popular music, the tendency to erase the body is still the norm in writings on electronic music. Gregory Whitehead's motto "radio bodies are nobodies"<sup>3</sup> illustrates this approach. There is a common assumption that electronic music just *is a certain way* (e.g. disembodied, virtual, abstract, neutral) rather than that listeners are habituated to interpret musical, formal, and aesthetic processes according to deeply embedded technoscientific codes.

The notion of sound as an object is native to modernist conceptions of electronic sound, particularly the postwar French and German schools of composition and research, which have achieved unparalleled canonicity in electronic music history. The dominance of this framework, I argue, has been injurious to electronic music engaging the body as it short-circuits both the phenomenal and the social processes that comprise listening (and engagement with the listener's body), and neglects the particularities of

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<sup>2</sup> Suzanne G. Cusick, "Feminist Theory, Music Theory, and the Mind/Body Problem," *Perspectives of New Music* 32/1 (Winter 1994), 18.

<sup>3</sup> Whitehead is quoted by Allen S. Weiss, *Breathless: Sound Recording, Disembodiment, and the Transformation of Lyrical Nostalgia* (Middletown, CT: Wesleyan University Press, 2002), 19.

human-technological labor from which sounds emerge (whether this is labor in the studio or on stage).

What is more, the idea of sound as object disregards actual music. I propose a listener-based approach to electronic music coupled with close attention to composition/performance design and its technological networks. Furnished with this approach, I seek to address the following questions: What are the electronic sound-codes that prompt particular narratives about electrobodily systems? How does concrete electro-bodily labor – in the music studio, on stage – uphold and/or oppose these narratives? How have composers of electronic music engaged with the body? And what is the value of alternative models of electro-bodily musicality?

I choose to discuss the work of women composers working in the 1970s and 1980s because these decades witnessed significant changes in the music technology market in the United States, defined by a move to mass-production, the outsourcing of labor, and new importing of affordable foreign products. Even the final chapter on live performance with wearable sensors since the mid-1980s to the present engages the music-technological fallout of the 1970s and 80s:<sup>4</sup> a move towards imported, standardized, button-heavy instruments. Moreover, women's composition and performance with sound technologies has been discussed infrequently compared to that of their male

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<sup>4</sup> The introduction of the MIDI standard over the course of the early to mid 1980s, and the increasing capacity of the microprocessor newly enable live performance with electronics.

counterparts. In most written and taught histories of American music, the composers I discuss occupy the margins at best. Consider the cover stories of music technology publications such as *Keyboard* magazine, or the British publication *The Wire* to notice an overarching trend towards male representation. Academic publications do not fare any better – see, for example artists featured in the *Computer Music Journal*, Christoph Cox and Daniel Warner’s edition of *Audio Culture*, or James Saunders’ collection on experimental music.<sup>5</sup> My work thus participates in the project of restoring women to the history of experimental and electronic American music in the late twentieth century.<sup>6</sup>

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<sup>5</sup> Only two out of fifty-seven texts in Christoph Cox and Daniel Warner’s 2004 edition of *Audio Culture: Readings in Modern Music*, and only one of twenty-four chapters in James Saunders’ *The Ashgate Research Companion to Experimental Music* are written by women (by Pauline Oliveros and Susan McClary, and Jennifer Walshe respectively). See *Audio Culture: Readings in Modern Music*, eds. Christoph Cox and Daniel Warner (New York: Continuum, 2004); and *The Ashgate Research Companion to Experimental Music*, ed. James Saunders (Burlington, VT: Ashgate Publishing Company, 2009). For more on this trend, see Paul Théberge, *Any Sound You Can Imagine: Making Music / Consuming Technology* (Hanover, NH: University Press of New England, 1997), 123. Relatedly, as composer Libby Larsen has noted, the movement towards electronic and electroacoustic composition in Composition Departments correlates with decreasing numbers of female graduate students. Brad Garton has likewise acknowledged that women’s participation is prominent at the undergraduate level but drastically drops off at the graduate level at the Columbia Computer Music Center. See Larsen in Tina Milhorn Stallard, “A Conversation with Libby Larsen,” in *Women of Influence in Contemporary Music* (Lanham, Maryland: Scarecrow Press Inc., 2011), 211; Brad Garton, Director of the Computer Music Center at Columbia University, in conversation with author in 2015.

<sup>6</sup> Women see greater representation in recent publications such as the pedagogically oriented Thom Holmes, *Electronic and Experimental Music: Technology, Music, and Culture* fifth edition (New York: Routledge, 2015). See also Nick Collins, Margaret

I am also interested in the 1970s and 1980s because these decades came on the heels of Second Wave Feminism, a movement that was far from enamored with technology. Unfolding in front of the American public was a conversation about the definitions and delineations of womanhood, women's voices, and women's bodies, which were revealed to be boundary-less, negotiated, discursive, legislated, and under-discussion in the United States. Due to the strong gendering of the arena of hi-tech, I believe that the music of composers who belong to a gender category that is more aware, socially speaking, of *being* a gender, can be instructive. I approach "women" not as a global coalition or universal category but instead, following intersectional theory first articulated by Kimberlé Crenshaw and elaborated by Chela Sandoval and Patricia Hill Collins, as one factor of social hierarchy within a larger matrix of structural oppressions.<sup>7</sup> Gender, race, ethnicity, class, sexuality, nationality or immigration status, and other axes of domination interact and converge in the construction of social inequities. Conversely, I seek to mark the functions of privilege in music history: most of the artists I

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Schedel, and Scott Wilson, *Electronic Music* (Cambridge: Cambridge University Press, 2013).

<sup>7</sup> Kimberlé W. Crenshaw, "Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics," *University of Chicago Legal Forum* (1989): 138-67; Patricia Hill Collins, *Black Feminist Thought: Knowledge, Consciousness and the Politics of Empowerment* (New York: Routledge, 2000), 18, 299; Chela Sandoval, *Methodology of the Oppressed* (Minneapolis, MN: University of Minnesota Press, 2000), 41-67.

discuss are White, most of them are cisgender, most of them are classically trained musicians, either American or European, upper middle class, and so on – functions of my own privilege.

I am purposely interested in the music of composers working with signature techniques, one-off effects, and custom-built gear. Such technologies stimulate experimental approaches to musical aesthetics that test the limits of dominant sound-technological and musical practice. Giulia Loli, who performs as DJ Mutamassik, refers to such oppositional discourses as the “incitefulness/insightfulness”<sup>8</sup> of music that carries out cultural and political critique. As Melanie Chilianis asks, “Can sonic practices and gendered materialities enact altered cultural formations and even social forms?”<sup>9</sup> And what are the political stakes of women’s performance with sound technologies engaging the body? Since the 1980s, Donna Haraway has been famously optimistic about the feminist potential of late twentieth-century technologies such as “the silicon chip,” which blurs the “natural and artificial, mind and body, self-developing and externally designed,” and

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<sup>8</sup> Giulia Loli in Tara Rodgers, *Pink Noises: Women on Electronic Music and Sound* (Durham: Duke University Press, 2010), 185.

<sup>9</sup> Melanie Chilianis, “The Body’s Impact on Creative Sonic Practice :: Sonic Practice’s Impact on the Body” (presentation, Sound :: Gender :: Feminism :: Activism, CRiSAP Research Event, London, May 17, 2012). Abstract accessible at [http://hernoise.org/wp-content/uploads/2012/06/Abstracts\\_SGFA\\_17\\_05\\_2012.pdf](http://hernoise.org/wp-content/uploads/2012/06/Abstracts_SGFA_17_05_2012.pdf). Video of presentation accessible on <https://vimeo.com/43806512>.

“physical and non-physical.”<sup>10</sup> Some of the musical performances I describe echo Haraway’s captivation with trends such as the emerging resistance to military contracting in the scientific community in the early 1980s and the outcropping of “Cyborg monsters in feminist science fiction” around the same time.<sup>11</sup> In the work of Joan La Barbara, Laurie Anderson, Wendy Carlos, Laetitia Sonami, and Pamela Z, I identify performative interventions in the technoscientific paradigms that demarcate music, technology, and the body in the late twentieth century.

The musical body frequently gets reduced to the voice: as Emily Wilbourne put it, the voice has become “an unwieldy synecdoche for the body.”<sup>12</sup> In the work of composers discussed in this dissertation, gendered and racialized voices and bodies insinuate themselves into electronic sounds: not clearly, and never as full and essential manifestations, but instead as unrelenting hybrids. Throughout this study I maintain that, counter to common narratives of electronic music history, the body never completely

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<sup>10</sup> Donna J. Haraway, “A Cyborg Manifesto: Science, Technology, and Socialist Feminism in the Late Twentieth Century,” in *Simians, Cyborgs, and Women: The Reinvention of Nature* (London: Free Association Books, 1991), 152-3.

<sup>11</sup> Donna J. Haraway, “Science, Technology, and Socialist Feminism in the 1980s,” *The Postmodern Turn: New Perspectives on Social Theory*, ed. Steven Seidman (Cambridge: Cambridge University Press, 1994), 109. Haraway, “A Cyborg Manifesto,” 180.

<sup>12</sup> Emily Wilbourne, “Lo Schiavetto (1612): Travestied Sound, Ethnic Performance, and the Eloquence of the Body,” *Journal of the American Musicological Society* 63/1 (2010): 5.

disappears from electronic music. Three broad types of technologized voices that challenge the limits of musical vocality are the focus of the first three chapters on extended and processed voice, aurality and mediated voice, and synthesized voice respectively. I understand the relationship of the voice and body as material and relational but not completely defined by either approach.

Chapter 1 surveys historical approaches to women's voices, and explores early vocal work by Joan La Barbara with multitracked and sometimes processed vocals employing extended technique. I argue that technologized voices expose our dogmas and anxieties about the relationship between voice and body (both the performer's and the listener's) ever more readily than classical and popular voices. Chapter 2 looks to the work of Laurie Anderson to argue that the common positing of the voice as the central text of broadcast neglects the fact that broadcast first and foremost organizes, hierarchizes, and isolates listeners. Chapter 3 opens with a critique of modernist theories of listening, which perpetuate the gendered narrative of 'disembodiment' that follows electroacoustic voices. I consider early approaches to vocal synthesis, and particularly the work of Wendy Carlos, who popularized the Vocoder by composing for a unit custom-built for her by Robert Moog in the early 1970s. The flexible identity of "inhuman" and "alien" Others, I argue, permits the composer's gender-queer restoration of the de-essentialized body to electronic music. The final chapter on gesture control in musical performance argues that the prevalent description of

gesture control as “natural” and “intuitive” disintegrates in light of the musically experimental performances of Laetitia Sonami and Pamela Z. Sonami and Z, I argue, reframe the meeting of the performer with her algorithmic and digitized body as a kind of virtuosic intimacy.

Musical experimentation with technology and technique frequently comes up against politicized notions of alterity. Experimental performances of womanhood and personhood often envision the artist as an exotic Other, whether through extended vocal techniques borrowed from non-Western music (Chapter 1), the synthesis of alien voices from space (Chapter 3), the deconstruction of markers of embodiment (Chapter 4), or the broad reference to new musical language (Chapter 1 and 4). The social position of Whiteness occupied by most of the artists I discuss affords a particular encounter with difference from a racially unmarked position. The political energy of experimentalism thus tacitly brushes up against a colonial logic. This attitude is not so much imperial, exploitative, or *colonizing* but instead invested in the progressive project of counter-canoncity. It also stems from the multiculturalism of urban centers such as New York City and the Bay Area. Nevertheless, experimental envisioning of musical difference through the White imaginary of the Other is always necessarily bound up with the historical, political, and affective dimensions of colonial encounter.<sup>13</sup>

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<sup>13</sup> I am thankful to Ana María Ochoa for raising provocative questions about the place and meaning of the colonial in this dissertation, and to Alondra Nelson and George Lewis for encouraging me to think through the ways Whiteness is marked.

Haraway's 1985 theorization of the Cyborg is a generative framework for addressing experimental work with sound technologies engaging the body. Haraway's Cyborg, a joint of machine and organism, audits multiple realities from multiple positions, "reveal[ing] both dominations and possibilities unimaginable from the other vantage point."<sup>14</sup> As such, it is radically non-essential. Sociologist Deborah Lupton values Haraway's work precisely because "it is important [...] to challenge the discourses that privilege certain types of bodily assemblages."<sup>15</sup> Anne Balsamo, on the other hand, famously critiques Donna Haraway's Cyborg framework for "fail[ing] to consider how the cyborg has already been fashioned in our cultural imagination,"<sup>16</sup> and in light of the masculinized and sometimes militarized history of sound technologies, this critique should not be dismissed. Although Haraway does gesture to the Cyborg as the "illegitimate offspring of militarism and patriarchal capitalism," this is only one facet of the Cyborg's multiplicity for her: "illegitimate offspring are often exceedingly unfaithful to their origins," she writes.<sup>17</sup> I argue that Haraway's and Balsamo's Cyborg

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<sup>14</sup> Haraway, "A Cyborg Manifesto," 154.

<sup>15</sup> Deborah Lupton, "Donna Haraway: The Digital Cyborg Assemblage and the New Digital Health Technologies," in *The Palgrave Handbook of Social Theory in Health, Illness and Medicine*, ed. Fran Collyer (New York: Palgrave Macmillan, 2015), 577.

<sup>16</sup> Anne Balsamo, "Reading Cyborgs, Writing Feminism," in *The Gendered Cyborg: A Reader*, eds. Gill Kirkup, Linda Janes, Kathryn Woodward, Fiona Hovenden (New York: Routledge, 2000), 155.

<sup>17</sup> Haraway, "A Cyborg Manifesto," 150.

frameworks are both necessarily at play in electrobodily musical performance. In the work of La Barbara, Anderson, Carlos, Sonami, and Z, however, the dominant technoscientific imaginary described by Balsamo functions primarily as a pivot point for the musical articulation of oppositional discourses.

Balsamo reads Haraway as establishing that “the body is not solely a matter of materiality; nor can it be reductively a matter of discourse.”<sup>18</sup> As such, this dissertation is as much about bodily labor, musical sound, and language. I contribute a layered narrative of technologized labor, from the gendered labor of the voice, across composers’ disavowal of commercial technologies in favor of building one’s own, the tedium of analog synthesis and the physical effort of staged performance, to artists’ thematization of women’s housework and slave labor. It is these various instances of human work and technological process that are frequently hidden behind musical terminology that poses as socially neutral. I am motivated by Zoë Sofia’s reminder about why language matters:

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<sup>18</sup> Anne Balsamo, *Technologies of the Gendered Body: Reading Cyborg Women* (Durham, NC: Duke University Press, 1996), 34. From the perspective of ethnomusicology, Thomas Porcello, Louise Meintjes, Ana María Ochoa, and David W. Samuels have relatedly argued that the body should not be understood in opposition to language: there are “broad areas of overlap and agreement between various approaches to the embodied sensuous nature of human experience and sociability.” See Thomas Porcello et al., “The Reorganization of the Sensory World,” *Annual Review of Anthropology* 39 (2010): 60.

Futures are contested zones, and the language we use to talk about them is possibly more important than we usually realize. [...] although past and future may be of little interest to disenchanting veterans of the new left, both history and futurity are very much alive and contested by members of the newer social movements (such as feminism, environmentalism, and land rights).<sup>19</sup>

Equally, music matters. Sound matters. My close engagement with musical forms and especially timbral dynamics builds on studies such as Susan McClary's analysis of the instrumental background Laurie Anderson's songs,<sup>20</sup> George Lewis' hearing of Pamela Z's use of digital delay as Afrofuturist,<sup>21</sup> and Hannah Bosma's attention to Cathy Berberian's voice in Luciano Berio's *Thema (Ommagio a Joyce)* in terms of the singer's recognizable technical uniqueness.<sup>22</sup> Like these authors, I seek to address how technological processes and musical forms engage the literal and

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<sup>19</sup> Zoe Sofia, "Contested Zones: Futurity and Technological Art," in *Women, Art, and Technology*, ed. Judy Malloy (Cambridge, MA: MIT Press, 2003), 503-504.

<sup>20</sup> Susan McClary, *Feminine Endings: Music, Gender, and Sexuality* (Minneapolis: University of Minnesota Press, [1991] 2002). See especially Chapter 6, "This is Not a Story My People Tell: Musical Time and Space According to Laurie Anderson."

<sup>21</sup> George E. Lewis, "The Virtual Discourses of Pamela Z," *Journal of the Society for American Music* 1/1 (2007): 55-77.

<sup>22</sup> Hannah Bosma, "Thema (Ommagio a Joyce): A Listening Experience as Homage to Cathy Berberian," in *Cathy Berberian: Pioneer of Contemporary Vocality*, eds. Francesca Placanica, Pamela Karantonis, Pieter Verstraete, and Anne Sivuoja-Kauppala (Burlington, VT: Ashgate, 2014), 97-120.

figurative body as variously subaltern, digitized, racialized, pathologized, and cyborg.

## Chapter One ♦ Joan La Barbara's Cyborg Manifesto

This chapter lays the theoretical background for the dissertation, surveying perspectives on women's performance with sound technologies and scholars' overwhelming focus on female vocality. I posit the changing morphology of the ancient Siren as injurious to historical attitudes to women's vocality, and the emergence of audibly technologized Cyborg voices as coming to the Siren's epistemological rescue. In my understanding, not only electroacoustic voices but also acoustic extended techniques constitute Cyborg vocality, in spite of the cleaving of the two in discourse and practice. I demonstrate how the work of Joan La Barbara, a classically trained vocalist who has employed extended techniques and electronic processing in her compositions, reconciles feminist efforts to 'give women a voice' and at the same time to de-essentialize vocality.

*Voice is the Original Instrument*, declared composer and vocalist Joan La Barbara in 1976 with the release of an eponymous album of three vocal works. In 2003, she recycled the title for the release of a two-disc box set including additional vocal etudes and original compositions from the seventies and eighties.<sup>1</sup> The full-sentence title of the album as well as La Barbara's liner notes promised "a statement of purpose and a manifesto." This impression is somewhat deceiving, however. La Barbara's work consistently complicates what "voice" is, where we might look for its "origin," and the sense in which voice is and is not "instrumental." The 2003 collection includes experimental etudes for solo acoustic voice, a number of pieces with

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<sup>1</sup> Joan La Barbara, "Album Notes: Voice is the Original Instrument," *Voice is the Original Instrument*, 2003 by Lovely Music Ltd., CD 3003, two compact discs. The box set was originally released as a series of LPs in the 1970s and early 1980s on La Barbara's own label Wizard Records. See Joan La Barbara, *Voice Is The Original Instrument*, 1976 by Wizard Records, RVW-2266, LP.

multitracked voices, and a handful of compositions that employ electronic treatments of the acoustically extended voice. “Vocal Extensions,” composed in 1975 and included on the 1976 release, falls into the last category: La Barbara uses sounds that are recognizably vocal but resolutely non-classical, and builds the eighteen-minute form of the piece out of the ebb and flow of electronic pressure on vocal limits and vocal simulacra of electronic processes. Electronics intensify vocal sibilance into hiss, high-pitched vowels into electronic beeps, rapid repetition into even more rapid reproduction, and multiphonics into multidubbing. A sparse central section features a melodically erratic solo line treated with moments of reverberation and echo, which transforms into layered speech-like phonemes, whispers, and squeaks that sound like a poorly oiled hand crank. At the end, the electroacoustic hybrid section of the beginning returns. Through “Vocal Extensions,” the listener marvels less at the capacity of electronic manipulation to *extend* the voice and more at the quasi-electronic phenomena of La Barbara’s acoustic techniques. It is difficult to tell where the acoustic ends and the electronic begins, where sounds come from, and how they are being controlled. It would be wrong to say electronic processes are applied *to* the voice in “Vocal Extensions” – rather, the voice encroaches upon, indeed directs the electronic.

Extended voice bears on both classical and technologized vocality. It follows that the three have been in a frictional relationship in music of the twentieth century. In this chapter, I propose that “Vocal Extensions” and

other hybrid, electroacoustic treatments of the voice critically negotiate the epistemological, political, and social forces that underlie the tension between classical, extended, and electroacoustic voices. Because the sung voice is particularly feminized in music history, I will also address the epistemological interaction of song, speech, and language. For the same reason I am especially interested in the work of women composers, chiefly the work of Joan La Barbara from the 1970s within the context of the Second Wave Feminist Movement in the United States. Extended voices that are also electronically processed lie at the edges of avant-garde vocal work by women composers and, some would argue, are only marginally vocal. However, as Timothy D. Taylor argues in his monograph on sound technologies, “the margins often have much to say about the centers that those in the centers might not be aware of.”<sup>2</sup>

### **The Vocal Body**

First, I shall clarify how musicologists generally understand the terms, techniques, and organologies of classical, extended, and processed voice. Classical voice is a category comprising a range of singing styles and voice types used in opera, recital, and concert singing of the Common Practice Era, as well as musical theater of the twentieth century. The discursive and institutional integration of these many kinds of classical voices in textbooks

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<sup>2</sup> Timothy D. Taylor, *Strange Sounds: Music, Technology and Culture* (New York: Routledge, 2001), 9.

and conservatories alike has only augmented the cultural cache of classical voice. In contrast, so-called extended vocal techniques comprise non-traditional acoustic techniques that produce sounds and timbres largely extraneous to vocal writing of the common practice era. Finally, when I refer to the electronic processing of vocal audio, I mean the reconfiguration or alteration of analog media such as tape or of a digital description of sound file or live sound to achieve a desired timbral effect (such as distortion) or structural process (such as a multitracking or delay) outside of the scope of acoustic and/or classical voice. Audio processing of the voice thus collapses the Romantic opposition of culture and technology, which still defines contemporary debates about instrumentality, virtuosity, and artistic authenticity, and which echoes in the discursive separation of mind and body in music.<sup>3</sup>

The vocal tract is often positioned as the origin of the voice but, as numerous scholars have argued in recent years, to name the limits of vocal production is organologically impossible and musicologically inadequate. Holly Watkins and Melina Esse refer to “the failure of the machine analogy – all the close-ups of larynx, tongue, and glottis that break the body down to its parts” – that does not account for the “broader, and richly semiotic, practice

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<sup>3</sup> Eric Salzman and Thomas Dési, *The New Music Theater: Seeing the Voice, Hearing the Body* (Oxford: Oxford University Press, 2008), 21-27. See also Andrew Murphie and John Potts, *Culture & Technology* (New York: Palgrave Macmillan, 2003), 1-9.

of somatic introspection.”<sup>4</sup> English experimental vocalist Trevor Wishart in fact uses diagrams of the sound-making tracts of organisms from crickets, across birds, to humans to demonstrate the particular complexity, indeed impracticality, of human vocal organology.<sup>5</sup> Using the opposite tactic, two large color photographs of the pink, glistening mucous membranes of “Vocal chords opened and closed” in Laurie Anderson’s 1994 published retrospective engage the shortcomings of vocal tract diagrams viscerally.<sup>6</sup> Kathryn Heidemann’s new analytical model aimed at the voice accounts for the blend of bodily, semiotic, and social interpretive processes that are at stake in listening to the voice.<sup>7</sup> Nina Eidsheim’s work on classical vocal pedagogy as a Whitening bodily discipline demonstrates that phenomenological approaches are inextricable from socio-anthropological concerns.<sup>8</sup> Finally, Emily Wilbourne shows how operatic disguise, cross-

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<sup>4</sup> Holly Watkins and Melina Esse, “Down with Disembodiment; or, Musicology and the Material Turn,” *Women and Music* 19 (2015): 166.

<sup>5</sup> Trevor Wishart, *On Sonic Art* (Amsterdam: Harwood Academic Publishers, 1996), 239-262.

<sup>6</sup> Laurie Anderson, *Stories from the Nerve Bible: A Retrospective 1972-1992* (New York: Harper Collins, 1994), 260.

<sup>7</sup> Kathryn E. Heidemann, “Hearing Women’s Voices in Popular Song: Analyzing Sound and Identity in Country and Soul” (PhD diss., Columbia University, 2014).

<sup>8</sup> Nina Sun Eidsheim, “Race and the Aesthetics of Vocal Timbre,” in *Rethinking Difference in Music Scholarship*, eds. Olivia Bloechl, Melanie Lowe, and Jeffrey Kallberg (Cambridge: Cambridge University Press, 2015), 338-365.

dressing, and exoticism can create productive points of fissure in listeners' tendency, otherwise dominant, to hear the voice as betraying the body.<sup>9</sup>

The ever-indefinite borders of the voice necessitate a historicized understanding of extended vocal technique, a classical- and Eurocentric term disliked by many vocalists. South African experimental vocalist Roy Hart, whom Eric Salzman and Thomas Dési position as a pioneer of extended vocality, rejected the term "extended" because he viewed the technique as "part of the natural, if neglected, human vocal repertoire."<sup>10</sup> Composer and vocalist Pamela Z concurs with this assessment:

The term "extended vocal techniques" seems almost Eurocentric in that it assumes that using the voice in the western way is normal and going outside of that is extending it. A Tuvan singer does not think of themselves as using extended technique. They are just singing. It kind of reminds me of how our society sees being white and male as the normal thing and everybody else as the exception, so that women are just "extended" men!<sup>11</sup>

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<sup>9</sup> Emily Wilbourne, "Lo Schiavetto (1612): Travestied Sound, Ethnic Performance, and the Eloquence of the Body," *Journal of the American Musicological Society* 63/1 (2010): 5.

<sup>10</sup> Hart quoted in Salzman and Dési, *The New Music Theater*, 275 n1.

<sup>11</sup> Kathy Kennedy, "A Few Facets of Pamela Z," *Musicworks* 76 (Spring 2000). Accessed on *Pamela Z* on December 12, 2012, <http://www.pamelaz.com/musicworks.html>.

The tension between classical, extended, and processed voices is best encapsulated by the distinctions and continuations, both discursive and material, between technology and technique – terms with entwined histories. Jonathan Sterne defines technique as “a learned skill, a set of repeatable activities within a limited number of framed contexts,” and as connoting “practice, virtuosity, and the possibility of failure and accident.”<sup>12</sup> Technologies, Sterne argues, do not extend our bodies as is often said; instead, they extend the techniques we have already practiced and learned. In that sense, they do not attach to but rather continue bodily practice. Sterne applies his definition towards his conceptualization of “audile technique,”<sup>13</sup> but it is equally valuable in thinking about performance. Indeed, the modern body, as described by Michel Foucault, has been disciplined into being.<sup>14</sup> Multi-technical performance reveals that the ostensible boundaries of the vocal body are drawn and redrawn precisely by discipline and technology. It is generative to place Sterne’s model in conversation with Judith Butler’s homologous theory of performativity, in which she describes gender as “a set of repeated acts within a highly rigid regulatory frame that congeal over time

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<sup>12</sup> Jonathan Sterne, *The Audible Past: Cultural Origins of Sound Reproduction* (Durham: Duke University Press, 2003), 92.

<sup>13</sup> Sterne, *The Audible Past*, 93-95.

<sup>14</sup> Michel Foucault, *Discipline And Punish: The Birth of the Prison*, trans. Alan Sheridan (New York: Vintage, 1977), 136. See also his *The History of Sexuality: An Introduction, Volume 1* (New York: Knopf Doubleday Publishing Group, 1990), 139-140.

to produce the appearance of substance.”<sup>15</sup> If technologies extend technique, extended technique is a kind of performative technology.

“The disciplined body,” writes Cynthia Lowenthal, “is most apparent when positioned *against* [an] unruly body, in their difference, they are mutually constitutive [sic].”<sup>16</sup> Extended voice is unruly in the sense that it articulates the outside of classical vocal discipline. The performativity of the voice is thus most apparent in works and performances that juxtapose, hybridize, and transform spoken, classical, extended, and processed voice. Katharine Norman has similarly argued that sound pieces that engage the meanings of several media maximize the socially critical powers of the open text.<sup>17</sup> Since “uncivilized bodies were [and are] often assumed to be female bodies,”<sup>18</sup> any inquiry into extended and hybrid voices should happen through a gender-attuned lens. Indeed, as I will show, the frictions among different types of musical voices are largely built along the axis of gender stemming from the gendered build of Western vocal epistemology.

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<sup>15</sup> Judith Butler, *Gender Trouble: Feminism and the Subversion of Identity* (New York: Routledge, 1990), 33.

<sup>16</sup> Cynthia Lowenthal, *Performing Identities on the Restoration Stage* (Carbondale, IL: Southern Illinois University Press, 2003), 18.

<sup>17</sup> Katharine Norman, *Sounding Art: Eight Literary Excursions through Electronic Music* (Burlington, VT: Ashgate Publishing Company, 2004), 106.

<sup>18</sup> Lowenthal, *Performing Identities on the Restoration Stage*, 18.

## Sirens, Cyborgs, Talking Dolls

I understand the changing morphology of the Siren as an allegory for the way women's voices, spoken and sung, have been heard in Western modernity.

The early mythological Sirens of Homer's *Odyssey* are monstrous, murderous storytellers singing about the Trojan War surrounded by bodies of their previous victims. Homeric depictions show the Sirens most often as half-women, half-bird, with the head of a woman and the lower body of a bird with scaly feet.<sup>19</sup> Homer's two Sirens are a queer pair living together in the middle of the sea away from society, and their voices give deathly sexual pleasure to all within earshot. As Adriana Cavarero has argued, that the Sirens are not only irresistible but also all-knowing narrators is key for Homer, because their omniscience and magnetism is a foil for the genre of the epic itself.<sup>20</sup> However, as Cavarero demonstrates, the Siren is stripped of speech beautified, objectified, and feminized in the course of Western vocal epistemology. In the modern imaginary, the Siren is represented as a beautiful mermaid singing non-semantic songs, still a seductress in the aural

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<sup>19</sup> Adriana Cavarero, *For More than One Voice: Toward a Philosophy of Vocal Expression* (Stanford, CA: Stanford University Press, 2005), 106-107. Judith Peraino brings attention to a bell krater from Paestum, Italy attributed to a Python Painter, ca. 330 B.C.E.. On it, two Sirens are rendered with the upper bodies of women and the lower bodies of birds, levitating above Odysseus' ship holding a drum and a harp respectively, while fish swim underneath the ship. Judith Peraino, *Listening to the Sirens: Musical Technologies of Queer Identity from Homer to Hedwig* (Berkeley: University of California Press, 2006), 17 Fig. 1.

<sup>20</sup> Cavarero, *For More than One Voice*, 105. Peraino makes the same claim in Peraino, *Listening to the Sirens*, 15.

domain but no longer an omniscient and verbal one. Her transformation from half-bird, a vocal animal, to half-fish, an animal that symbolizes muteness, is a visual confirmation of her diminished power. The fate of the Siren testifies to the modern understanding of female vocality: non-semantic, sexual, dangerous, and politically mute. As bell hooks deplures, women who sing in certain contexts are often perceived as “less theoretical” and “a spectacle.”<sup>21</sup> Adorno and Horkheimer reference the distortion of the Siren in the *Dialectic of Enlightenment*:

The sirens have their own quality, but in primitive bourgeois history it is neutralized to become merely the wistful longing of the passer-by. Since Odysseus' successful-unsuccessful encounter with the Sirens all songs have been affected, and Western music as a whole suffers from the contradiction of song in civilization – song which nevertheless proclaims the emotional power of all art music [sic].<sup>22</sup>

Mary Ann Smart frames the Siren as a victim of philosophy,<sup>23</sup> and Cavarero herself mourns the modern fate of the Siren through two modern anti-

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<sup>21</sup> bell hooks in Mary Childers and bell hooks, “A Conversation about Race and Class,” *Conflicts in Feminism*, eds. Marianne Hirsch and Evelyn Fox Keller (New York: Routledge, 1990), 78.

<sup>22</sup> Theodor W. Adorno and Max Horkheimer, *Dialectic of Enlightenment*, trans. John Cumming (New York: Verso, 1997), 58-60.

<sup>23</sup> Mary Ann Smart, “Theorizing Gender, Culture, and Music,” *Women and Music* 9 (2005): 106.

monuments to femininity that portray their silencing: René Magritte's surrealist painting of a beached creature with the head of a fish and a nude female lower body aptly called *The Collective Invention* and Franz Kafka's story about Sirens rendered dumb by Odysseus' passing visual acknowledgement, a defeat of the female vocal by the male gaze.<sup>24</sup> Magritte's painting also depicts the modern Siren as White – a characterization that echoes through Hans Christian Andersen's fairytale "The Little Mermaid" (1837) and its adaptations into opera by Antonín Dvořák (*Rusalka*, 1901) and Germaine Tailleferre (*La Petite Sirène*, 1957), as well as the 1989 Walt Disney adaptation and deformation of the story, where the loss of the voice is the explicit price the Siren's role in a heterosexist love plot. This reiterated Whiteness of the modern Siren irretrievably aligns her voice with Western vocality.

The modern morphology of the Siren captures the gendered understanding of vocal embodiment. As Suzanne Cusick points out, modernity and with it musicology treat "music, an art which self-evidently does not exist until bodies make it and/or receive it [...] as if it were *mind-mind* game."<sup>25</sup> Carolyn Abbate has similarly described opera studies as a field

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<sup>24</sup> Cavarero, *For More than One Voice*, 109-111. Franz Kafka, "The Silence of the Sirens," in *The Complete Stories* (New York: Schocken Books, 1971).

<sup>25</sup> Suzanne G. Cusick, "Feminist Theory, Music Theory, and the Mind/Body Problem," *Perspectives of New Music* 32/1 (Winter 1994): 16. See also Susan McClary, *Feminine Endings: Music, Gender, and Sexuality* (Minneapolis: University of Minnesota Press, [1991] 2002), 23-25, 53-4, 136-39.

that is “deeply invested in theories of vocal disembodiment,” which is to say the discursive textualization of the voice.<sup>26</sup> Finally, Thomas Porcello, Louise Meintjes, Ana María Ochoa, and David W. Samuels describe the ethnomusicological perception of *language* as something “transferred from the head of one individual into the head of another,” while most instances of language are vocal.<sup>27</sup> The systematic textualization of voice and language comes with a gendered caveat, however: the voices of women are mostly described as safely and necessarily embodied, and any process that suggests otherwise (vocal power, mediation, processing) invites speculations about pathology and excess, often with sexual overtones of pleasure and danger that also conveniently play out in the plots of many operas.<sup>28</sup> Michelle Duncan attributes “the conviction that the operatic voice operates primarily on the registers of excess and lack and that it is both immaterial and disembodied” to the sway of Lacanian psychoanalysis.<sup>29</sup> The male domination of musical modernism and postwar electronic music, where the

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<sup>26</sup> Michelle Duncan, “The Operatic Scandal of the Singing Body: Voice, Presence, Performativity,” *Cambridge Opera Journal* 16/3 (Nov. 2004): 285.

<sup>27</sup> Thomas Porcello et al., “The Reorganization of the Sensory World,” *Annual Review of Anthropology* 39 (2010): 60.

<sup>28</sup> See Catherine Clément, *Opera, Or The Undoing of Women* (Minneapolis: University of Minnesota Press, 1999).

<sup>29</sup> Duncan, “The Operatic Scandal of the Singing Body,” 284.

fantasy of the mind-mind game found its apotheosis, certainly did not help de-pathologize the non-normative female vocal.

The advent of technologies of recording and broadcast at the beginning of the twentieth century provides reliable testimony about the gendered rules of vocal disembodiment and subject-object relationality. Thomas Edison himself believed that tremolo and vibrato, techniques more apparent in women's classical voices, were vocal defects because these vocal techniques did not play back clearly on early phonographs, which could not render sudden jumps in pressure with high fidelity.<sup>30</sup> In 1888, the public had rejected his invention of the first singing doll using the "oldest American-made recording of a woman's voice that we can listen to today:"<sup>31</sup> the low-fidelity recording of "Twinkle Twinkle Little Star" emanated from the doll's humanoid body, but the voice "seemed to horrify the public and [the product] was quickly pulled off the market."<sup>32</sup> If public phobias are reliable indicators of subversive ideas, what social threat did Edison's doll pose exactly? I

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<sup>30</sup> Edison also preferred "low tones" and moderate dynamics, and hated "guttural vocal sounds – and especially breathing." Allen S. Weiss, *Breathless: Sound Recording, Disembodiment, and the Transformation of Lyrical Nostalgia* (Middletown, CT: Wesleyan University Press, 2002), 96.

<sup>31</sup> Josh Lederman, "1888 Edison Recording May Be 1<sup>st</sup> Talking Doll Try," *Washington Times* Associated Press, July 14, 2011, accessed December 15, 2012, <http://www.washingtontimes.com/news/2011/jul/14/1888-edison-recording-may-be-1st-talking-doll-try/>.

<sup>32</sup> Sharon M. Scott, *Toys and American Culture: An Encyclopedia* (Santa Barbara, CA: ABC-CLIO, 2010), 60.

nominate its low fidelity, a distortion that audibly cleaves the perceived unity of voice and body as significant in this regard. A generation later in 1927, Adorno still deemed women's voices unfit for reproduction in a veiled attempt to separate the "natural" female voice from masculine technology, making the argument that "in order to become unfettered, the female voice requires the physical appearance of the body that carries it."<sup>33</sup> Adorno, however, also involuntarily drew attention to the social threat of reproduced voice as ideologically malleable: on one hand, he called the gramophone a "piece of bourgeois furniture" and a plinth for the "artistic photograph of the divorced wife with the baby," but on the other, he saw "the downtrodden gramophone horns assert themselves as proletarian loudspeakers."<sup>34</sup> Aside from distortion, the resistance to recording women's voices thus also arguably came from the uncertain power of reproduction that had exempted the voice from the perceived constraints of a body that would have otherwise been socially (dis)qualified as inferior.

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<sup>33</sup> Adorno cited in Barbara Engh, "Adorno and the Sirens: Telephono-graphic Bodies," in *Embodied Voices: Female Vocality in Western Culture*, eds. Leslie Dunn and Nancy Jones (Cambridge: Cambridge University Press, 1994), 128. Elsewhere, Engh goes so far as to say that the phonograph "represents an anthropological revolution [...] – not just another in a series of technological innovations, but one which profoundly interrupts and problematizes what it means to be human. The phonograph dissociated the voice and embodied consciousness, which formerly had been thought to be so coterminous as to virtually define each other." Barbara Engh, "After 'His Master's Voice,'" *New Formations* 38 (1999): 54.

<sup>34</sup> Theodor W. Adorno, "The Curves of the Needle," trans. Thomas Y. Levin, *October* 55 (Winter 1990): 52.

Roland Barthes, who is perhaps the most prominent proponent of the idea that the sonic properties of a voice are equal to its meaning, still trusted that the voice manifests the body.<sup>35</sup> Cavarero similarly reinterpreted the Aristotelian concept of *phone semantike* to revocalize language and thought (*logos*). In contrast to Barthes, however, she considers the voice “between the mouth and the ear” as relational, signifying uniqueness of all speakers and delimiting new “spaces for the taking-place of politics.”<sup>36</sup> Her relational vocal order critiques traditional philosophy, for which “uniqueness is epistemologically inappropriate.”<sup>37</sup> Her ethics of uniqueness, Ryan Dohoney has noted, refers not to the acoustic exhibition of a speaker’s body but rather the unrepeatability of every person’s presence within the architecture of mutuality inherent in the voice – an ethical ideal that recognizes difference.<sup>38</sup> Analyzing Björk’s electrovocality, Jennifer Iverson has acknowledged that music accentuating vocal reciprocity can intimidate listeners:

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<sup>35</sup> Roland Barthes, “Grain of the Voice,” in *Image, Music, Text*, trans. Stephen Heath (New York: Hill and Wang, 1977 [1972]).

<sup>36</sup> Ryan Dohoney, “An Antidote to Metaphysics: Adriana Cavarero’s Vocal Philosophy,” *Women and Music* 15 (2011): 73. In a recent colloquy on the voice, Martha Feldman maintains the currency of the relational voice in musicology. Martha Feldman, “The Interstitial Voice: An Opening,” *Colloquy Why Voice Now? Journal of the American Musicological Society* 68/3 (2015): 658.

<sup>37</sup> Cavarero, *For More than One Voice*, 10.

<sup>38</sup> Dohoney, “An Antidote to Metaphysics,” 76.

The idea that the Other is always already present in the voice [...] is on its face a threatening thought. But it does not have to be so. There is a real opportunity in accepting the porous nature of the voice.<sup>39</sup>

Edison's doll was the genealogical precedent of Chatty Cathy, a toy phenomenon of the 1960s that puts pressure on Cavarero's regime of vocal relationality.<sup>40</sup> By the 1960s, the original purpose of recordings *to record* receded to the background in favor of the more commercially viable *to reproduce*, and so women's recorded voices were incorporated into the plot of musical capitalism. Upon the pull of a string, Chatty Cathy delivered an affectionate phrase, question, or request. The string wound a coil that set off one of eleven low-fidelity phonograph recordings housed inside the doll. In Mattel's 1960s television advertisements, her utterances are contextually on point but in real (play)time she is uncompromisingly indeterminate – a fledging remainder of her antecedent's monstrosity. Listeners to Chatty Cathy learn the sanctioned uses of the female voice: to compliment, to ask innocent questions, to ask for attention, and most importantly, speak only when asked and always have something nice to say. The doll's name nevertheless became a sexist slur leveled at outspoken women: female

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<sup>39</sup> Jennifer Iverson, "Mechanized Bodies: Technology and Supplements in Björk's *Electronica*," in *The Oxford Handbook of Music and Disability Studies*, eds. Blake Howe, Stephanie Jensen-Moulton, Neil Lerner, and Joseph Straus (Oxford: Oxford University Press, 2015), 167.

<sup>40</sup> Scott, *Toys and American Culture*, 60-61.

vocality had once again been dealt with, another Siren silenced. While the horrified listeners to Edison's doll were confronted with an untenable reconfiguration of relationships of voice to body and song to gender, Chatty Cathy introduced a new, sanctioned regime of vocal reciprocity that both challenged and affirmed Cavarero's understanding of vocal uniqueness by introducing an inanimate vocal object that is nevertheless understood as a subject.

Ryan Dohoney has valuably built on Cavarero's work, which is scant on actual encounters with sound. He stands up for tectonic moments in the reception of vocal sounds, performances that go so far in the way of *phone* that *logos* cannot be recovered anymore, experimental voices, and voices that are technologically mediated. As one of Dohoney's students had suggested upon hearing Meredith Monk use extended techniques, the voice "became monstrous and it snapped off."<sup>41</sup> Can extended and technologized voices such as the distorted voice of Edison's doll come to the Siren's epistemological rescue by taking Cavarero's *phone semantike* to and past its limits? Dohoney's interest in musical performance that "acts otherwise"<sup>42</sup> resonates with Wishart's interest in voices that offer an "entirely different perspective"<sup>43</sup> on utterance – the locus of *phone semantike*. As Wishart argues, electroacoustic

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<sup>41</sup> Dohoney, "An Antidote to Metaphysics," 82.

<sup>42</sup> Dohoney, "An Antidote to Metaphysics," 80.

<sup>43</sup> Wishart, *On Sonic Art*, 262.

vocality uniquely allows composers to “play with the 'utteranceness' of a sound-object.”<sup>44</sup> He continues:

This aspect of the electro-acoustic medium is another feature contributing to its potentially dreamlike quality, the creation of an artificial universe in which our conventional presuppositions are called into question and where we may be brought to see the world from an entirely different perspective.

A number of feminist music scholars have explored Donna Haraway's framework of the Cyborg in trying to address music-technological assemblages, particularly voices. Hannah Bosma's examination of the gendered division of labor between male composers of electroacoustic music and female vocalists, and Freya Jarman-Ivens' inquiry into vocal failure and acoustic and electronic music technologies are two representative examples.<sup>45</sup> Cyborg frameworks regard nature and technoculture as concomitant rather than separate,<sup>46</sup> each “reveal[ing] both dominations and possibilities unimaginable from the other vantage point,” as Haraway put it

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<sup>44</sup> Wishart, *On Sonic Art*, 262.

<sup>45</sup> Hannah Bosma, “Bodies of Evidence, Singing Cyborgs and Other Gender Issues in Electrovoical Music,” *Organised Sound* 8/1 (2003): 5-17. Freya Jarman-Ivens, *Queer Voices: Technologies, Vocalities, and the Musical Flaw* (New York: Palgrave Macmillan, 2011).

<sup>46</sup> Donna J. Haraway, “A Cyborg Manifesto: Science, Technology, and Socialist Feminism in the Late Twentieth Century,” in *Simians, Cyborgs, and Women: The Reinvention of Nature* (London: Free Association Books, 1991), 153.

in her 1991 “Cyborg Manifesto.”<sup>47</sup> Haraway describes the Cyborg as “a cybernetic organism, a hybrid of machine and organism, a creature of social reality as well as a creature of fiction. Social reality is lived social relations, our most important political construction, a world-changing fiction.”<sup>48</sup> The manifesto is, Haraway says, “an argument for *pleasure* in the confusion of boundaries and for *responsibility* in their construction.”<sup>49</sup> It is very much in these terms – that is, the terms of “fiction”, “political construction” and “social relation,” which blend so easily in the musical realm, and the terms of “pleasure” and “responsibility” – that I hear La Barbara’s work. *Voice is the Original Instrument* is not, as I argue, a manifesto in a traditional sense. It is, however, a Cyborg Manifesto insofar as it imagines multivocality and vocal hybridity as a strategic confusion of vocal boundaries and bodily identities. For Haraway, the alterity of Cyborg monsters that occupy the limits of our imagination is more productive than the binary categories that structure our worldview, and La Barbara’s vocal escape from categorization does exactly that.

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<sup>47</sup> Haraway, “A Cyborg Manifesto,” 154.

<sup>48</sup> Haraway, “A Cyborg Manifesto,” 149.

<sup>49</sup> Haraway, “A Cyborg Manifesto,” 150.

## **Berberian, La Barbara, and the Female Vocal**

Pamela Z, whose work is treated in detail in Chapter 4 of this dissertation, has drawn attention to the fact that women composer-performers who use the voice in avant-garde experimental music receive more attention for their work than either their gender-counterparts using the voice or than women instrumentalists, particularly those using electronic/digital instruments.<sup>50</sup> Lara Pellegrinelli has documented a similar schism in jazz, where singing has been marginalized, gendered, and consequently separated out from mainstream jazz history.<sup>51</sup> The perceived appropriateness of the voice as a means of expression for women in music, and electronic music in particular, has 1) rendered the voice a crucial site of negotiating women's musicality, 2) contributed to the historical neglect of women in electronic music who do not perform with the voice,<sup>52</sup> and 3) conversely rewarded women who do perform vocally. Z's testimony that "women are often much more comfortable using their voices (and bodies) in untested ways" in

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<sup>50</sup> Pamela Z, "A Tool is a Tool," in *Women, Art and Technology*, ed. Judy Malloy (Cambridge: The MIT Press, 2003), 357. Hannah Bosma also speculates about possible reasons for the lack of electroacoustic compositions featuring male voices in Bosma, "Bodies of Evidence," 14.

<sup>51</sup> Lara V. Pellegrinelli, "The Song Is Who? Locating Singers on the Jazz Scene" (PhD diss., Harvard University, 2005), 8.

<sup>52</sup> Chapter 4 of this dissertation addresses the work of Pamela Z, Laetitia Sonami, and a number of other composers who perform with body-bound gesture controllers to trigger electronic processes in performance.

performance workshops speaks to the last point.<sup>53</sup> Although women are encouraged to perform with the voice, this voice is expected to manifest the gendered performing body. To engage this dogma, many experimental vocalists – La Barbara among them – employ musical, discursive, performative, and technological strategies that still engage the voice as relational, intimate, and bodily, but challenge its essential embodiment.

In the post-war American avant-garde, there are indeed many women experimenting with the voice. Composer-performers such as Iva Bittova and Meredith Monk have pushed extended voice far afield from classical vocality, often drawing on folk idioms as inspiration for new sounds. Aside from folk influences, as Allen Weiss argues, the “linguistic aberrations” that we hear in experimental vocal work of the twentieth century – techniques such as “glossolalia, dissonance, cacophony, the expansion of vocal timbre, and the invention of pseudo-languages – are inflected or infected by recording techniques.”<sup>54</sup> Chris Salter echoes this sentiment, writing that “by now, it is more or less accepted that [...] studio-based techniques incalculably changed acoustic creation and listening practices.”<sup>55</sup> Although Monk and Bittova mostly perform acoustically (or at most with simple amplification) and use

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<sup>53</sup> Pamela Z, “A Tool is a Tool,” 357.

<sup>54</sup> Weiss, *Breathless*, 83.

<sup>55</sup> Chris Salter, *Entangled: Technology and the Transformation of Performance* (Cambridge: The MIT Press, 2010), 181.

electronic processing only very occasionally, Monk's "Duet for Voice and Echoplex" from her album *Beginnings* recorded between 1966 and 1980 treats the voice with a common tape delay effect, producing a texture that is heard again in "Wa-Ohs," a section of *Dolmen Music* (1981) for the three male singers. Here, the voices of Paul Langland, Robert Een, and Julius Eastman produce a similar sound effect evocative of a "Jew's harp sound."<sup>56</sup> As Monk has said about this early foray into electronics, "I've realized that the voice can do almost anything that electronics can do. I've stayed very much away from electronics [since then]."<sup>57</sup> Like La Barbara, Monk has described her voice as an instrument:

One day, I had this revelation that the voice could be like an instrument. I didn't have to do words, and it could be male and female, animal, vegetable, mineral. There could be landscape, characters, textures.<sup>58</sup>

La Barbara's and Monk's notion that the voice could be an instrument, not to speak of "male and female, animal, vegetable, mineral," rhetorically distances the voice from the body as an object of control, of technique. Additionally,

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<sup>56</sup> David Sterritt, "Notes: Meredith Monk," in *Meredith Monk*, ed. Deborah Jowitt (Baltimore: The Johns Hopkins University Press, 1997), 107.

<sup>57</sup> Meredith Monk, "Voices/Visions: An Interview with Meredith Monk," interview by Edward Strickland, in *Meredith Monk*, ed. Deborah Jowitt (Baltimore: The Johns Hopkins University Press, 1997), 138.

<sup>58</sup> Monk quoted in Zachary Woolfe, "A Singular World That Won't Fade Away," *New York Times*, November 30, 2014, AR1.

Monk's reference to the voice as a source of infinite sonic plasticity is evocative of the theoretically limitless sonic possibility achievable through synthesized sound. The cover of La Barbara's early album *Tapesongs* (1978) shows the composer-vocalist dressed in a cascading gown made of unreeled tape.<sup>59</sup> The image provides a counterpoint to a gown that might have been worn by a female opera singer on a solo album, and it illustrates La Barbara's appeal to instrumental-technological vocality.

Other composers set classical voices within electroacoustic textures. A representative example is *Study for Voice and Tape* (1968) by Alice Shields, which features her trained mezzo-soprano singing long notes within a texture of synthesized sounds composed on the Buchla synthesizer from the Columbia-Princeton Electronic Music Center. Synthesized sounds swarm the register of the sung melody too much for the voice to remain melodic.

Pauline Oliveros' *Bye Bye Butterfly* (1965) similarly erases a chorus from Puccini's opera, which appears, partially, in the middle of the piece: like an ancient fresco peeking out from under coats of peeling paint, the chorus is covered over by oscillators tuned to the peaks of its melodies. With electronics, Oliveros creates aural distance from Puccini's Orientalist project, which, as Judy Tsou has shown, positions Cio-Cio-San's Italian lyricism as a

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<sup>59</sup> Joan La Barbara, *Tapesongs*, 1987 by Chiaroscuro, CR 196, LP. Photographs of the cover and back cover (a smiling variation on the regal cover image) are available at Discogs, <https://www.discogs.com/Joan-La-Barbara-Tapesongs/release/655661>.

failed quest for American assimilation.<sup>60</sup> Neither Shields nor Oliveros directly process classical voice, but their vocal lines are nevertheless indisputably transformed by the electronics around them.

Many historians appropriately nominate vocalist and composer Cathy Berberian as a crucial model of vocal experimentation for women in the post-war avant-garde.<sup>61</sup> Berberian developed an image of a fashionable eclectic star of classical and avant-garde music and, as Kate Meehan and others have documented, she was also a forthright authority on the voice and a proficient collaborator attuned to the vision of composers and musicians around her, always bringing her own creative views to the table.<sup>62</sup> Berberian's collaboration with her once-husband Luciano Berio on *Thema (Ommagio a Joyce)* (1958) yielded one of the first tape compositions centered around the female voice, a work that now "belongs to the canon of 20<sup>th</sup> century music."<sup>63</sup>

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<sup>60</sup> Judy Tsou, "Composing Racial Difference in *Madama Butterfly*: Tonal Language and the Power of Cio-Cio-San," in *Rethinking Difference in Music Scholarship*, ed. Olivia Bloechl, Melanie Lowe, and Jeffrey Kallberg (Cambridge: Cambridge University Press, 2015), 223.

<sup>61</sup> A representative example is the recent edition *Cathy Berberian: Pioneer of Contemporary Vocality*, eds. Francesca Placanica, Pamela Karantonis, Pieter Verstraete, and Anne Sivuoja-Kauppala (Burlington, VT: Ashgate, 2014).

<sup>62</sup> Kate Meehan, "Not Just a Pretty Voice: Cathy Berberian as Collaborator, Composer and Creator," (PhD diss., Washington University, 2011).

<sup>63</sup> Hannah Bosma, "*Thema (Ommagio a Joyce)*: A Listening Experience as Homage to Cathy Berberian," in *Cathy Berberian: Pioneer of Contemporary Vocality*, eds. Francesca Placanica, Pamela Karantonis, Pieter Verstraete, and Anne Sivuoja-Kauppala (Burlington, VT: Ashgate, 2014), 98.

The piece is made of samples of Berberian performing the first “Siren” chapter of James Joyce’s *Ulysses*, processed and layered to various degrees. Hannah Bosma offers several readings of *Thema*’s non-semantic central section, which is sandwiched between two verbal sections, in terms of the Siren’s voice: on the one hand, tape music’s separation of the voice from the female body powerfully negates the embodiment of the Siren but crucially retains musical markers that make this voice recognizably Berberian’s.<sup>64</sup> Bosma argues that this split of the voice and female body was only enabled by the conceptualization of the sound object in electronic music as abject – a characterization that can be productively cross-pollinated with Dohoney’s notion of difference as most patent in experimental vocality.<sup>65</sup> On the other hand, Bosma acknowledges that it is difficult not to hear the non-verbal central section of *Thema* as a kind of mad scene – a more pessimistic reading that finds resonance in Berio’s “ideological oversight” of Berberian’s co-authorship of the work.<sup>66</sup>

Kristin Nordeval has conducted a set of interviews with Monk, La Barbara, Rinde Eckert, Theo Bleckmann, and Pamela Z about the importance

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<sup>64</sup> Bosma, “*Thema (Ommagio a Joyce)*,” 106.

<sup>65</sup> Bosma, “*Thema (Ommagio a Joyce)*,” 112.

<sup>66</sup> Bosma, “*Thema (Ommagio a Joyce)*,” 99, 112. For more on composers’ neglect in crediting Berberian as collaborator, see Kate Meehan’s dissertation. Meehan proposes that we understand Berberian as asserting her co-authorship by “assum[ing] some pieces into her own concert repertoire.” Meehan, “Not Just a Pretty Voice,” 27-29.

and influence of Berberian's work. Nordeval's interviews reveal that the genealogy of extended voice has been technically and conceptually dynamic and multiple: extended voice is not one set of sounds, what is at stake is the very possibility of difference. Writing about Fanny Ardant's impersonation of Maria Callas, Mary Ann Smart has argued that sometimes it is precisely "the slippage that creates much of the thrill," referring to the listener's uncertainty about whom they are listening to.<sup>67</sup> After Berberian, extended voice has been in a perpetual state of slippage that can read as threatening or generative.

La Barbara revealed her relationship with Berberian to be particularly complex: in 1974, Berberian generously passed a teaching assignment in France to La Barbara; soon after, however, she distanced herself from extended techniques and denigrated singers who did not.<sup>68</sup> Elsewhere, La Barbara also qualified the ways in which Berberian was a crucial model for women vocalists:

Some of the work that she did with Luciano Berio is considered by some people the beginnings of extended vocal techniques, although what she did was not all that extended. She did some gasping and

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<sup>67</sup> Smart, "Theorizing Gender, Culture, and Music," 110.

<sup>68</sup> Kristin Nordeval, "What We Owe to Cathy: Reflections from Meredith Monk, Joan La Barbara, Rinde Eckert, Theo Bleckmann, and Pamela Z," in *Cathy Berberian: Pioneer of Contemporary Vocality*, ed. by Francesca Placanica, Pamela Karantonis, Pieter Verstraete, Anne Sivuoja-Kaupala (Burlington, VT: Ashgate, 2014), 196-200.

gurgling, humming, laughing, sounds like that, but not really extending the sound of the voice. It was more including what we would consider everyday sounds in the vocabulary of vocal music.<sup>69</sup>

Monk, too, made a distinction between Berberian's practice of mixing various folk and classical singing techniques and creating a whole new vocabulary.<sup>70</sup>

The recourse to linguistic terms such as "vocabulary," "lexicon," and "language" appears frequently in vocalists' descriptions of extended technique. On the one hand, extended voice can thus be understood as an alternative to linguistic hegemony. On the other hand, vocalists' interest in the linguistically foreign (particularly the performance of incomprehensible chatter, non-Western phonology, and techniques drawn from global folk) implicates a problematic history of Western encounters with non-Western and indigenous speakers and the colonial objectification of foreign cultures. Further, the slippage between folk and audio techniques that I have described in Monk's work reveals that the theatrical figure of the artist as exotic Other is often rendered technologically. Bosma, too, speaks of vocal "Others" constructed through techniques lifted "either from other cultures than the Western art world, or [from] non-human, artificially generated

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<sup>69</sup> Joan La Barbara, "The Unexpected Importance of Yes: Joan La Barbara," interview by Molly Sheridan, *New Music Box*, March 1, 2006, accessed December 15, 2012. <http://www.newmusicbox.org/articles/the-unexpected-importance-of-yes-joan-la-barbara/>.

<sup>70</sup> Nordeval, "What We Owe to Cathy," 195.

computer vocals.”<sup>71</sup> These experimental engagements with vocal aberration and artifice rarely escape the colonial history of linguistic difference.

Like Berberian, La Barbara is a classically trained vocalist with virtuosic command of extended technique. Between 1965 and 1969, she studied at Syracuse University with soprano Helen Boatwright, who was celebrated for her interpretations of the songs of Charles Ives, some of which she had premiered.<sup>72</sup> It was at Syracuse that La Barbara started exploring extended techniques, after she saw instrumentalists doing the same.<sup>73</sup> That Boatwright herself bemoaned the opera-centric world of vocalists no doubt encouraged La Barbara’s experimentation with the voice.<sup>74</sup> Later, La Barbara studied with new music vocalist Phyllis Curtin, who started an important annual seminar on vocal practice at the Berkshire Music Center that has been running since 1964, and with Hungarian opera singer Marion Freschl at the Juilliard School, who had also coached Marian Anderson.<sup>75</sup> In the mid-

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<sup>71</sup> Bosma, “Bodies of Evidence, Singing Cyborgs and Other Gender Issues in Electrovoical Music,” 11.

<sup>72</sup> Laura Kuhn, “La Barbara, Joan,” *Grove Music Online, Oxford Music Online*, accessed March 25, 2016, <http://www.oxfordmusiconline.com/subscriber/article/grove/music/42738>.

<sup>73</sup> La Barbara, “The Unexpected Importance of Yes: Joan La Barbara.”

<sup>74</sup> Margalit Fox, “Helen Boatwright, Celebrated Soprano, Dies at 94,” *New York Times*, December 4, 2010, accessed December 26, 2015, <http://www.nytimes.com/2010/12/05/arts/music/05boatwright.html>.

<sup>75</sup> Kuhn, “La Barbara, Joan.”

seventies, La Barbara developed command of a gamut of extended techniques performing with Steve Reich and Philip Glass. One of her signature techniques is the multiphonic production of more than one distinct pitch achieved by “inhaling or exhaling while producing a musical grunt,”<sup>76</sup> famously used in Luciano Berio’s *Sequenza III* (1965). She also commonly uses circular breathing borrowed from brass players, ululation, which is a trill produced by rapid tongue movement, and glottal stops, which are percussive sounds created by the sudden stop of airflow in the vocal tract. One fallout of the dogma that the voice divulges truths about the vocal subject is La Barbara’s experience with composers who have sometimes opted not to make use of her signature technical repertory for fear of audiences thinking that La Barbara is the author.<sup>77</sup>

La Barbara negotiated her conflicted relationship to Berberian, who disavowed extended technique in the late 1970s, in a tape composition for multiple voices titled “Cathing”<sup>78</sup> (1977). In “Cathing,” La Barbara sampled an interview given by the modernist icon during the intermission of La Barbara’s concert on June 19, 1977 at the Holland Festival in Amsterdam,

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<sup>76</sup> Stephen Muir, “Multiphonics” *Grove Music Online, Oxford Music Online*, accessed December 10, 2013, [http://www.oxfordmusiconline.com/subscriber/article/opr/t114/e4593?q=multiphonics&search=quick&pos=2&\\_start=1#firsthit](http://www.oxfordmusiconline.com/subscriber/article/opr/t114/e4593?q=multiphonics&search=quick&pos=2&_start=1#firsthit).

<sup>77</sup> Nordeval, “What We Owe to Cathy,” 202.

<sup>78</sup> “Cathing” was first released on *Tapesongs*. The piece was re-released on *Voice is the Original Instrument* in 2003.

which convened around the theme of The Human Voice that year.<sup>79</sup> La Barbara enfolded the speech sample in her own extended vocals with electronic processing that becomes progressively more audible as the piece unfolds: “I took ‘found language,’ and broke it apart, treating [Berberian’s] words electronically while using my extended vocal techniques to weave a sonic texture around the deconstructed material,” she writes.<sup>80</sup>

In the intermission interview, Berberian polemicized that classical virtuosity is essential to true musicality and argued that singers using only extended technique are “freaks:”

I’ll tell you something that my experience with people with extended vocal technique...it’s just that it’s a fabulous source of research but it...it...for the moment it has hit an impasse, a kind of a stop, because these people dedicate their whole existence to developing their technique and it would be a very foolish composer, a good composer, who would compose a piece for one of these singers because it’s a very limited thing and it can only be used by those people who specialize in it. The...the only thing that I can imagine is that some of these things can be taught to people who are really singers because I doubt that most of the people involved can really sing in the true sense of the word, you see, and the kind of – I don’t want to be offensive because I don’t intend this – but

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<sup>79</sup> Derek Elley, *International Music Guide 1979* (Tantivy Press, 1978), 99.

<sup>80</sup> La Barbara, “Album Notes: Voice is the Original Instrument.”

they're in a way...they're freaks, they're phenomena –  
what they used to call me...but it wasn't true in my  
case because I can also sing, you see, but the freak  
element and phenomena element with them is all.<sup>81</sup>

The Berberian documentary *Music is the Air I Breathe* by Dutch filmmaker Carrie de Swaan contains similar passages where Berberian criticizes old-school singers Renata Tebaldi and Monserrat Caballé for subscribing to a classical economy of singing favoring “horses with blinders.” Berberian continues: “after their voices have gone, they’re just poor old cows!”<sup>82</sup> In the aggregate of the two interviews, Berberian’s metaphors – horses, cows, freaks, phenomena, and also “these people” – pathologize women’s vocality and crudely testify to the body-centered evaluation of vocal skill. La Barbara described her reaction to a tape of Berberian’s interview to Nordeval: “I was really astonished to hear somebody who had been touted as a champion of extended vocal techniques really put the whole practice of it down,” and “I was highly offended.”<sup>83</sup> Later in life, Berberian finds compassion for Berberian’s hostility, which she frames as a response to the traumas of being called the very same names.<sup>84</sup>

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<sup>81</sup> Emphasis mine, based on Berberian’s intonation.

<sup>82</sup> Cathy Berberian, *Music Is the Air I Breathe: A Documentary on Singer Cathy Berberian (1925-1983)*, directed by Carrie de Swaan (1994), film.

<sup>83</sup> Nordeval, “What We Owe to Cathy,” 197, 199.

<sup>84</sup> La Barbara, “The Unexpected Importance of Yes: Joan La Barbara.”

As I have argued, vocal experimentalism often draws on the musical and linguistic imagination of Otherness. Berberian's accusation of 'freakdom' thus arguably also carries an understated racialized charge directed at vocalists' choice to engage with difference at all, whether these engagements are progressive or problematic. The African-American experimental vocalist and pianist Julius Eastman who mastered a broad range of avant-garde extended techniques was victim of racialized perceptions of his musicality first hand. Eastman deplored his colleagues' perception of him as a "talented freak,"<sup>85</sup> an epithet that doubtless reflected his colleagues' readings of his ethnicity in the context of new music performance, and which is an uncanny echo of Berberian's language.

At one point in "Cathing," Nordeval notes, Berberian's word "freak" is treated with a delay effect, making it sound like "free, free, free, free."<sup>86</sup> Elsewhere, La Barbara has indeed described extended techniques as giving her "classically trained voice its freedom."<sup>87</sup> In the repetition of "freak, freak, freak, freak," musical meaning does not become abstracted and purified as certain Modernist theories of listening (treated in Chapter 3 of this dissertation) would have it, but rather it changes and evolves with every

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<sup>85</sup> Ellie Hisama, "'Diving into the earth': the musical worlds of Julius Eastman," in *Rethinking Difference in Music Scholarship*, eds. Olivia Bloechl, Melanie Lowe, Jeffrey Kallberg (Cambridge: Cambridge University Press, 2015), 262, 267.

<sup>86</sup> Nordeval, "What We Owe to Cathy," 199.

<sup>87</sup> La Barbara, "Album Notes: Voice is the Original Instrument."

instantiation. Repetition plays on the indeterminacy of listening altered by musical memory, and acoustic repetition additionally explores the indeterminacy of performance.<sup>88</sup> Pauline Oliveros similarly explores acoustic repetition in a number of sonic meditations guided by text scores: in “Cross Overs” (1996) she asks: “Sound a sound until it is a word. Sound a word until it is a sound;”<sup>89</sup> in “One Word,” she explores how the sound of a repeated word is affected by the speed of repetition from “extremely slowly” to “as fast as possible.”<sup>90</sup> Electronic and digital repetition by loop and delay has been a long-time feature of the work of Pamela Z, who has conceptualized listening to loops as a process that is active, indeed interactive.

In one piece called *Pearls*, at the beginning, I put a loop in the delay where I sang, *Pearls, pearls! Pearls, pearls!* And that continued through the whole song, and I sang and spoke over the top of that. I had so many people come up to me and say, I love how you took that word *pearl* and slowly morphed it to *peril*. They heard the word changing, but it was the same loop – I didn’t change it. I think when you hear something repeat over and over again, with each hearing you hear another layer. You get to keep

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<sup>88</sup> Z addresses this difference in her conversation with Kathy Kennedy, but insufficiently positions acoustic repetition as solely invested in the indeterminacy of performance. Z in Kennedy, “A Few Facets of Pamela Z.”

<sup>89</sup> Pauline Oliveros, *Deep Listening: A Composer’s Sound Practice* (New York: iUniverse, Inc., 2005), 54.

<sup>90</sup> Pauline Oliveros, *Sonic Meditations* (Baltimore: Smith Publications, 1974), xii.

reexamining it, and your ear reconstructs the timbral qualities. You hear different frequency layers within it, and so it changes the color, it changes the sound of the vowel. All of this is happening in your ear, but you think that it's happening in reality. I find that really interesting.<sup>91</sup>

Ellen Pearlman describes a moment in another piece by Z, "Muni Section," which features the sampled and looped the shout of a train conductor "All aboard!" until it sounds like "'allaboar,' a new word in an exotic, made-up language."<sup>92</sup> What Pearlman hears as an exotic transformation through repetition describes the carnivalesque alterity of Berberian's "freak" that becomes "free, free, free." Again, the exoticism of vocal technique and musical form that deviates from Classical vocabulary is extended technologically.

Judith Butler has voiced dissatisfaction with theories of transgression that posit "the perverse as [...] essential to the norm." She writes: "the problem [with these theories] is that the perverse remains entombed precisely there, as the essential and negative feature of the norm, and the relation between the two remains static, giving way to no rearticulation of

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<sup>91</sup> Z in Tara Rodgers, *Pink Noises: Women on Electronic Music and Sound* (Durham: Duke University Press, 2010), 219.

<sup>92</sup> Ellen Pearlman, "Ze Cat's Meow: Pamela Z: 'New Strategies with DJ Spooky' at Symphony Space, the Cutting Room, and the Stone," *The Brooklyn Rail*, September 2, 2006, accessed May 1, 2012, <http://www.brooklynrail.org/2006/09/music/ze-cats-meow-pamela>.

the norm itself.”<sup>93</sup> The refiguring of “freakdom” as the “freedom” of the normative voice – to be disciplined in any number of ways – is an important rearticulation of the norm, not least because the voice is fundamentally articulative. Towards the end of *Cathing*, two highly processed samples from Berberian’s voice return, twenty-five seconds apart: “I can only think,” we hear, “that the freak element is all.” The dry distortion of these two samples makes them sound vintage and robotic, creating a temporal – indeed generational – distance between Berberian, who was thirty years old to Berberian’s fifty-two in 1977. With regards to the voice, the relationship of the perverse and the norm is not simply conceptual, it is generational.

At eight minutes, the scope of “Cathing” is modest but its historical situation at the peak of Second Wave Feminism in the United States contextualizes its complex and critical commentary on the multiple meanings of voice. In musicology of “the 1970s and 1980s voice [...] was typically as flat as a sheet of typing paper,” writes Martha Feldman,<sup>94</sup> but outside the academy, the relationship of voice, language, and gender was becoming increasingly contested in the public domain. The 1970s were the decade of change for women in the United States: on the legal front, the Equal Rights Amendment, Equal Opportunity Act, and legalization of abortion came into

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<sup>93</sup> Judith Butler, *Antigone’s Claim: Kinship Between Life and Death* (New York: Columbia University Press, 2000), 75-6.

<sup>94</sup> Feldman, “The Interstitial Voice,” 654.

effect, while on the popular front, Helen Reddy's song "I am Woman" won a Grammy, *Ms. Magazine* permeated the cultural mainstream, and *Charlie's Angels* played on television.<sup>95</sup> In La Barbara's sonic palimpsest, the sense of having a voice and having one's voice heard mix with the musical species of the singing voice, the extended voice, and the acousmatic voice. "Cathing" is as much about aesthetic genealogy and the cultural and social inequalities resulting from the protected stronghold of Western musical canonicity as it is about American feminism in the purview of two generations of American women. Subtitled "for multiple voices on multi-track tape," "Cathing" issues a reminder that women's voices are not one, neither metaphorically nor sonically, during a decade when feminism hung its dreams on the notion of a universal womanhood and woman as nature – paradigms vociferously rejected by Haraway and others a decade later.

La Barbara's instrumentalization of the vocal apparatus rejects the marginalization of vocality into the feminine realm that is oppressed by the dogma that women don't *use* instruments, they *are* instruments, de facto and de jure. The Berkeley Art Museum, where the first edition of *Voice is the*

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<sup>95</sup> "Three beautiful women detectives in an agency run by 'Charlie,' who was never seen, but only heard on the intercom as a controlling male voice," writes John Fiske. In spite of this patriarchal framing, Fiske writes, "many women have reported to me that their pleasure in ["the aggressiveness and success of the women detectives"] was strong enough to overwhelm the patriarchal frame and block the effectivity of the ideological closure." John Fiske, *Television Culture* (New York: Routledge, 1987), 189.

*Original Instrument* was recorded, and The Kitchen Center for Video and Music in New York, where “Cathing” was premiered in 1977, were certainly typical institutional and geopolitical sites for ideas tangential to Second Wave Feminism to explode musically. Arguably, the 2003 edition of *Voice is the Original Instrument*, which contains acoustic and electronic works from 1974 to 1980, is not only the product of what Kenneth Goldsmith describes as a “nostalgia for the New York avant-garde”<sup>96</sup> in his album notes, but also a nostalgia for the peak years of Second Wave at a time of – for better or for worse – post-millennial feminist diffraction.

### **La Barbara’s Mother Cyborg**

Also in 1977, La Barbara produced a playful vocal tape mix for *Sesame Street*’s animated Sign Language alphabet segment titled “Signing Alphabet.”<sup>97</sup> The animation by Steven Finkin shows colorful letters morphing slowly into signing hands. In La Barbara’s tape mix, the deliberately pronounced name of every letter is succeeded by various phonetic instantiations of it, many of which are highly electronically processed to create unusual timbres. We hear the formal name of each letter twice, once

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<sup>96</sup> Kenneth Goldsmith, “Voice is the Original Instrument: The Reluctant Gypsy’s Balancing Act,” [album notes] *Voice is the Original Instrument*, 2003 by Lovely Music Ltd., CD 3003, two compact discs.

<sup>97</sup> See Joan La Barbara, “The Signing Alphabet,” *Sesame Street*, television, animation by Steven Finkin (PBS, 1977), accessed on <https://www.youtube.com/watch?v=y819U6jBDog>.

when the lower-case letter appears and then again when the American Sign Language hand sign appears. The character-giving material of the tape mix lies, however, in between the two utterances in the melodically and rhythmically erratic extended and processed phonological material. As is apparent in opera, high register has a particularly corrosive effect on phonological clarity. La Barbara thus revocalizes the alphabet – the organizing principle of language as text. Dohoney’s description of Monk’s *Dolmen Music* as building “a tension just shy of the breaking point” between *semantike* and *phone*, grounding “sounds in the relations between the voices and bodies of the ensemble” is apt here, though the ever-uniqueness of La Barbara’s many voices is established through extended techniques and organization on tape.<sup>98</sup> The rapid-fire timbral and registral changes that would be impossible to perform acoustically represent diverse bodily morphologies and vocal disciplines. Difference is thus actualized in every phonological utterance in a material way. Considering the unique sizes and shapes of human lungs, vocal folds of the larynx, and articulators, as well as the unique accents that result from the intersection of locality, race, and class, there is of course no absolute way to pronounce a letter. The animated signing hands in the video, too, appear in different sizes and colors suggestive of multiple ethnicities, genders, and ages. “Signing Alphabet”

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<sup>98</sup> Dohoney, “An Antidote to Metaphysics,” 84.

confronts the signified with the multiplicity of its possible signifiers that are corporeal, enacted, and ephemeral, but first and foremost ever-multiple.

In the Western imaginary and scholarship alike, the female voice is intimately linked to the figure of the mother. Female vocals that address, implicate, and engage children are therefore some of the most vulnerable and malleable sites of engagement with the feminine. To “denaturalize the tie between women and caring” – and specifically the female voice and care – is therefore a deeply feminist project: “if women’s nurturing role is a function of their historical subordination, so men’s self-sufficiency is actually a fiction, maintained by women’s emotional work,” writes feminist theorist Susan Freiman.<sup>99</sup> The fallout of psychoanalysis on the culture of the twentieth century has, however, only fostered this link.<sup>100</sup> Kaja Silverman attributes this to the traditional psychoanalytic definition of the maternal voice as a

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<sup>99</sup> Susan Fraiman, “Pussy Panic versus Liking Animals: Tracking Gender in Animal Studies,” *Critical Inquiry*, Vol. 39, No. 1. (September 2012): 107. For more feminist perspectives on the historical ties between women and caring, see Carol J. Adams, “Caring about Suffering: A Feminist Exploration” in *Beyond Animal Rights: A Feminist Caring Ethic for the Treatment of Animals*, ed. Josephine Donovan and Carol J. Adams (New York: Continuum, 1996), 171, 173; and Farah Jasmine Griffin, “When Malindy Sings, a Meditation on Black Women’s Vocality,” *Uptown Conversation: The New Jazz Studies*, eds. Robert O’Meally, Brent Hayes Edwards, Farah Jasmine Griffin (New York: Columbia University Press, 2004), 102-125.

<sup>100</sup> For the influence of psychoanalysis on listening, see Ellie Ragland, “On the Relation Between the Voice and the Gaze,” *Reading Seminar XI. Lacan’s Four Fundamental Concepts of Psychoanalysis*, eds. Richard Feldstein, Bruce Fink, Maire Jaanus (New York: SUNY Press, 1995), 187-203. For a thorough engagement of the voice of the mother in psychoanalysis and the work of Adriana Cavarero, Michel Poizat, and Etty Mulder, see Bosma, “*Thema (Ommagio a Joyce)*,” 111-115.

signifier for the prenatal unity of mother and child, largely symbolic and prelinguistic, and thus stripping agency away from the mother.<sup>101</sup> Even in electronic music, Susan McClary claims, we expect a “nurturing presence [from] female performers.”<sup>102</sup>

The voice that teaches the alphabet to children, most often a parent or a teacher and usually a mother or a female teacher, is thus classically feminized and presumed to be acoustic, not processed, to maintain a sense of physical closeness. At most, the maternal voice can be broadcast on television, which, by 1977, becomes the organizing principle of the middle-class home.<sup>103</sup> The maternal voice in another alphabet sound piece, *ABC* (2002) by Paul Lansky with vocals by Hannah McKay, and Lansky’s “Now and Then” (1991), which features McKay reading phrases from children’s stories, exemplifies the nurturing maternal voice.<sup>104</sup> In Lansky’s soundscapes

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<sup>101</sup> “The theoretical and cinematic equation of the maternal voice with ‘pure’ sonorousness must [...] be understood not as an extension of its intrinsic nature, or of its acoustic function, but as part of a larger cultural disavowal of the mother’s role both as an agent of discourse and as a model for linguistic (as well as visual) identification,” writes Kaja Silverman. See Silverman, *The Acoustic Mirror*, 100.

<sup>102</sup> Susan McClary, *Feminine Endings: Music, Gender, and Sexuality* (Minneapolis: University of Minnesota Press, [1991] 2002), 139.

<sup>103</sup> Taylor, *Strange Sounds*, 78-81.

<sup>104</sup> Norman, *Sounding Art*, 121 n12. “Even before they can speak [children] enjoy the regular, soothing patterns of speech – it must be a kind of music to them. “Now and Then” is a musical encapsulation of the sound of this activity,” writes Lansky. See Paul Lansky, “Liner Notes” *Homebrew*, 1992 by Bridge BSD 9035, compact disc; and Paul Lansky, *Alphabet Book*, 2002 by Bridge BSD 9126, compact disc.

of electronic sound objects, the maternal voice comes away mostly untouched by digital processing and positively unscathed by extended technique. Jeremy Grimshaw has appropriately described MacKay's voice as "soothing" with "the timbre and tone [...] somewhere between Lucinda Childs and Doris Day," and admired Lansky's work for "both its technological sophistication *and* its unapologetic nostalgia," doubtless referring to the stereophonic backdrop and vocal foreground respectively.<sup>105</sup> While not necessarily anti-feminist, the organic-maternal voice in a soundscape of avant-garde electronic sounds conforms to the historical coding of the female body as "the cultural sign of the 'natural,' the 'sexual,' and the 'reproductive,'" as Anne Balsamo put it.<sup>106</sup>

La Barbara's take on the mother-teacher is refreshingly non-Freudian in comparison. The electronic processing in "Signing Alphabet" subverts the link between the female voice and body at a wet-cement site of female vocal formation. Moreover, as Paul Théberge has argued, electronic music studios become exterritorial spaces to the familial home in contrast to the precedent

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<sup>105</sup> Jeremy Grimshaw, "Paul Lansky: *Now and Then*, for computer synthesized tape. Description by Jeremy Grimshaw," *All Music*, accessed March 11, 2013, <http://www.allmusic.com/composition/now-and-then-for-computer-synthesized-tape-mc0002402392>.

<sup>106</sup> Anne Balsamo, *Technologies of the Gendered Body: Reading Cyborg Women* (Durham, NC: Duke University Press, 1996), 9.

conception of the home as a “traditional site of female music-making.”<sup>107</sup> With the studio, “the musician’s lifestyle is portrayed as virtually irreconcilable with the demands of conventional society, let alone family life.”<sup>108</sup> Stylistically, La Barbara’s collage of acousmatic vocal samples quickly recalls the musique concrète studies of Pierre Henry, such as his *Vocalises* (1952) that is similarly composed entirely of vocal samples. However, when musique concrète’s conceptual thrust of defamiliarizing the sounding context of an acousmatic sample and treating it for its material properties enters the feminine realm of teaching the alphabet in La Barbara’s piece, the process of *defamiliarization* clashes with the familial sphere, with *family*.

With the wet processing of every letter’s utterance, La Barbara’s mother-teacher slips out of the female body and gender, suggesting Cyborg non-commitment to binary sex and reproduction. The feminized technology of alphabet instruction and the home-based technology of the television eclipse and confuse the masculinized home studio. Is television the new mother? Is “Signing Alphabet” an early Harawayesque call for feminists’ embrace of technology? The voice of the mother-teacher foregoes all kinship value: the tie between the female voice and caring is not severed (because caring is kind) but it is denaturalized (because caring is not essentially

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<sup>107</sup> Paul Théberge, *Any Sound You Can Imagine: Making Music / Consuming Technology* (Hanover, NH: University Press of New England, 1997), 125.

<sup>108</sup> Théberge, *Any Sound You Can Imagine*, 125.

female). La Barbara's piece thus builds an alternative space of kinship, gender, and intimacy grounded in experimentation and multivocality. Scholarship on intimacy addresses the confluence of emotional and material in-betweenness, destabilizing the perceived opposition of public and private that defines television and the spaces and identities bridged and constructed by it. "Spaces traditionally associated with the gendered division of labor," writes Lauren Berlant, are "categories [...] considered by many scholars to be archaic formations, legacies of a Victorian fantasy that the world can be divided into a controllable space (the private-affective) and an uncontrollable one (the public-instrumental)."<sup>109</sup> La Barbara has equally described extended techniques as "sounds that we would have thought were too private to make,"<sup>110</sup> that is, sounds that destabilize the private/public binary. In "*Signing Alphabet*", something as exclusively private as the female mothering, teaching voice is instrumentalized – made into a musical instrument privileging timbre over semantics, and mediatized by the public-private medium of late 1970s television. Privacy is doubly linked to the space of the living room but also to the inside of the body – the interior broadly conceived.

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<sup>109</sup> Lauren Berlant, "Intimacy: A Special Issue," *Critical Inquiry* 24/2 (Winter 1998): 283.

<sup>110</sup> Nordeval, "What We Owe to Cathy," 196-197.

La Barbara's and other vocalists' recourse to the rhetoric of instrumentality and language, her composition of hybrid vocalities that bring together acoustic and electronic techniques, and her hybridization of wet-cement sites of the female voice all come to the rescue of the modern Siren. Her treatment of the voice thus reconciles the contrary feminist efforts to 'give women a voice' on the one hand, and de-essentialize vocality on the other. La Barbara dramatizes the voice – the stereotypical symbol of subjecthood and musical embodiment – not only as something constructed through discipline as Butler would have it, but also as something that escapes the vocal tract altogether, transgresses the boundaries of interior/exterior, public/private, and present/mediated. More than any of the numerous visual metaphors and references to cyborg imagery in Haraway's "Cyborg Manifesto," the vocal Cyborg illustrates a turn to hybridity, simulation, and uncertainty about "what counts as nature."<sup>111</sup> *Voice is the Original Instrument*, La Barbara's Cyborg manifesto, presents the instrumental voice as artificial nature, a jarring oxymoron that nevertheless offers a speculative position from which we can redefine the relationship of women's voices and bodies wholesale.

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<sup>111</sup> Haraway, "A Cyborg Manifesto," 153-4.

## Chapter Two ♦ Voicemail and Anti-Mediation in the Music of Laurie Anderson

Conversations about Laurie Anderson's relationship to technology have been dominated by her long-time use of a pitch-shifting vocal filter. My inquiry newly situates the voice as one discrete aspect of Anderson's broader interest in technologized aurality. Specifically, Anderson thematizes non-reciprocal listening regimes produced by sound technologies such as the answering machine, broadcast media, the intercom, telepresence, and others. I show that Anderson frequently deconstructs the aural dimension of states of emergency and exception, which blur the multiple meanings of 'listening' as auditory process, attention, and obedience.

Reproduced voices have come to define a number of social genres, spaces and relationships in the late twentieth-century: we take directions from satellite navigation software, pique our ears for station announcements on the subway, commit airplane evacuation protocols to memory, and put up with the insistent voice that says *attention, shoppers!* Sound technologies that reproduce the voice have long attracted the attention of critical historians of sound recording, radio, and film, most often for the way these voices sound, for the technology's ability to address multitudes, and for the gendered and racialized terms of access to mass media control and consumption.

The work of multimedia artist Laurie Anderson also betrays a long-time fascination with mediated voices. Anderson has garnered the most scholarly and journalistic attention for her use of a gender-bending vocal filter that produces her signature Voice of Authority.<sup>1</sup> While discussions of

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<sup>1</sup> Laurie Anderson, *Stories from the Nerve Bible: A Retrospective 1972-1992* (New York: Harper Collins, 1994), 150.

vocal gender are valuable, technologies of sound mediation first and foremost construct very particular *listening* relationships. My inquiry posits vocal gender as one discrete element of Anderson's complex critical engagement with audio culture beyond the voice alone. Specifically, I analyze Anderson's interpretation of one-sided listening relationships imposed by sound technologies such as the car horn, the megaphone, the answering machine, the intercom, and the human microphone. The auditory asymmetry and non-reciprocity that defines these sound technologies is precisely what makes them social technologies of power. Anderson's experimental reconfigurations of these auditory assemblages are then no less than creative deconstructions and redesigns of social structures. Thus, I maintain that we should ask not only who is envoiced and what speakers sound like, but also what kinds of listeners and listenerships are produced in the process.

### **Concerts, Publics, Listening Regimes**

Anderson's interest in thematizing listening regimes is already apparent in her juvenilia. Her early sound-based performances defy genre and medium, arguably owing to her non-musical focus in higher education: after one year at Mills College in Oakland, California – a center of musical experimentalism that bypassed the biology-majoring Anderson, she transferred to Barnard College to study the visual arts. She graduated in 1969 and completed a Master of Fine Arts in Sculpture at Columbia University in 1972. Although

many sources date the beginnings of her musical work in the late seventies and she deems herself a visual artist until 1975,<sup>2</sup> there are at least two compositions within a year of her graduation that address and exploit musical principles and classical concert culture.

*An Afternoon of Automotive Transmission (Automotive)* was a concert program played entirely on car horns, featuring Anderson and two other composers.<sup>3</sup> This “very first performance I ever did”<sup>4</sup> was performed on Sunday, August 27, 1972 by the residents of Rochester, Vermont on the Town Green – a long-time site of public concerts and firework displays.<sup>5</sup>

The high school brass band played in the gazebo and everyone from the surrounding area came. The audience parked their cars on the green, circling the gazebo. The strange thing was that they never got out

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<sup>2</sup> William Duckworth, *Talking Music: Conversations with John Cage, Philip Glass, Laurie Anderson, and 5 Generations of American Experimental Composers* (New York: Schirmer Books, 1995), 369. Most sources date the beginning of Anderson’s musical career at the premiere of *Americans on the Move* in Carnegie Hall in 1979, or her first album *Big Science* from 1982, which includes her hit “O Superman.”

<sup>3</sup> The other two composers in the concert were Peter Schneider and Geraldine Pontius, neither of whom still composes.

<sup>4</sup> Anderson quoted in Mickey D. Drysdale, “Laurie Anderson Gave First Concert On Rochester Park” *The Herald of Randolph* [Rochester, VT] (January 20, 2005), accessed December 20, 2015, [http://www.ourherald.com/news/2005-01-20/Front\\_page/f07.html](http://www.ourherald.com/news/2005-01-20/Front_page/f07.html).

<sup>5</sup> M. Dickey Drysdale, “Automotive Orchestra Bows in Stunning Rochester Debut,” *White River Valley Herald of Randolph* [Rochester, VT], August 31, 1972, 1.

of their cars. After each number, they honked their horns as applause.<sup>6</sup>

In a front-page article for the *White River Valley Herald of Randolph, M.* Dickey Drysdale wrote about Anderson preparing her pieces by walking the streets with “a tape recorder, asking startled local motorists to toot into her machine,” and writing a color-coded graphic score with seven hues representing the limited tonality of her works.<sup>7</sup> The concert boasted an audience of fifty and a program of pieces built on a limited diatonic scale including Anderson’s *L’auto-da-fe: Six-Part Fugue for the Well-Fueled Heretic* and *Concerto for Landrover with Six-Cylinder Back-Up*.<sup>8</sup> Timbrally, the works ranged from the “Mickey Mouse beep of a motorcycle to the smooth, well-tuned blares of the modern American cars,”<sup>9</sup> or, in Anderson’s own words, “barking seals” to “the magnificence of an enormous traffic jam.”<sup>10</sup> By making performers out of the Green’s typical audience and surrounding the actual,

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<sup>6</sup> Anderson, *Stories from the Nerve Bible*, 154.

<sup>7</sup> Drysdale, “Automotive Orchestra Bows in Stunning Rochester Debut.”

<sup>8</sup> Writes Drysdale: “Peter Schneider, attired in a full tuxedo with black tie but without socks, directed his ‘Horn Pipe for Horn and Pipe’ while Geraldine Pontius conducted her ‘Well-tempered Beep.’” Drysdale, “Automotive Orchestra Bows in Stunning Rochester Debut,” 1.

<sup>9</sup> Drysdale, “Automotive Orchestra Bows in Stunning Rochester Debut,” 1.

<sup>10</sup> Anderson, *Stories from the Nerve Bible*, 154.

new, audience in the Green's "antique bandstand,"<sup>11</sup> *Automotive* played chess with the listener's position typically characterized by a guise of "silence and apparent passivity."<sup>12</sup> Moreover, as Nicholas Cook has argued, a space of musical performance is "the architectural equivalent of the score" that bodes a musical politics of public experience.<sup>13</sup> This space is turned inside out in Anderson's site-specific work. As a classically trained violinist, Anderson would have been familiar with the ritual architecture of a classical concert, and it is arguably this experience of classical music that informed her choice of forms and titles.

Her second site-specific musical work titled *O-Range* (1973) was set for ten of Anderson's students shouting stories through megaphones in the empty Lewisohn Stadium of the City University of New York on 138<sup>th</sup> Street and Amsterdam Avenue, a large amphitheater demolished only a few months later. As with the Town Green in Rochester, listening was inscribed in the history and architecture of the Stadium, which boasted a history of large-scale musical performances for audiences of thousands between 1918 and

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<sup>11</sup> Drysdale, "Automotive Orchestra Bows in Stunning Rochester Debut," 1.

<sup>12</sup> Christopher Small, *Musicking: The Meanings of Performing and Listening* (Middletown, CT: Wesleyan University Press, 1998), 43.

<sup>13</sup> Nicholas Cook, "Classical Music and the Politics of Space," in *Music, Sound, and Space: Transformations of Public and Private Experience*, ed. Georgina Born (Cambridge: Cambridge University Press, 2010), 225.

1966.<sup>14</sup> The New York Philharmonic's program from 26 June 1935 presents a representative medley of pieces: the prelude to Richard Wagner's *Die Meistersinger* is followed by Beethoven's Symphony No. 5, Felix Mendelssohn's Concerto for Violin and Orchestra in E minor, and Three Dances from the ballet *The Three-Cornered Hat* by Manuel De Falla.<sup>15</sup> Another typical program, from 1956, opens with directions "in the event of air raid alarm" and features the Stadium Symphony Orchestra in an all-Gershwin evening starring soprano Leontyne Price.<sup>16</sup> *O-Range* positions the megaphone – and the amphitheater, for that matter – not so much as a musical instrument and more as a technology establishing a listening relationship, commanding attention, and creating a sense of emergency.

Since *Automotive* and *O-Range* have largely been considered as pieces of performance art, the sonic and aural elements of these works have yet to

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<sup>14</sup> Sarah Rimer, "Commemorating Lewisohn Stadium," *New York Times* (May 15, 1985), accessed March 13, 2014.  
<http://www.nytimes.com/1985/05/15/nyregion/commemorating-lewisohn-stadium.html>. See also Irving Kolodin et al., "New York," *Grove Music Online*, *Oxford Music Online*, accessed March 1, 2016.  
<http://www.oxfordmusiconline.com/subscriber/article/grove/music/19843>.

<sup>15</sup> Sigmund Gottlober, *Stadium Concerts Review* Vol. XVIII No. 1, CUNY Academic Works (June 26, 27, 28, 29, 30 and July 1,2 1935): accessed October 5, 2013.  
[http://academicworks.cuny.edu/cc\\_arch\\_lewisohn/8/](http://academicworks.cuny.edu/cc_arch_lewisohn/8/).

<sup>16</sup> Milton J. Pensak, *Stadium Concerts Review* Vol. XXXIX No. 4, CUNY Academic Works (July 9, 1956): accessed October 5, 2013.  
<http://archives.nyphil.org/index.php/artifact/80d8e555-4604-487d-b008-644218c8a810/fullview#page/1/mode/2up>.

receive critical attention.<sup>17</sup> These elements comprise the music-historical titling of works that make up *Automotive* (symphony, concerto, thirds), their site-specific setting at established-yet-unexpected concert venues (a public square and a stadium), and, most importantly to this chapter, their disturbance of listening relationships inherent to the classical concert (the would-be listeners' participation in *Automotive* and their absence in *O-Range*). The conventional function of the car horn and the megaphone as sound technologies of alarm is unsettled by the faux-classical style of *Automotive* and the feminized storytelling of *O-Range*. Anderson, a self-described "professional storyteller,"<sup>18</sup> furnishes storytelling with the urgency of emergency address. Both performances' radical dis-locations of the listener, the conventional object of sound technologies of alarm, also resist the meaning of listening-as-obedience that typically defines emergency. Although Anderson's early critique of classical concert culture resurfaces in later musical work as a lesser motif as I show in the next section, her early

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<sup>17</sup> This is the case for Anderson's work in general. As Lindsey Eckenroth has argued, "academic writing on Anderson's performative electronic storytelling has not explicitly addressed musical characteristics." Lindsey Eckenroth, "Once Again, on the Music of Laurie Anderson's 'O Superman (for Massenet)," *American Music Review* XLIII/ 2 (Spring 2014): 1. Available at <http://www.brooklyn.cuny.edu/web/academics/centers/hitchcock/publications/amr/v43-2/eckenroth.php>.

<sup>18</sup> Laurie Anderson quoted in Gillian G. Gaar, *She's a Rebel: The History of Women in Rock & Roll*, expanded 2<sup>nd</sup> ed. (New York: Seal Press, 2002), 242.

concern with the limits of the classical concert is largely replaced by a critique of the politics of auditory culture at large.

### **Vocal Gender and Other White Coats**

Vocal gender is the first and overriding variable by which we judge speakers when we listen, more important than a vocalist's appearance, ethnicity, or sonic fidelity.<sup>19</sup> Whereas the male voice enters our culture primarily as pure speech, dominating mainstream media and the public sphere, the female voice is shackled to the body. The prevalence of male-voiced voiceovers and off-screen male speech in films has been widely documented, most notably by film theorist Kaja Silverman.<sup>20</sup> Composers have long addressed voices of broadcast and voiceovers in their work. For example, Ruth Anderson's sound collage "SUM: State of the Union Message" (1974) is a "period piece" collage of vocal material from television advertisements mixed with Richard Nixon's presidential address from 1970, revealing the vastly different uses of male and female voices in the media.<sup>21</sup> German-Canadian composer Hildegard Westerkamp's "His Master's Voice" (1985) is a comparable "collage of the

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<sup>19</sup> Clifford Naas and Scott Brave, *Wired for Speech: How Voice Activates and Advances the Human-Computer Relationship* (Cambridge, MA: The MIT Press, 2005), 9-31.

<sup>20</sup> Kaja Silverman, *The Acoustic Mirror: The Female Voice in Psychoanalysis and Cinema* (Bloomington: Indiana University Press, 1988), 51. See also Kaja Silverman, *Male Subjectivity at the Margins* (New York and London: Routledge, 1992), 234.

<sup>21</sup> Elizabeth Hinkle-Turner, *Women Composers and Music Technology in the United States: Crossing the Line* (Burlington VT: Ashgate Publishing Company, 2006), 30.

'macho voice' as it appears in all walks of life: on the street, in the media [...], in the political and religious realms [etc.]."<sup>22</sup>

Anderson's so-called Voice of Authority is the most widely recognized sound technology of power in her work. Anderson used the pitch-shifted voice effect for the first time during a *Nova Convention* celebration of William S. Burroughs in 1978,<sup>23</sup> and it makes a number of appearances in her magnum opus tetralogy *United States*, which premiered at the Brooklyn Academy of Music in 1983 and was edited and published as a box set album *United States Live* in 1984. The effect is heard on songs such as "Closed Circuits," "Walk the Dog," "Difficult Listening Hour," and "Yankee See." It is also native to Anderson's alter ego Fenway Bergamot, a male character whose tone, timbre, and tessitura is heard as satirically authoritative. To achieve the voice, Anderson uses the 910 and 949 models of the Eventide Harmonizer, which transpose the voice within two octaves and add delays

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<sup>22</sup> Hildegard Westerkamp, "His Master's Voice (1985)," *Simon Fraser University* website, accessed February 20, 2013, [http://www.sfu.ca/~westerka/program\\_notes/mastervoice.html](http://www.sfu.ca/~westerka/program_notes/mastervoice.html). For more on voices of broadcast and gender, see Katherine Norman, *Sounding Art: Eight Literary Excursions through Electronic Music* (Burlington, VT: Ashgate Publishing Company, 2004), 103-122. See also Frances Dyson, "The genealogy of the Radio Voice," in *Radio Rethink: Art, Sound and Transmission*, eds. Diana Augaitis and Dan Lander (Banff: Banff Centre Press, 1994), 167-86.

<sup>23</sup> Anderson, *Stories from the Nerve Bible*, 148.

and vocal doubling.<sup>24</sup> The compelling effect of the Harmonizer has been much interpreted by scholars, perhaps most eloquently by two art historians Craig Owens, who described the dropped-frequency voice as “electronic vocal transvestism”<sup>25</sup> and Amelia Jones, who argued that “Anderson both thwarts the privileging of vision in determining [gender]”<sup>26</sup> and at the same time “transcends” the terms of masculinity. Anderson herself characterizes the Harmonizer voice as “audio drag” or as an “audio mask”<sup>27</sup> but sometimes, in a trifling mode typical of her interviews, she keeps description simpler – the Harmonizer enables her “to sound like a man.”

I loved to use the lowest setting on the Harmonizer, a digital processor that lowered my voice, to sound like a man. This was especially effective in Germany. When I spoke as a woman, they listened indulgently; but when I spoke as a man, and especially as a bossy man, they listened with interest and respect.<sup>28</sup>

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<sup>24</sup> John Diliberto and Kimberly Haas, “The Laurie Anderson Interview: Ms. Anderson is Provocative as Ever,” *Electronic Musician* (September 1985): 19.

<sup>25</sup> Craig Owens, “The Discourse of Others: Feminists and Postmodernism,” in *The Anti-Aesthetic: Essays on Postmodern Culture*, ed. Hal Foster (New York: The New Press, 1998), 69.

<sup>26</sup> Amelia Jones, *Body Art: Performing the Subject* (Minneapolis: University of Minnesota Press, 1998), 211.

<sup>27</sup> Laurie Anderson quoted in Susan McClary, *Feminine Endings: Music, Gender, and Sexuality* (Minneapolis: University of Minnesota Press, [1991] 2002), 139.

<sup>28</sup> Anderson, *Stories from the Nerve Bible*, 131. Interestingly, it was in Germany that BMW recalled a female-sounding synthesized voice of a car navigation system to

It is apropos to invoke Judith Butler's theorization of drag: "Is drag the imitation of gender or does it dramatize the signifying gestures through which gender is established?"<sup>29</sup> To even begin answering this question, one cannot treat the Harmonizer voice in isolation from the dizzying gamut of vocalities that surround it. Scholars have tended to juxtapose the Harmonizer voice with Anderson's unprocessed alto. In the representative accounts of Kyle Gann and Katharine Norman, the "obnoxious"<sup>30</sup> Harmonizer bass satirizes authority with the "puerile, competitive backbiting of [a] salesman,"<sup>31</sup> while Anderson's unprocessed voice is reserved for moments of "pointed social criticism."<sup>32</sup> However, even a cursory listening to *United States Live* shows this categorization to be unconvincing and narrow in scope.<sup>33</sup>

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replace it with a male-sounding version more palatable to BMW's users. Nass and Brave, *Wired For Speech*, 31.

<sup>29</sup> Judith Butler, *Gender Trouble: Feminism and the Subversion of Identity* (New York: Routledge, 1990), viii-ix.

<sup>30</sup> Kyle Gann, *Music Downtown: Writings from the Village Voice* (Berkeley: University of California Press, 2006), 230.

<sup>31</sup> Katharine Norman, *Sounding Art: Eight Literary Excursions through Electronic Music* (Burlington, VT: Ashgate Publishing Company, 2004), 120n.

<sup>32</sup> Laurie Anderson quoted in Norman, *Sounding Art*, 105.

<sup>33</sup> Philip Auslander notes that scholars' descriptions of Anderson's work "are all based on the traditional critical procedure of reading a single work for its political or social content, in relation, to a real or imagined audience," with little attention to intertextual meaning within her oeuvre. Philip Auslander, "Going with the Flow: Performance Art and Mass Culture," *TDR* 33/2 (Summer 1989): 124.

First, the Harmonizer is not always one and the same sound effect: “Closed Circuits,” for example, stands out for a particularly wet, reverberant processing and a use of vocal doubling so frictional that it sounds more like the feminized affectation of so-called vocal fry than “like a man.” In contrast, “Difficult Listening Hour” employs a tighter vocal doubling effect and less reverberation for a dry sound. Anderson and her long-time producer and collaborator Roma Baran have independently addressed the dynamic and changing character, sound, and role of the Voice of Authority, and Anderson’s experimentation with the settings on the 910 and 949 Harmonizers and her preference for the former machine’s imperfections is also documented.<sup>34</sup>

Second, the Harmonizer voice often speaks through various broadcast media, which only appear figuratively but, I will argue, temper the meaning of audible sound effects. It is so much more than audio drag. On “Difficult Listening Hour,” for example, Anderson voices the character of a radio host who speaks in a “low, velvety, patriarchal voice that soothes and seduces while congratulating the [radio] listener.”<sup>35</sup> The song functions as a critical entryway to Susan McClary’s “Terminal Prestige: The Case of Avant-Garde Music Composition,” a genealogy of intellectualism in European and

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<sup>34</sup> Diliberto and Haas, 19. Roma Baran quoted in *Homeland – The Story of the Lark*, dir. Braden King (Burbank, CA: Warner Bros, 2010), film. Anderson, *Stories from the Nerve Bible*, [Introduction].

<sup>35</sup> Susan McClary, “Terminal Prestige: The Case of Avant-Garde Music Composition,” *Cultural Critique* 12/1 (Spring 1989): 58.

American twentieth-century musical avant-gardes. In spite of McClary's title, the article is less about composition as more about concert culture, and "Difficult Listening Hour," writes McClary, satirizes this culture with a "lethal accuracy"<sup>36</sup> that is nothing if not coterminous with pointed social criticism. Although McClary makes an obligatory nod to the fact that "[p]erhaps the first thing that strikes one is the sound of [Anderson's] voice,"<sup>37</sup> her analysis of the voice is focused on the kind of listener that is produced in the process. The lyrics of the song mirror this preoccupation with the listener:

Good evening, welcome to Difficult Listening Hour,  
the spot on your dial for that relentless and  
impenetrable sound of difficult music. [...] So sit bolt  
upright in that straight-backed chair, button that top  
button, and get set for some difficult music.<sup>38</sup>

As Anderson speaks through the material circuitry of the Harmonizer to create the vocal character in the song, the character himself speaks through the figurative broadcast technology of the radio. The listener in is lyrically shackled to his "straight-backed chair" and straitjacketed into his formal shirt. How do we hear the literal sound effect and figurative technology working together theatrically and musically? Anderson certainly satirizes the sonic identity of a male radio announcer's voice with elements such as

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<sup>36</sup> McClary, "Terminal Prestige," 58.

<sup>37</sup> McClary, "Terminal Prestige," 57.

<sup>38</sup> McClary, "Terminal Prestige," 58.

tessitura, pace, cadence, and rhythm, but the unaddressed theme in her work is the isolation and silencing of the listener – here portrayed as a sitting down and buttoning up – by technologies of broadcast.

Bruno Latour has argued that Stanley Milgram’s white lab coat was the unaddressed, a priori technology of power committing his research subjects to obey orders to torture their peers in his infamous psychology experiment.<sup>39</sup> Taking a cue from Latour, I propose that technologies of broadcast also function as white coats, commanding everyone within earshot to listen even before the tone of the voice or the content of its message is heard. In other words, the command of Anderson’s Voice of Authority is often established by the narrative, figurative presence of technologies of broadcast that command our listening. The logic goes that it must be important to listen to the person who has access to recording, amplifying, reproducing, or broadcasting a message. In the words of R. Murray Schafer, “the amplifier was [...] invented by an imperialist; for it responds to the instinct to dominate

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<sup>39</sup> “That students went along with Milgram’s torture does not prove they harboured some built-in tendency to violence, but demonstrates only the capacity of scientists to produce artifacts no other authority can manage to obtain,” writes Latour. He argues that the experiment proved nothing about violence and obedience and more about the authority of the white coat, that is, science. Bruno Latour, “How to Talk About the Body? The Normative Dimension of Science Studies,” *Body & Society* 10/205 (2004): 222.

others with one's own sound."<sup>40</sup> Pamela Z similarly draws attention to the way "computerized voices are, on a daily basis telling us how to behave,"<sup>41</sup> and Lauren Berlant's work unpacks the intimate attachment between speakers and "listeners to voices who explain things manageably (on the radio, at conferences, on television screens, on line, in therapy)."<sup>42</sup>

Anderson's performance "Mach 20"<sup>43</sup> as a musical guest on *The New Show* in 1984 illustrates the white coat allegory on several counts.<sup>44</sup> "Mach 20" is a mock science video narrated in a particularly low Harmonizer voice and scored with a suspenseful synthesizer beat that undercuts its absurd message: Anderson scales up the velocity of human sperm to the size of a sperm whale in the nautical unit of flow velocity, the Mach number. The white coat of audio drag is augmented by Anderson's literal white coat and the figurative white coat of mass broadcast. To dramatize her command of

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<sup>40</sup> R. Murray Schafer, "The Music of the Environment [1973]," in *Audio Culture: Readings in Modern Music*, eds. Christoph Cox and Daniel Warner (New York: Continuum Books, 2002), 36.

<sup>41</sup> Pamela Z quoted in Tara Rodgers, *Pink Noises: Women on Electronic Music and Sound* (Durham: Duke University Press, 2010), 220.

<sup>42</sup> Lauren Berlant, "Intimacy: A Special Issue," *Critical Inquiry* 24/2 Intimacy (Winter 1998): 284-5.

<sup>43</sup> A version of "Mach 20" appeared as a song in the performance *United States 4* (1983). Anderson, *Stories from the Nerve Bible*, 21.

<sup>44</sup> The New Show ran for only nine episodes in 1984 produced by Lorne Michaels. Similar to Saturday Night Live, each week was moderated by guest artists and an invited musical star. Anderson appeared as a musical guest on March 16, 1984, with the episode moderated by John Candy and Laraine Newman.

the audience further, Anderson wears a prominent headset microphone.

The audibly technologized voice appears in Anderson's work in many other guises, often testing the limits of vocality. There is the pillow speaker,<sup>45</sup> "placed inside her mouth and emanating a prerecorded violin solo that she modulate[s] with her lips."<sup>46</sup> The sound of the pillow speaker both is and is not vocal. It draws attention to and at the same time defies the moving mouth as the symbol of the voice. It distorts the meaning of *speaker* as orator and amplifier.<sup>47</sup> Anderson's tape bow violin<sup>48</sup> similarly stretches the limits of vocality: furnishing her violin bow with magnetic tape (and, later in her career, MIDI triggers) in place of horsehair, she variously fragments and performs a vocal sample by William S. Burroughs in the song "Late Show" on *Home of the Brave* (1986). "Listen to my heartbeat," the sample goes. McClary is right to point out that Anderson's gender matters greatly to her performance and that the disorienting, multiple characterizations of her voice through technology de-essentialize her performance in a way that

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<sup>45</sup> Laurie Anderson, *Stories from the Nerve Bible*, 28.

<sup>46</sup> Barbara London, "From Video to Intermedia: A Personal History," in *Modern Women: Women Artists at the Museum of Modern Art*, eds. Cornelia Butler and Alexandra Schwartz (New York: The Museum of Modern Art, 2010), 363.

<sup>47</sup> Anderson performed a short solo with the Pillow Speaker during her 2012 Commencement Address for the School of Visual Arts in New York.

<sup>48</sup> Laurie Anderson, *Stories from the Nerve Bible*, 36.

would not have the same implications for a man.<sup>49</sup> It is thus not just 'audio drag' that launches gender trouble for Anderson; rather, it is the very multiplicity of vocalities and the technologized relationships between them. McClary writes: "Anderson's work always involves several discourses all operating simultaneously, all interconnected in unpredictable, sometimes contradictory ways."<sup>50</sup> As the next section illustrates, Anderson's narrative organization of multiple vocal positions around figurative sound technologies of recording, mediation, and broadcast further disorients the listener.

### **Anti-mediation and the Answering Machine**

The defining quality of the white coat of mediated speech is the speakers' inability to listen back and the listener's isolation from being heard. A speaker, one who speaks, becomes a *speaker*, an amplifier. Broadcast enacts the classical hierarchy of speakers and listeners, active and passive, masculine and feminine, and produces a dispersed and involuntary listenership. Jean Baudrillard makes this point in a 1972 essay grimly titled "Requiem for the Media," which conceptualizes mass media precisely in terms of the sequestration of listeners:

The mass media are anti-mediatory and intransitive.  
They fabricate non-communication – this is what  
characterizes them, if one agrees to define

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<sup>49</sup> McClary, "Terminal Prestige," 138.

<sup>50</sup> McClary, *Feminine Endings*, 135.

communication as an exchange, as a reciprocal space of a speech and a response, and thus of a responsibility (not a psychological or moral responsibility but a personal, mutual correlation in exchange). We must understand communication as something other than the simple transmission-reception of a message, whether or not the latter is considered reversible through feedback. Now, the totality of the existing architecture of the media finds itself on this latter definition: they are what always prevents response, making all processes of exchange impossible. [...] This is the real abstraction of the media. And the system of social control and power rooted in it.<sup>51</sup>

Philip Auslander builds on Baudrillard's analysis, writing that the power of mass media derives "from the socially isolating effect of their form, not their ability to transmit content."<sup>52</sup> Whereas Baudrillard later develops his reading into the even more cynical stance that the mediated is the new real,<sup>53</sup> Auslander is correct to defend the critical practice of performance to engage the social isolation of media.<sup>54</sup>

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<sup>51</sup> Jean Baudrillard, "Requiem for the Media," in *The New Media Reader*, ed. Noah Wardrip-Fruin and Nick Montfort (Cambridge, MA: The MIT Press, 2003), 280-1.

<sup>52</sup> Auslander, "Going with the Flow," 134 n6.

<sup>53</sup> See Jean Baudrillard, "The Evil Demon of Images," in *Film Theory: Critical Concepts in Media and Cultural Studies, Volume 4*, eds. Philip Simpson, Andrew Utterson, and K.J. Shepherdson (New York: Routledge, 2004), 181-191.

<sup>54</sup> Auslander, "Going with the Flow," 134 n6.

Anderson's signature assemblage of literary (narrative) and literal (sonic) sound technologies can be understood as the nexus of the composer's critical praxis. The figurative technologies in Anderson's work – Jon McKenzie calls them “virtual machines,”<sup>55</sup> Rosi Braidotti refers to Anderson's “as if” mode of creative expression<sup>56</sup> – necessarily modulate the technological context of literal sound effects like the Harmonizer. A representative figurative technology of anti-mediation that appears time and again in Anderson's performances is the answering machine, or voicemail in later years. The answering machine epitomizes both communication and anti-mediation: it both interrupts and responds to a call, it speaks but cannot listen. The answering machine appears for the first time in Anderson's 1981 hit single “O Superman (For Massenet).” The recorded voice on the machine is treated with a unique Harmonizer effect heavy on doubling but with little to no pitch-shifting; less man, more robot. The caller, an acoustic vocal character of Anderson's mother, over-intones in maternal worry.

Hi. I'm not home right now but if you want to leave a message, just start talking at the sound of the tone.  
*Hello? This is your mother, are you there? Are you coming home? Hello? Is anybody home?*

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<sup>55</sup> Jon McKenzie, “Laurie Anderson for Dummies,” *TDR* 41/2 (Summer 1997): 43.

<sup>56</sup> Rosi Braidotti, “Cyberfeminism with a Difference,” in *Futures of Critical Theory: Dreams of Difference*, eds. Michael Peters, Mark Olssen, Colin Lankshear (Lanham, MD: Rowman & Littlefield Publishers, 2003), 247.

The answering machine reappears in the guise of a manager in the twin songs “Sharkey’s Day” and “Sharkey’s Night” on *Mister Heartbreak* (1984), the latter B-side song narrated by Burroughs in place of Anderson: “And the manager says: Sharkey? He’s not at his desk right now. [...] Could I take a message?” In an early review of *Mister Heartbreak*, *New York Times* critic Stephen Holden identifies “[l]oneliness, the difficulty of communication” as two principal themes of Anderson’s work. On the 1994 CD-ROM *Puppet Motel*, a faintly interactive virtual environment designed by Anderson, users who enter the Phone Room encounter a programmed voicemail: “If you’d like to leave a message, press 1. If you’d like to go somewhere you haven’t been before, press 2. If you’d like a list of options, press 3. If you’d like to leave a message on the Internet, press 4.” Still in 2010, to celebrate the simultaneous release of an album titled *Homeland* and the opening of a theater piece titled *Delusion*, Anderson offered to record a voicemail message in the Harmonizer voice of Fenway Bergamot for one lucky winner of a competition.<sup>57</sup> These are few of many instances where the answering machine functions as emblematic of the failure to connect, one-sided listening, and anti-mediation in Anderson’s work.

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<sup>57</sup> Nonesuch, “Enter to Win a Voicemail from Fenway Bergamot, Laurie Anderson’s Male Alter Ego,” *Nonesuch*, September 24, 2010, <http://www.nonesuch.com/journal/enter-to-win-a-voicemail-from-fenway-bergamot-laurie-anderson-male-alter-ego-2010-09-24>.

## **Listening and Emergency**

Anderson's allegories of broadcast voices blur the meanings of listening as auditory process (listening to the radio), attention (listening to instructions), and obedience (listening to a superior). It is during what scholars have theorized as "states of emergency" that this slippage becomes most apparent. Originally introduced by Carl Schmitt and developed by Giorgio Agamben, the concept describes the suspension of the law by a sovereign, and the wielding of the force of law outside of law itself. A network of Anderson's pieces connected by title, medium, and form thematizes the auditory dimension of local and global states of emergency to critique anti-mediation as a political process. I will briefly outline the intellectual genealogy of scholarship on emergency before delving into their auditory dimension and Anderson's work.

The political condition of a state of emergency radically refigures the legal and behavioral relationship between citizens and sovereigns, and results in extra-legal mandates to alter bodies, behaviors, legal statuses, and territory. In a state of emergency, the law and sovereign power are in a double relationship, where the sovereign mandates a state of exception, which in turn suspends the law for the time being. In the 1978 lecture on "Governmentality," Michel Foucault contrasted the aim of government – to manage processes within the state, with the aim of sovereignty – the very

assertion of sovereign power to declare exceptions.<sup>58</sup> However, where sovereign power is largely self-referential in Foucault's account, later models of exception stress that extra-legal sovereign action is increasingly commonplace. Such is the argument of Agamben's 1995 *Homo Sacer: Sovereign Power and Bare Life*, built around the titular Roman figure whose political life is no longer protected by law, but whose bare life is defined by it – a distinction that maps onto a mind/body split and a priori excludes women and children from political life.<sup>59</sup> Similarly to Agamben, Judith Butler identifies sovereign power as increasingly operational.<sup>60</sup> For Butler and Agamben exception is the paradigmatic state of the contemporary global order.

Interestingly for scholars of sound, states of emergency are defined by particular modes of address, executive vocality, and regimes of listening. Nazi Germany has long been the archetypal example of a state of emergency, and

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<sup>58</sup> Michel Foucault, "Governmentality," in *The Foucault Effect: Studies in Governmentality*, eds. Graham Burchell, Colin Gordon, and Peter Miller (Chicago: University of Chicago Press, 1991), 87-104.

<sup>59</sup> Giorgio Agamben, *Homo Sacer: Sovereign Power and Bare Life*, trans. Daniel Heller-Roazen (Stanford, CA: Stanford University Press, 1998). Agamben develops his idea further in the *State of Exception*, trans. Kevin Attneil (Chicago: University of Chicago Press, 2005).

<sup>60</sup> Judith Butler, *Precarious Life: The Powers of Mourning and Violence* (London: Verso, 2004), 50-100. See also Judith Butler, "Precarious Life; Indefinite Detention," *Guantanamo Bay Museum of Art and History*, accessed February 14, 2016, <http://www.guantanamobaymuseum.org/?url=butlertext>.

“as [Adolf] Eichmann constantly repeated,” writes Agamben, “the words of the Fuhrer had the force of law.”<sup>61</sup> The force of law is embedded in speech that is uncontested by the very design of emergency. Drawing on Agamben, social theorist Elaine Scarry has insightfully argued that states of emergency are moments of public silencing: “we are misled by governments into believing that the speed of modern life requires that populations step aside and stop thinking,” she writes in her 2011 monograph *Thinking in Emergency*.<sup>62</sup> Therefore, the survival tactic for an individual in crisis is, Scarry says, to “keep talking [...] whatever happens.”<sup>63</sup> In a video vignette in her 2015 film *Heart of a Dog*, Anderson artist muses that the “If You See Something, Say Something” trademark of the Department of Homeland Security and a related campaign by Amtrak that adds “hopefully it’s nothing,” sounds like an aphorism by Ludwig Wittgenstein. If language brings the world into being, Anderson  *marvels*, what is Amtrak’s stake in world-making? Keep talking whatever happens. Governing bodies have historically been overt about the link between silencing and emergency: one need only consider any number of wartime propaganda posters that mandate “don’t ask don’t tell,” “silence means security,” “I pledge allegiance and silence about

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<sup>61</sup> Giorgio Agamben, “The State of Emergency,” *Generation Online*, accessed May 20, 2016, <http://www.generation-online.org/p/fpagambenschmitt.htm>.

<sup>62</sup> Elaine Scarry, *Thinking in an Emergency* (New York: W. W. Norton & Company Inc., 2011), xv.

<sup>63</sup> Scarry, *Thinking in Emergency*, 9.

the war,” let me do the talking!” “loose lips might sink ships,” and “he’s in the silent service – are you?”<sup>64</sup> And yet, non-reciprocal listening relationships have rarely been the subject of musicological inquiry, though a handful of models for this framework have emerged in recent years.<sup>65</sup>

Anderson’s deliberate muddying of *listening* as aurality, attention, and obedience is evident in “From the Air,” a song from her first album *Big Science* (1982). The song narrates the beginning of an emergency crash landing of an airplane. Anderson recites safety instructions as the character

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<sup>64</sup> Posters bearing these and other similar slogans are catalogued by the Prints and Photographs Online Catalog, Library of Congress, and available at <https://www.loc.gov/>. Attila Nagy contextualizes the newest iteration of this slogan, “loose tweets destroy fleets,” among a number of older posters catalogued by the Library of Congress. See Attila Nagy, “The Best Operations Security Propaganda Posters from World War II,” *Gizmodo* (August 27, 2015), accessed on April 1, 2016, <http://gizmodo.com/the-best-operations-security-propaganda-posters-from-wo-1726361670>.

<sup>65</sup> See Suzanne G. Cusick’s series of articles of noise and torture, María Edurne Zuazu’s work on Black Lives Matter, and Jessica Schwartz’s research on the silencing of the indigenous populations of the Bikini Atoll. Suzanne G. Cusick, “‘You are in a place that is out of the world’: Music in the Detention Camps of the ‘Global War on Terror,’” *Journal of the Society for American Music* 2/1 (2008): 1-26; Suzanne G. Cusick, “Musicology, Torture, Repair,” *Radical Musicology* 3 (2008), accessed February 22, 2013, <http://www.radical-musicology.org.uk/2008/Cusick.htm>. Suzanne G. Cusick, “Towards an Acoustemology of Detention in the ‘Global War on Terror,’” in *Music, Sound and Space*, eds. Georgina Born and Tom Rice (Cambridge: Cambridge University Press, 2013), 275-292. María Edurne Zuazu, “Loud but Non-Lethal: Acoustic Stagings and State-Sponsored Violence,” *Women and Music: A Journal of Gender and Culture* 19 (2015): 151-159. Jessica Schwartz, “‘A Voice to Sing’: Rongelapese Musical Activism and the Production of Nuclear Knowledge,” *Music & Politics* VI/1 (Winter 2012), accessed January 11, 2016, <http://quod.lib.umich.edu/m/mp/9460447.0006.101/--voice-to-sing-rongelapese-musical-activism?rgn=main;view=fulltext>.

of an airplane captain speaking as if through an intercom. Her voice is in the sonic foreground, unprocessed, calm, poised and subtly melodious in a way that has become characteristic of many of her performances. Her use of uptalk, a manner of intonation whereby declarative sentences are uttered with the rising intonation of questions, underscores the captain's unlikely femininity, and the close-range mic set-up creates a sense of aural intimacy with the voice. The text alludes to the Anglophone children's game "Simon Says," the winning tactic of which is to act on certified executive orders without questioning them: Simon is the leader, who gives various simple commands to followers. Following an order not prefaced with "Simon says" results in the follower's elimination from the game. The game is a staple of Western popular culture.

Good evening, this is your Captain. We are about to attempt a crash landing. Please extinguish all cigarettes. Place your tray tables in their upright, locked position. Your captain says: put your head on your knees. Captain [Simon] says: put your head in your hands. Captain [Simon] says: put your hands on your head. Put your hands on your hips. [laughter – Simon didn't say].

The absurd sequence of orders renders grotesque the rule to follow executive orders in crisis and obey voices of broadcast.

In a series of articles on actual plane crashes, Scarry draws attention to the antiquated call-and-recall radio communication system between pilots and air traffic controllers, whereby the pilot merely repeats what he hears.<sup>66</sup> One command that goes *unrepeated* by pilots is “standby,” a thrice-recurring motif in “From the Air” – is Anderson speaking as the air traffic controller now? Her leisurely utterance of “standby” enacts the political power of anti-mediation in its two even syllables as the phased instrumental frame crumbles in the background.

The instrumental setting that underscores the unstable logic of states of exception and instills a sense of urgency, disintegration, and alarm in the listener. The abrasive polyphony produced by Baran is a loop made of two voices: one voice for a Farfisa vocoder-synthesizer pair rises and falls, while the other is a skip-a-step rising riff for tape-looped tenor and alto saxophone pair. The meeting of disco and minimalism is characteristic of Baran’s

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<sup>66</sup> While scientists have vociferously discredited the scientific arguments that underlie Scarry’s research, her critique of call and recall remains poignant and valuable to scholars of sound and media. Elaine Scarry, “Swissair 111, TWA 800, and Electromagnetic Interference,” *The New York Review of Books* (September 21, 2000), accessed November 3, 2013, <http://www.nybooks.com/articles/2000/09/21/swissair-111-twa-800-electromagnetic-interference/>. See also Elaine Scarry, “The fall of TWA 800: The Possibility of Electromagnetic Interference,” *The New York Review of Books* (April 9, 1998), accessed November 10, 2013, <http://www.nybooks.com/articles/1998/04/09/the-fall-of-twa-800-the-possibility-of-electromagn/>; and Elaine Scarry, “The Fall of EgyptAir 990,” *The New York Review of Books* (October 5, 2000), accessed November 3, 2013, <http://www.nybooks.com/articles/2000/10/05/the-fall-of-egyptair-990/>.

production (she met Anderson in 1978 or 1979) and Anderson's albums of the 1980s produced under Warner Bros.<sup>67</sup> Anderson writes at the piano to achieve "the most plain kind of version"<sup>68</sup> of a riff. The fourths and fifths drone on "Big Science," the main riff of "From the Air," which spans a minor sixth, the minimalist sax-and-clarinet riff of "Example #22," which spans a perfect fifth, and the stepwise ostinato of "Born, Never Asked," which reappears almost verbatim in "It Tango," sound all the more apathetic for not animating the wrists, elbows, and arms of a would-be keyboardist. Halfway through "From the Air," the polyphonic voices start phasing and obscuring the downbeat underscored by a drum pattern. Instead of devolving into sonic mush, however, the texture remains crisp and intelligible owing to the idiosyncratic instrumental timbres. Susan McClary has described similar looping structures in Anderson's music as an enfolding of musical time and space.<sup>69</sup> In "From the Air," this rhythmic decay captures the disintegration of logic and law in crisis, and the rising and falling melodic contours even evoke the sounds of sirens.

"From the Air" would never sound the same in post-9/11 New York. Anderson reused the title in 2008 to produce a new multi-media installation,

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<sup>67</sup> Anderson, *Stories from the Nerve Bible*, 186, 285.

<sup>68</sup> Mark Dery, "Laurie Anderson: The Cool High Priestess of the Avant-Garde Wanders Unceasingly in the Hot Lands of Techno-Pop," *Keyboard* 15/12 (December 1989): 78.

<sup>69</sup> McClary, *Feminine Endings*, 132-147.

a miniature video image of the artist and her dog Lolabelle projected, hologram-like, onto two small sculptures of white armchairs. The tiny, three-dimensional Anderson then tells a story of vultures swooping in on a shocked Lolabelle who is never the same afterwards, and draws a parallel to the change in New Yorkers' new awareness that "they can come from the air." The allegory reappears in *Heart of a Dog* with new visuals. Although the 1982 and 2008/15 versions of clearly thematically related, when WNYC radio host John Schaefer asked Anderson about the relationship between them, she quipped: "There's just a limited number of titles."<sup>70</sup> The 2008 *From the Air* is additionally part of a series of installations using multiple projections onto three-dimensional statues for a hologram-like effect. The first, *At the Shrink's*, was shown at the Holly Solomon Gallery in New York in 1975 and consisted of a miniature video sculpture of Anderson talking about therapy.<sup>71</sup> Subsequent proposals and projects comprised the live video of incarcerated persons onto three-dimensional white casts installed in sites outside of prison. Unrealized proposals to beam video of an inmate to a church across the street in Krems, Austria and a proposal to beam from the Sing-Sing correctional facility in New York to the Whitney Museum of American Art in

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<sup>70</sup> Laurie Anderson, interview by John Schaefer, "#3790: Heart of a Dog, with Laurie Anderson," *New Sounds*, WNYC (October 26, 2015), accessed February 1, 2016, <http://www.wnyc.org/story/heart-dog-laurie-anderson/>. In the Introduction to *Stories from the Nerve Bible*, she writes of a "knack for calling all sorts of things by the same name." Anderson, *Stories from the Nerve Bible*, [Introduction].

<sup>71</sup> Anderson, *Stories from the Nerve Bible*, 84.

New York City eventually took shape as *Dal Vivo* [transl. *Live*, as in live television] in Milan, Italy in 1998. *Dal Vivo* beamed the silent video statue of Santino Stefanini from the San Vittore white collar prison into the exhibition space of the Fondazione Prada.<sup>72</sup> In an interview with Jean-Michel Jarre, Anderson recounts Stefanini's understanding of the installation as a "virtual escape."<sup>73</sup>

Anderson's work with telepresence culminated in October 2015 with the installation *Habeas Corpus*, which beamed the live image of former Guantánamo detainee, Chadean citizen, and co-author of the work Mohammed El Gharani from West Africa to the Park Avenue Armory in New York for three consecutive days. El Gharani was detained as a child and released after seven years on winning *Habeas Corpus* – the right to be released from unlawful detention, which is one effective loophole to the *Homo Sacer* state. Even so, El Gharani is forever barred from stepping foot on U.S. soil. The image of El Gharani was radical for its liveness, for its size and posture in a giant white armchair deliberately evocative of the Lincoln Memorial, and for the daring technological rendition of the Black body. Amelia Jones valuably interprets the role of the body in Anderson's work:

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<sup>72</sup> Five video-statues of Anderson herself were part of the installation as well.

<sup>73</sup>Jean-Michel Jarre, "Jean-Michel Jarre and Laurie Anderson (RBMA Paris 2015)," *YouTube* video, posted by Red Bull Music Academy, January 7, 2016, accessed January 20, 2016, <https://www.youtube.com/watch?v=Y6uqehnXUlg>.

Laurie Anderson exploits technologies of representation to insist upon the embodiment and thus the particularity of the subjects of making and viewing culture. While acknowledging, indeed exacerbating, the radical dislocations that technologies such as video and computers have introduced into the conception of the body/self, they also emphasize the *embodiment* of this subject *as*, in fact, a body/self (rather than a 'transcendent,' masculinized self of pure thought and immanent feminine body).<sup>74</sup>

In other words, the digital in Anderson's work all but erases the bodily particularities of a subject. For Anderson, writes Jones, the body is always already mediated – Jones calls it the “technophenomenological body,” which takes gendered and racialized subjects into phenomenological account.<sup>75</sup> McClary has complimented Anderson's work with technology as being “far more complex than the in-your-face transgression that characterizes some performance art,”<sup>76</sup> presumably referring to the feminist Body Art of the 1960s and 1970s characterized by artists' use of their literal bodies as the material of performance. More accurately, Anderson's work has been a

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<sup>74</sup> Amelia Jones, *Body Art: Performing the Subject* (Minneapolis: University of Minnesota Press, 1998), 206.

<sup>75</sup> Jones, *Body Art*, 17.

<sup>76</sup> McClary, *Feminine Endings*, 137.

successor to this period – a genealogy elaborated by Auslander.<sup>77</sup>

El Gharani's performance of *Habeas Corpus* [transl. *may you have the body*] indeed echoes the vulnerability and risk-taking of feminist body art of the 1960s and 70s, but Anderson's own Whiteness, mostly absent but implicit by contrast, is thrown into sharp relief.

The legal, national, and racial particularity of the former detainee establishes key attributes in the relationship of surveillance and the regime of non-listening between the Armory's Drill Hall and West Africa. In a close reading of *Dal Vivo*, Eu Jin Chua has excellently argued that the subjects of Anderson's telepresence installations are never "transcendently disembodied" but instead "disabled" in a state of "profound blockage."<sup>78</sup> Although the installation establishes a broadcast, it is far from a teleconference: reciprocity and communication are limited. For example, although El Gharani spoke to the audience about his experiences at the detention camp, this only happened in hourly pre-recorded segments. And although he was able to watch the audience in the Armory during the beaming of these segments, he could not listen in. In fact, the installation was underscored by "Drones," a composition by Anderson's late husband Lou Reed constituting the loud feedback of several electric guitars, and

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<sup>77</sup> Auslander, "Going with the Flow," 119.

<sup>78</sup> Eu Jin Chua, "Laurie Anderson's Telepresence," *Postmodern Culture* 16/2 (January 2006): 7, accessed November 11, 2014, <http://pmc.iath.virginia.edu/issue.106/16.2chua.html>.

improvised with by a number of guest musicians. True to what McClary calls the contradictory nature of Anderson's discourses, the installation toed the line between broadcast and surveillance, a point made by Anderson herself.<sup>79</sup> On the one hand, El Gharani's telepresence is a political position of not having to listen (obey) anymore. On the other, it is an isolating condition of deafness and immobility.<sup>80</sup> Many visitors mouthed *sorry* in front of the cameras in the Armory's Drill Hall, some wept, pointed to their heart and then at the camera. The installation both succumbed to and reversed Baudrillard's notion of anti-mediation and a systematic politics of non-listening. On day two of the installation, Anderson held a concert in the Armory, opening with "O Superman." Some of the only melodically sung lines of the song landed with a particular heaviness: "when justice is gone, there's always force."

In a review of the installation and performance, Alex Ross suggested *Habeas Corpus* was an "outlier"<sup>81</sup> in Anderson's oeuvre, but it is better understood as one node of an intertextual network of installations, songs, and performances dealing with anti-mediation in states of exception and emergency, perhaps even as the center of this network. Staging the politics of

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<sup>79</sup> Laurie Anderson, "Bringing Guantánamo to Park Avenue," *The New Yorker* (September 23, 2015), October 1, 2015, <http://www.newyorker.com/culture/cultural-comment/bringing-guantanamo-to-park-avenue>.

<sup>80</sup> Chua, "Laurie Anderson's Telepresence," 9.

<sup>81</sup> Alex Ross, "Monumental: Laurie Anderson's 'Habeas Corpus' at the Park Avenue Armory," *The New Yorker* (October 19, 2015): 80.

unhearing inherent to these states makes explicit the lack of reciprocity of power in society. Crucially, the telepresence series emphasizes the social particularity of isolated subjects. Prisoners stripped of first class citizenship and detainees who are altogether stateless experience isolation concomitant to social death, which echoes, writes Chua, in the “paradoxically deathly electronic image” and the “moribund lump of clay” the image is projected on.<sup>82</sup> While the mediation and liveness apparent from the actors’ small movements may represent a virtual escape, they also betray their confinement to the white armchair, to the exhibition space, and to the socially disenfranchised position of not being heard because of who they are.

### **Mic Check**

Anderson’s installations, songs, and performances that thematize anti-mediation anticipate a shift in the mainstream American perception of public spaces. In 1969, three years prior to *Automotive*, the General Assembly of the International Music Council of UNESCO “denounce[d] unanimously the intolerable infringement of individual freedom and of the right of everyone to silence, because of the abusive use, in private and public places, of recorded or broadcast music.”<sup>83</sup> Narratives of noise pollution and acoustic

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<sup>82</sup> Chua, “Laurie Anderson’s Telepresence,” 5.

<sup>83</sup> “We ask the Executive Committee of the International Music Council to initiate a study from all angles – medical, scientific and juridical – without overlooking its artistic and educational aspects, and with a view to proposing to UNESCO, and to the

ecology that variously pathologize and hierarchize sounds in public have, however, somewhat overshadowed analyses of aurality itself. By the 1990s, argues Timothy Taylor, “public spaces [are] increasingly [...] uninhabitable, intolerant and intolerable; being in public is like being in prison or in a police state.”<sup>84</sup> Much has been made of the emergence of “audience-of-one”<sup>85</sup> with the rise of private listening to audio and the “isolated individuals [listening to mass media] whose only common bond is their relation to the medium.”<sup>86</sup> Public space, I suggest, comes to be organized by the same logic of anti-mediation that governs mass media and states of exception. It is not so much noise pollution that comes to oppress public space, it is the silencing of the public and the acoustic dominance of the state. In other words, the public’s right to silence is also a silencing of the public in the late twentieth and early twenty-first century metropolis.

Anderson has confessed that she has increasingly tried to curb an impulse to be too explicitly political in her performances; she even cut a

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proper authorities everywhere, measures calculated to put an end to this abuse.” Quoted in Schafer, “The Music of the Environment,” 37.

<sup>84</sup> Taylor illustrates this shift with a description Packard Bell computer commercial, in which a “suave male voice[over]” addresses people trapped in a long line in the dystopian bureaucracy of a bank, asking “Wouldn’t you rather be home?” Timothy Taylor, *Strange Sounds: Music, Technology, and Culture* (New York: Routledge, 2001), 136, 138-9.

<sup>85</sup> Evan Eisenberg, *The Recording Angel: Music, Records and Culture, from Aristotle to Zappa* (New Haven: Yale University Press, 2005), 24.

<sup>86</sup> Auslander, “Going with the Flow,” 130.

number of unequivocally political songs from *Homeland*.<sup>87</sup> On June 18, 2013, I watched her release several small quadcopter drones over an audience during an outdoor performance in Rockefeller Park on the Hudson river and exclaim “let’s hear it for the whistleblowers!” after naming Bradley (now Chelsea) Manning, Julian Assange, and Edward Snowden. While expressive actions like this one earn “easy applause,”<sup>88</sup> the coded and layered musical narratives described by McClary, which resist and contradict any one linear reading but still engage ethical and political questions have earned Anderson more critical acclaim.<sup>89</sup> Anderson frequently attends left-of-center public protests such as a demonstration at the Playboy Club in 1973 and a pro-Clinton protest at a Bush rally in 1992.<sup>90</sup>

Her participation in the December 2011 activist performance protest Occupy Art reveals many of the same concerns with a politics of unhearing that I identify in her creative work. The activist group met at Lincoln Plaza after the curtain of Philip Glass’ political opera *Satyagraha* about Mahatma Gandhi’s years in South Africa at the Metropolitan Opera. Like Glass before her, Anderson addressed hundreds of protesters on the plaza in human

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<sup>87</sup> Laurie Anderson in *Homeland – The Story of the Lark*.

<sup>88</sup> Jon Pareles, “Of Songs, Stories, and WikiLeaks,” *New York Times* (June 21, 2013): C5.

<sup>89</sup> McClary, *Feminine Endings*, 135.

<sup>90</sup> Anderson, *Stories from the Nerve Bible*, 247, 264.

microphone form, often called mic check for short.<sup>91</sup> Mic check is an acoustic technology of spatial antiphonal address whose modern form emerged in the anti-nuclear protests of the 1970s. It is employed by public protesters unlicensed to use technological amplification such as megaphones and speakers – the very sound technologies that define Anderson’s early performances. Unlike Glass before her, Anderson introduced herself only by first name and required two waves of mic-check because she spoke at a lower volume and the crowd had grown. In a video taken by one of the protesters, a young man gives instructions to the crowd before Anderson speaks, each of his lines punctuated by two waves of mic check:

We need two generations of mic check  
We need to be a little patient  
Laurie will speak  
And we’ll mic-check  
And then we’ll wait  
For the second wave  
To make it to the back<sup>92</sup>

Anderson’s particularly soft acoustic voice sharply contrasted the military-grade 110-decibel megaphone used by the NYPD at Occupy Wall Street

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<sup>91</sup> Glass’ address to protesters was captured on video by *The New Yorker’s* classical music critic Alex Ross and published on Ross’ personal YouTube channel. “Philip Glass at Occupy Wall Street Protest,” *YouTube* video, posted by Alex Ross, December 1, 2011, accessed January 15, 2012, <https://www.youtube.com/watch?v=MUXI3O8SAaQ>.

<sup>92</sup> Laurie Anderson, “Philip Glass Lou Reed Laurie Anderson Occupy Lincoln Center General Assembly Dec 1 2011,” *YouTube* video, posted by NewYorkRawVideos, December 5, 2011, accessed December 20, 2011, <https://www.youtube.com/watch?v=IRIIdsWnc4s>.

downtown, where protesters rose to the stakes by purchasing Air-Force grade earplugs.<sup>93</sup> Anderson seemed to enjoy the more complex mic-check structure: she fragmented her speech into individual words, which both emphasized and abstracted her message of camaraderie with police officers like imitative vocal writing from the Renaissance. In her commencement address to graduates of The School of Visual Arts, Anderson describes how audiences exiting the opera house toppled the barricades that physically separated Lincoln Plaza from protesters on the street, metaphorically toppling the barrier between life and art, as “one of the greatest moments of my life in this country.”<sup>94</sup>

Mic check is both its own sound technology and a substitute for another one – it is both literal and figurative. In the performance of mic check, groups of would-be listeners to the media of executive power such as the amplifiers and megaphones of the police force, come to replace and

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<sup>93</sup> The so-called ‘sound cannon’ or LRAD is intended to inflict pain with 110 decibels, and at Occupy it was controversially used to deliver obtrusively loud and crisp messages from police to protesters and clear spaces with painful and injurious beeps. Joan Firstenberg, “NYPD blasting Occupy protesters with powerful military megaphone,” *Digital Journal* (November 20, 2011), accessed November 18, 2011, <http://www.digitaljournal.com/article/314641>. For more on sonic warfare, see Steve Goodman, *Sonic Warfare: Sound, Affect, and the Ecology of Fear* (Cambridge, MA: MIT Press, 2010), 5-14. María Edurne Zuazu has published on the police use of later generations of the LRAD in Black Lives Matter protests since 2013. See Zuazu, “Loud but Non-Lethal.”

<sup>94</sup> Laurie Anderson, “Commencement Address” (Commencement Address for the School of Visual Arts, Radio City Music Hall, New York City, May 12, 2012).

override these very same technologies. Indeed, they become *a speaker*. Even though mic check is an acoustic technology, it refuses the terms of vocal embodiment because it identifies one subject's voice with many physical bodies. At the same time, mic check insists on every individual speaker's subjectivity as an unheard citizen.

As the original speaker punctuates her speech by periodic testing – the initial mic check – the sound technology encroaches upon content. There are countless similarly self-reflexive, metafictional moments in Anderson's work, acts of Brechtian *gestus* that counteract a listener's tendency towards immersion. The refrain of "From the Air," for instance, draws attention to the musical and commercial form of the song itself: "this is the time / and this is the record of the time," goes the recitative mantra that recurs six times in the song. In "Talk Normal" on *Home of the Brave* (1986), Anderson jovially recounts: "I turned the corner in Soho today and someone / Looked right at me and said: Oh No! / Another Laurie Anderson clone!" The song "Strange Angels" from an eponymous album (1989) opens with a simile of two simulacra: "They say that heaven is like TV." These humorous, tectonic moments in Anderson's storylines play with Baudrillard's notion of hyperreality but their very humorousness, which relies on the listener's recognition of reality pitted against fiction, is an assurance that the hyperreal is only an emergent aspect of our culture. These poetic devices disorient our understanding of who is speaking and which vocal characters are inside the narrative of a song at all. It is as if the singer of Schubert's "Erlkönig" broke

character and sang a couplet about the piano accompaniment. Compounding the lyrical disorientation is another set of “anxieties” caused by the ungrounded female voice, splintered by vocal filters, loops, sequencing, pillow speakers, and so on.<sup>95</sup> The listener leans forward in an active-process of sense-making that then implicates his or her body in the performance.

### **Aural Regimes as a Feminist Issue**

Underlying my inquiry into Anderson’s thematization of aural regimes is my belief that the formation of listenerships is a feminist issue. As musicologists continue to theorize Anderson’s Voice of Authority in terms of vocal gender or the male domination of broadcast media, the context of its figurative and real audiences and listening publics should be part of the conversation. The non-reciprocity of broadcast media and sound technologies of emergency produces listeners who are isolated from one another and silenced by virtue of not being heard. The slippage between speakers and listeners, performers and audiences, and literal and narrative technologies that I have identified in Anderson’s work dramatizes the formal gestures of political aurality.

Musicology is of course intimately familiar with non-reciprocal listening: the audience of the modern classical concert is a laboratory for isolation – isolation from the stage, isolation from other audience members, isolation from one’s own body. At the same time, this isolation is, if

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<sup>95</sup> McClary, *Feminine Endings*, 137.

paradoxically, a mode of sociality. McClary documents the avant-garde concert to be a site of gender contestation, naming a number of male composers, including Roger Sessions, Arnold Schoenberg, Milton Babbitt, Robert Schumann, Pierre Boulez, Wynton Marsalis, Anthony Braxton, and Charles Ives, who have insisted on particular and exclusive modes of listening portrayed as purely aural.<sup>96</sup> A concert listener in Anderson's care is always reminded that he or she is always also a listening citizen. Through musical framings of states of emergency, those extra-legal moments of absolute sovereign power, Anderson reconfigures listening relationships ad absurdum to challenge and therefore highlight their social and spatial fixity.

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<sup>96</sup> McClary, "Terminal Prestige."

### Chapter Three ♦ Queering Disembodiment: Vocal Synthesis, Wendy Carlos, and Stanley Kubrick

Artificial voices are persistently heard as disembodied, a gendered category of vocality. I understand disembodiment as a fiction that stands in for the technological, bodily, and social processes that make up sounding and listening. This chapter interprets creative interventions in the gendered narrative of disembodiment by Wendy Carlos, focusing on her *March from a Clockwork Orange* (1971), and Stanley Kubrick in his imitation of the Vocoder for the voice of HAL 9000 in *2001: A Space Odyssey* (1968). I argue that the gender-queer voice of HAL reflects the fluid identities of astronaut/alien/Other in the Space Age imaginary, and I also position Carlos' synthesized version of the Ode to Joy as a queer re-reading of the finale of Beethoven's Ninth Symphony.

In the opening of *In Search of Opera*, Carolyn Abbate invokes the “postmortem singing” of the severed head of Orpheus as a symbol for the discursive obsession with vocal disembodiment in opera studies.<sup>1</sup> In a previous study, Abbate nominates attention to staged bodily performance as remedial to this tendency, as long as, she says elsewhere, high-tech sound solutions do not “interfere.”<sup>2</sup> Is live, bodily performance the only remedial practice to the fixation with vocal disembodiment, however? Could technologized vocality, a class of voices most persistently heard as disembodied, non-corporeal, and inhuman have something to say about bodies? At the extreme of technologized voices lie synthesized voices, which

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<sup>1</sup> Carolyn Abbate, *In Search of Opera* (Princeton: Princeton University Press, 2001), 6.

<sup>2</sup> Carolyn Abbate, “Opera; or, the Envoicing of Women,” in *Musicology and Difference: Gender and Sexuality in Music Scholarship*, ed. Ruth A. Solie (Berkeley: University of California Press, 1993), 234.

are not performed or staged in a traditional sense: are they disembodied? Synthesized voices certainly fictionalize the voice-body relation and thus put pressure on the logics of vocal gender and binary sex, but, as I will argue, this is precisely why they are intimately related to epistemologies of the musical body.

This chapter opens with a discussion of prominent postwar theories of mediated sound, addressing new configurations of the voice-body relation that arise from the emergence of recording technologies, but end up reproducing rather than subverting the mind/body dualism. The heavily gendered histories of (1) early vocal synthesizers within the commercial/military spheres and (2) the electronic music studio, and the meeting of the two in Space Age culture also echo in descriptions of synthesized voices. I critique the terminology of disembodiment in literature on technologized sound and assess the repercussions of its prevalence for feminist musicology of electronic music in general and synthesized voice in particular. Finally, I interpret creative interventions in the gendered narrative of disembodiment by Stanley Kubrick in his imitation of synthesized voice for the voice of HAL 9000 in *2001: A Space Odyssey* (1968) and Wendy Carlos in her *March from a Clockwork Orange* (1971). This labor-intensive synthesis of Beethoven's Ode to Joy by Carlos and producer Rachel Elkind, I argue, suggests a new understanding of the Ninth Symphony's finale. Although the historical scope of the chapter focuses on early vocal synthesis in the peak years of American synthesizer manufacturing in the early 1970s,

my engagement with language surrounding electrovocality still applies to synthesized voices of the late twentieth and early twenty-first century.

### **Disembodied Sounds**

Post-1950s approaches to mediated sound reveal a number of modernist biases, which, most patently in the case of voices, sustain the gendered logic of disembodiment. Most prominently, they include Pierre Schaeffer's theory of acousmatic sound from the mid-1950s and R. Murray Schafer's framework of schizophonia from the late 1960s. Although the two composers' theories reflect very different sets of aesthetics, they are both rooted in the problematic premise that the twentieth-century sound world is best divided into present/acoustic sounds and mediatized/electronic ones. Whether a sound is heard away from its source becomes a test for a binary categorization of sounds and listening. The French composer Schaeffer invented the term "acousmatic" to describe sounds we hear without seeing their causes.<sup>3</sup> Schaeffer hears acousmatic sounds as purely sonic – or as allowing a mode of listening that is purely auditory, which he calls "pure listening."<sup>4</sup> The practice of pure listening rests on the idea that "much of what

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<sup>3</sup> Schaeffer cites the Larousse definition, "a noise that one hears without seeing what causes it." Pierre Schaeffer, Pierre Schaeffer, "Acousmatics," [a chapter from *Traité des objets musicaux*. Paris: Éditions du Seuil, 1966], trans. Daniel W. Smith, *Audio Culture: Readings in Modern Music*, eds. Christoph Cox and Daniel Warner (New York: Continuum, 2004), 77.

<sup>4</sup> Schaeffer, "Acousmatics," 78.

we thought was heard was in reality only seen, and explicated though the context.”<sup>5</sup> For Schaeffer, doing away with vision was concomitant to a kind of aural cleansing, a practice he deemed most effective with repeated listening that made non-sonic meanings recede into the background in favor of the sound object itself.

The Canadian composer Schafer’s term “schizophonia” likewise describes a “split between an original sound and its electroacoustic reproduction.”<sup>6</sup> Schafer, however, found authenticity in the acoustic soundscape because to him, “real sound[s were] absolutely unique.”<sup>7</sup> In his view, the reproduction of sound made all unique relationships of sound and space dangerously interchangeable. His political motivations, which blossomed into the acoustic ecology movement out of Vancouver, were then altogether different than Schaeffer’s. Where Schaeffer “conceived of modern sound reproduction technologies like the radio, the loudspeaker, and the tape recorder as participating in the ‘actuality of ancient experience,’ originally opened by the Pythagorean veil,”<sup>8</sup> Schafer was wary of the “preponderance of broadcast sounds” that he saw as invading the

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<sup>5</sup> Schaeffer, “Acousmatics,” 78.

<sup>6</sup> R. Murray Schafer, *The Tuning of the World* (New York: Knopf, 1977), 273.

<sup>7</sup> R. Murray Schafer, *Listen*, directed by David New (National Film Board of Canada, 2009).

<sup>8</sup> Brian Kane, *Sound Unseen: Acousmatic Sound in Theory and Practice* (Oxford: Oxford University Press, 2014), 25.

soundscapes of the twentieth century.<sup>9</sup> The political relationship between these influential philosophies of sound, listening, and technology is quite dynamic and contrary – a point elaborated Brian Kane – but the two theorists have a lot in common as well. Their theories are organized around the logic that there are sounds *tied to* self-evident sources/spaces and sounds *separated from* their sources and spaces by reproduction – Benjamin Steege has described this as a “cordoning off, naturalization, or intensive policing of a specific difference of the aural.”<sup>10</sup> Schaeffer and Schafer also share a heightened language emphasizing purity, authenticity, and origin variously applied towards their respective political aims of electroacoustic composition and acoustic ecology.

There are many valuable critiques of modernist theories of listening to mediated sound, representative of diverse (and sometimes disjunct) perspectives from musicology, media studies, sound studies, phenomenology, and other philosophical vantage points. In recent years, perceptive commentary has come from Jonathan Sterne, Seth-Kim Cohen, Jason Stanyek and Benjamin Piekut, Frances Dyson, and most recently Kane. Sterne finds fault with the premise that before recording technologies came to be, “the voice and the body existed in some prior holistic, unalienated, and

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<sup>9</sup> Kane, *Sound Unseen*, 151.

<sup>10</sup> Benjamin Steege, “Acoustics,” in *Keywords in Sound*, eds. David Novak and Matt Sakakeeny (Durham: Duke University Press, 2015), 28.

self-present relation"<sup>11</sup> – that is, the assumption that the voice is of-the-body to begin with. Stanyek and Piekut similarly ask: “[w]here does one body – one sound – begin and the other end, and in what way do sounds gather up the world, absorb and form the bodies they meet?”<sup>12</sup> Kim-Cohen refuses the idea that listening can ever be just a “naïve, blank reception of the auditory,”<sup>13</sup> and Dyson demonstrates that constructs such as dis/embodiment, immersion, and virtuality have taken the place of technological networks in our techno-aural imaginary.<sup>14</sup> Finally, Kane’s critique of Schaeffer’s notion that pure listening arrives at a “more *essential* [truth] than those that depend primarily on context” locates the limits of phenomenological inquiry.<sup>15</sup>

For all their valuable critique, these writers do not address the fact that twentieth-century theories of listening to reproduced sound are built around gendered narratives and language. Kane notes that in invoking

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<sup>11</sup> Jonathan Sterne, *The Audible Past: The Cultural Origins of Sound Reproduction* (Durham: Duke University Press, 2006), 21.

<sup>12</sup> Jason Stanyek and Benjamin Piekut, “Deadness: Technologies of the Intermundane,” *TDR: The Drama Review* 54/1 (T205 Spring 2010): 31.

<sup>13</sup> Seth Kim-Cohen, *In the Blink of an Ear: Toward a Non-Cochlear Sonic Art* (New York: The Continuum International Publishing Group Inc., 2009), 13.

<sup>14</sup> Frances Dyson, *Sounding New Media: Immersion and Embodiment in the Arts and Culture* (Berkeley: University of California Press, 2009), 82. See also Kane, *Sound Unseen*, 37.

<sup>15</sup> Brian Kane, “L’ *Objet Sonore Maintenant*: Pierre Schaeffer, sound objects, and the phenomenological reduction,” *Organised Sound* 12/1 (2007): 7.

Pythagoras and his acousmatic veil, musique concrète composers “pronounce their own origin [in] an act of auto-poiesis or self-foundation.”<sup>16</sup> This identification with Pythagoras, writes Kane, is a claim to “the primal scene of de-visualized music.”<sup>17</sup> It is also, however, a self-identification with a patently male European scene, capitalizing on masculinity’s discursive invisibility and taken-for-grantedness, and its monopoly on de-visualized knowledge.<sup>18</sup> As the “loudspeaker, the mixing console and the technical tools of the studio occupy the place held by the Pythagorean veil,”<sup>19</sup> these technologies come to be understood as severing sound from the body, and they claim the same privilege of discursive invisibility granted to White European men.

Consider the way Schaefferite film scholar Michel Chion theorizes the experience of listening to a radio announcer:

There is a considerable difference between taking  
note of the individual’s’ vocal timbre – and

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<sup>16</sup> Kane, “*Acousmate*: History and de-visualized sound in the Schaefferian tradition,” *Organised Sound* 17/2 (2012): 180.

<sup>17</sup> Brian Kane, “*Acousmate*,” 180.

<sup>18</sup> Schafer’s idea that the world is a musical composition also refers to the precedent Pythagorean idea. For a feminist account of vocal repercussions of the mind-body dualism, see Adriana Cavarero’s critique of the gendered claims to *logos* and *phone*. Adriana Cavarero, *For More than One Voice: Toward a Philosophy of Vocal Expression* (Stanford, CA: Stanford University Press, 2005), 107.

<sup>19</sup> Brian Kane, “*Acousmate*,” 179.

identifying her, having a visual image of her and committing it to memory and assigning her a name.<sup>20</sup>

Aside from finding Chion's choice of a hypothetical female announcer in a male-dominated medium to be a convenient way of establishing the difference between pure voice and polluting body, I doubt the strict duality of his assertion that until we see her, we listen, and once we see her, we "identify" her. The threat to the purity of a mediated sound by the gendered body appears already in the nineteenth-century medical practice of auscultation: the fidelity of the early stethoscope was too poor to work much better than a naked ear, but it removed a doctor's ear from the patient's body, a sexed and gendered body, such that he could listen to the pure sound of a symptom.<sup>21</sup> Schaeffer is not incorrect to say that listeners derive some ostensibly sonic meanings from the appearance of sounding bodies, and as shown by Nina Eidsheim in her studies of racial perceptions in vocal timbre, such conclusions can have grave social ramifications.<sup>22</sup> However, the notion

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<sup>20</sup> Michel Chion, "The Three Listening Modes," in *The Sound Studies Reader*, ed. Jonathan Sterne (New York: Routledge, 2012), 49.

<sup>21</sup> See chapter 3 in Sterne, *The Audible Past*.

<sup>22</sup> See Nina Eidsheim, "Synthesizing Race: Towards an Analysis of the Performativity of Vocal Timbre," *TRANS* 13 (2009), <http://www.sibetrans.com/trans/articulo/57/synthesizing-race-towards-an-an>. See also Nina Eidsheim, "Voice as a Technology of Selfhood: Towards an Analysis of Racialized Timbre in Vocal Performance" (PhD diss., University of California San Diego, 2008). Accessed on <http://escholarship.org/uc/item/0h8841kp>.

that sounds visually unattached to sounding bodies are pure and apolitical is a modernist figment.

My issue with modernist configurations of vocal disembodiment stems from the cultural imperative of the mind/body dualism, which feminizes the body. The governing language of Schafer's and Schaeffer's respective fixations with the *original* in acoustic sound and the *purity* of sonic content in electronic sound, should both be problematic for feminist musicology.<sup>23</sup> These theories of listening that describe audio in terms of auditory rupture are complicit in the effort to avoid music's feminization. They essentialize sound, viewing technologies of its mediation as neutral, meaningless, and ahistorical. And they participate in the normalization of White masculinity by advocating disregard of the male domination of the broadcast, recording, and electronic music industries. Even aside from this, I find the terminology of disembodiment too often unhelpfully used without definition in accounts of electronic sounds, music, and performance. Often, the term inarticulately appears within a list of similarly vague descriptors. In

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<sup>23</sup> A 2014 panel discussion and Q&A with Martin Daughtry, Clara Latham, and Lauren Ninoshvili at a conference at New York University also addressed the problematic politics of the very term schizophonia, which Schafer describes as "a nervous word [...] related to schizophrenia [and] intended [...] to convey the same sense of aberration and drama." Schaeffer, *The Tuning of the World*, 91. See Daughtry et al., "Concluding remarks and discussion of next steps," concluding remarks at Voice at the Limits of Hearing: Historical and Contemporary Perspectives on Sonic Materiality and Expression (New York University, New York, March 7, 2014).

his monograph *Breathless: Sound Recording, Disembodiment, and the Transformation of Lyrical Nostalgia*, Allen S. Weiss only ever uses the term within catalogues of others: “disembodiment, death and nostalgia,” “partial, disembodied subjects,” “inhuman, inarticulate, disembodied screams,” and most confusingly “the effects of amplification, repetition, reversal, dubbing, projection, broadcast, disassociation and disembodiment.”<sup>24</sup> Like most scholars, Weiss never clarifies whether embodied and disembodied sounds are in a dichotomous, dialectical, or coterminous relationship.

As Abbate concedes, feminist musicologists also disagree about the political uses of embodiment and disembodiment. Is musicological attention to bodily performance really the answer? Or, Abbate doubts herself, “is the embrace of embodiment an essentialist end run?”<sup>25</sup> What is the difference between the masculinized decorporealization of music that Suzanne G. Cusick has called a “mind-mind game”<sup>26</sup> and the condition that we call disembodied voice? And how can feminist theory create new models for addressing noncompliance with the traditional gendering of disembodied vocalicity? In a recent article titled “Down with Disembodiment,” Holly

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<sup>24</sup> Allen S. Weiss, *Breathless: Sound Recording, Disembodiment, and the Transformation of Lyrical Nostalgia* (Middletown, CT: Wesleyan University Press, 2002), xiii, 20, 85, 82.

<sup>25</sup> Abbate, *In Search of Opera*, 52.

<sup>26</sup> Suzanne G. Cusick, “Feminist Theory, Music Theory, and the Mind/Body Problem,” *Perspectives of New Music* 32/1 (Winter, 1994): 16.

Watkins and Melina Esse caution against analytical models that view the vocal body as just another machine emitting a disembodied phenomenon.<sup>27</sup> What are musicologists to do, however, when the voice *is* partially produced by a machine?

Watkins and Esse bring up the modest but valuable postulate of J. Q. Davies: “The truth of what voices are [in relation to bodies] depends on *where* observers look, on which part or aspect of the body is deemed essential: mouth, lips, tongue, vocal tract, larynx, lungs, cerebral cortex – one could go on and on.”<sup>28</sup> In a 1995 article, Dyson identifies “an odd kind of disembodied ‘embodiment,’”<sup>29</sup> and by 2009, she calls disembodiment “slippery” and a “fiction.”<sup>30</sup>

A rhetorical apparatus developed in conjunction with, and often as a response to, [a] technological apparatus: like the equipment, if often broke down; it

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<sup>27</sup> Holly Watkins and Melina Esse, “Down with Disembodiment; or, Musicology and the Material Turn” *Women and Music* 19 (2015): 165.

<sup>28</sup> J. Q. Davies, *Romantic Anatomies of Performance* (Berkeley: University of California Press, 2014): 151 quoted in Watkins and Esse, “Down with Disembodiment,” 166.

<sup>29</sup> Frances Dyson, “In/Quest of Presence: Virtuality, Aurality, and Television’s Gulf War,” in *Critical Issues in Electronic Media*, ed. Simon Penny (Albany, NY: State University of New York Press, 1995), 28.

<sup>30</sup> Dyson, *Sounding New Media*, 2, 80.

was always incomplete; and it always promised too much.<sup>31</sup>

While feminist musicologists like Watkins and Esse mourn the disappearance of the body from body-produced technologized music, Dyson deplores “the disappearance of machines from conversations about machine-produced works.”<sup>32</sup> Synthesized voice presents a challenge for traditional conceptions of vocal embodiment and disembodiment, but labels such as *inhuman* and *disembodied* provide reconciliation only at the expense of their epistemological burden. When listeners do not understand a technological musical process, be it a virtuosic vocal technique or the artificial sound of vocal synthesis, they reach for new vocabulary, which often expresses not only aurality but also alterity. I seek to undo the work of gendered and racialized terminologies surrounding electronic music by addressing the work of composers, technologies, institutions, and companies involved in several scenes of early vocal synthesis, and asking how we hear electronic sound through extra musical contexts such as the vocal synthesizer’s military history, the colonial framing of outer space, Classical music, and so on.

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<sup>31</sup> Dyson, *Sounding New Media*, 12.

<sup>32</sup> Nina Sun Eidsheim and Mandy-Suzanne Wong, Review of *Sounding New Media: Immersion and Embodiment in the Arts and Culture* by Frances Dyson, *Organised Sound* 16 (2011): 284.

## Early Modes of Vocal Synthesis

A vocal synthesizer analyzes the formant qualities of an input signal – normally the spoken voice – and the tonal qualities of a synthesizer. The result sounds like tonal speech or singing. The Vocoder transmits the voice not as sound but as a description of its constituent spectral frequencies that can be decoded as sound at the receiving end. The transducer converts sound into electrical signal, and in digital technologies further into binary code, and then decodes it back into sound: as Sterne points out, sound is not *removed from* a body as much as it is made into something else.<sup>33</sup> Where theories of listening to mediated sound insist on diagnosing a schism, a separation, a defamiliarization, disembodiment, or even a metaphorical death, synthesized voice and its constituent technologies do not add up to a subject with a body.

Like many other sound technologies, the earliest vocal synthesizer brings together the United States military and the Bell Telephone Laboratories. In New Jersey, research engineer A. B. Clark headed a research effort that resulted in the exhibition of an early prototype of a Vocoder at the 1939 World Fair in New York and the filing of a patent in 1942.<sup>34</sup> The apparatus looked like a giant, boxy piece of furniture and took up an entire room; ten of its channels read the amplitude of the voice in different parts of

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<sup>33</sup> Sterne, *The Audible Past*, 22.

<sup>34</sup> Christopher H. Sterling, “SIGSALY: Beginning the Digital Revolution,” *The Journal of Winston Churchill* 49 (Winter 2010-11): 32.

a limited frequency spectrum (250-3000 Hz was enough), and two channels registered pitch and hiss.<sup>35</sup> By 1943, Clark's Vocoder became the basis for the first digital secure voice communications system called SIGSALY made by Western Electric for the U.S. government.<sup>36</sup> SIGSALY, a fake acronym invented to deceive the enemy, served the United States' military from 1943 to 1946 to facilitate encrypted conferencing between the executive branches and other high-level government offices of the United States and the United Kingdom.<sup>37</sup> In an illustrated, general-interest publication on the military history of the Vocoder (a rare text to credit Carlos with groundbreaking work on vocal synthesis), Dave Tompkins describes the inaugural conference call between Franklin D. Roosevelt and Winston Churchill, which was followed by at least three thousand additional conferences among twelve SIGSALY

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<sup>35</sup> J. V. Boone and R. R. Peterson, "SIGSALY – The start of the Digital Revolution," *National Security Agency / Central Security Agency Center for Cryptologic History* (2000), last modified January 15, 2009, accessed December 5, 2014, [http://www.nsa.gov/about/cryptologic\\_heritage/center\\_crypt\\_history/publications/sigsaly\\_start\\_digital.shtml](http://www.nsa.gov/about/cryptologic_heritage/center_crypt_history/publications/sigsaly_start_digital.shtml).

<sup>36</sup> Clark went on to head the research and development activities at the young National Security Organization in the 1950s. Boone and Peterson, "SIGSALY."

<sup>37</sup> Patrick D. Weadon, "Sigsaly Story," *National Security Agency / Central Security Service*, last modified January 15, 2009, accessed December 5, 2014, [http://www.nsa.gov/about/cryptologic\\_heritage/center\\_crypt\\_history/publications/sigsaly\\_story.shtml](http://www.nsa.gov/about/cryptologic_heritage/center_crypt_history/publications/sigsaly_story.shtml).

terminals around the globe.<sup>38</sup> Each terminal “occupied 2,500 square feet, essentially a three-bedroom home and a garage,” a space that was overheated from the work of hundreds of vacuum tubes that regulated current.<sup>39</sup> Tompkins calls SIGSALY’s Vocoder “the dehumanizer” and marvels that Churchill and Roosevelt, and later Harry S. Truman, would only hear “mechanical simulacra” of one another’s voices.<sup>40</sup> In 1987, Sir Fitzroy Maclean retroactively also described the experience as “inhuman.”<sup>41</sup> Roosevelt himself found the device alienating because “he did not want to be placed ‘one the spot,’ with no time to consider his answers.”<sup>42</sup> Clark’s

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<sup>38</sup> Dave Tompkins, *How to Wreck a Nice Beach: The Vocoder from World War II to Hip-hop* (Brooklyn, NY: Melville House Publishing, 2011), 61. See also Sterling, “SIGSALY,” 33.

<sup>39</sup> Tompkins, *How to Wreck a Nice Beach*, 61. Perfect time synchronization between the two SIGSALY rooms was imperative for correct decoding of signal. A key, intended to deceive, was made up of randomized thermal noise recorded on wax platters, and physically delivered to the sending and receiving SIGSALY stations ahead of time. A pair of records with the key made by Bell Labs and Muzak Corporation, and called SIGGRUV, another fake acronym that clumsily alludes to a record’s grooves was then played at exactly the same time on both ends with the speakers’ voices blended with its signal. Only then could each receiving station extract a speaker’s voice from the signal mix. Tompkins, “Smile When You Say Nasty Words,” *Only Connect Festival of Sound* (2013), catalogue publication, 68-9, accessed November 13, 2014, <http://nymusikk.no/en/artikler/dave-tompkins>.

<sup>40</sup> Tompkins, *How to Wreck a Nice Beach*, 76.

<sup>41</sup> Fitzroy McLean, “Joys of the Scrambler,” [Churchill Tour Dinner, Strachur, Scotland, September 12, 1987.] *The Journal of Winston Churchill* 49 (Winter 2010-11): 32.

<sup>42</sup> Sterling, “SIGSALY,” 33.

invention remained classified until 1976, and so the radically innovative digital encoding-decoding of the voice that is a precursor to cell phone technology did not cross-pollinate with the music industry for quite a while.

A different process of vocal synthesis took place at the Bell Laboratories in 1961: John C. Kelly and Carol C. Lochbaum wrote software, run on the punch-card computer IBM 704, that digitized data sampled from a physical mock-up of a vocal tract.<sup>43</sup> Using this process of physical modeling synthesis, they computed the song “Daisy Bell (Bicycle Built for Two).”<sup>44</sup> The original a capella version as well as a later version with honky-tonk accompaniment programmed by researcher Max Mathews<sup>45</sup> appeared on a

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<sup>43</sup> Julius O Smith III, “Singing Kelly-Lochbaum Vocal Tract,” in *Physical Audio Signal Processing: for Virtual Musical Instruments and Digital Audio Effects* (W3K Publishing, 2010). Accessed on [https://ccrma.stanford.edu/~jos/pasp/Singing\\_Kelly\\_Lochbaum\\_Vocal\\_Tract.html](https://ccrma.stanford.edu/~jos/pasp/Singing_Kelly_Lochbaum_Vocal_Tract.html).

<sup>44</sup> Paul Doornbusch, “A Chronology of Computer Music and Related Events,” in *The Oxford Handbook of Computer Music*, ed. Roger T. Dean (New York: Oxford University Press, 2009), 561.

<sup>45</sup> Mathews used MUSIC IV, the fourth generation of his sound synthesis program, to program the accompaniment. Interestingly for musicologists, Mathews worked closely with Edgard Varèse, Vladimir Ussachevsky, Milton Babbitt, John Cage, Pierre Boulez, and Laurie Spiegel at various points in his career in electronic and computer music research. He was a rare point of contact between the sound research group at Bell Labs and the Columbia-Princeton Electronic Music Center (CPEMC), and later also IRCAM. Max Mathews, “Max Mathews (1926-2011),” interview by Geeta Dayal, *Frieze.com*, May 9, 2011, accessed April 2, 2015. <http://friezenewyork.com/article/max-mathews-1926%E2%80%932011>.

1961 phonosheet (flexidisc) titled *Synthesized Speech*<sup>46</sup> that came with a monthly publication, *The Reporter*, distributed exclusively to the employees of Bell Telephone Laboratories and shareholders of AT&T. The flexidisc also included a synthesized version of Hamlet's soliloquy. For the author of an unattributed article in *The Reporter*, likely a researcher at Bell Laboratories intimately familiar with the process of synthesis, physical modeling synthesis put little pressure on the vocal body: the author describes the vocal tract in great detail and emphasizes that physical modeling synthesis is "merely an imitation" of speech.<sup>47</sup> "Daisy Bell" resurfaced again in 1962 as the only vocal track on an album of electronic music titled *Music from Mathematics*.<sup>48</sup>

Six years later, in 1968, the character of the artificially intelligent computer HAL 9000 sung "Daisy Bell" in Kubrick's *2001: A Space Odyssey*, a story of an investigative voyage to Jupiter aboard Discovery One, a nuclear-powered spacecraft. Kubrick, however, used neither the Vocoder nor physical modeling synthesis to produce the rhythmic and timbral characteristics of synthesized speech. Instead, the voice of HAL was simply recorded by Canadian voice actor Douglas Rain, and, as Kubrick later shared

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<sup>46</sup> Virtually the same record, re-titled *Hee Saw Dhuh Kaet (He Saw The Cat)*, was produced for a broader audience on a 33½rpm record in 1963. It was labeled "for educational use" and lasted five minutes. *Hee Saw Dhuh Kaet (He Saw The Cat)*, 1963 by Bell Telephone Laboratories, PB-287, LP.

<sup>47</sup> "The Building Blocks of Words," *The Reporter* (June 1962), 5.

<sup>48</sup> *Music from Mathematics: Played by IBM 7090 Computer and Digital to Sound Transducer*, 1972 by Decca, DL 1903, LP.

with Carlos, the makers of the film simply applied “a mild amount of time stretching” to the tracks to create the illusion of synthesized speech.<sup>49</sup> To increase a tape’s duration without a drop in pitch, the Eltro rate changer was used, winding tape around a rotating head drum and several cylinders that could turn *with* the passing tape to counteract the pitch-shifting effect of slow playback.

Although HAL’s spoken voice functions like a dialogic voiceover piped through the intercoms of the ship, it resists the colonial machismo implicit in both the genre of the voiceover and the project of space exploration.<sup>50</sup> Instead of acting as a traditional *acousmètre*, HAL illustrates what Marie Lathers has diagnosed as an ambiguity and interchangeability of the astronaut and the alien in Space Age culture – a “category of identity that may at times extend to non-human primates (chimps), women, and people of

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<sup>49</sup> Wendy Carlos, *Wendycarlos.com*, accessed 2012-2015, <http://www.wendycarlos.com>. The composer’s website is an invaluable resource and archive for Carlos scholars. I will cite this labyrinthine archive by site name only and recommend further navigation by keyword search. See also Curtis Roads, *The Computer Music Tutorial* (Cambridge, MA: The MIT Press, 1996), 267.

<sup>50</sup> Kaja Silverman and Michel Chion have charted the unsettling prevalence of male-voiced voice-overs in Hollywood cinema, while Katharine Norman and Frances Dyson have addressed a similar trend on the radio. Kaja Silverman, *The Acoustic Mirror: The Female Voice in Psychoanalysis and Cinema* (Bloomington: Indiana University Press, 1988); and Michel Chion, *The Voice in Cinema*, trans. Claudia Gorbman (New York: Columbia University Press, 1999); and Katharine Norman, *Sounding Art: Eight Literary Excursions through Electronic Music* (Burlington, VT: Ashgate Publishing Company, 2004), 104; and Frances Dyson, “Genealogy of the Radio Voice,” in *Radio Rethink: Art, Sound, and Transmission*, eds. Daina Augaitis and Dan Lander (Banff, Canada: Walter Phillips Gallery, 1994), 167-186.

color.”<sup>51</sup> HAL sonically queers his position of control over the ship by speaking softly and hesitantly, undermining our expectation of a commanding and resolute voice from someone in a position of power. On her website, Carlos describes Rain’s delivery as “feelingful.” Moreover, the close microphone set-up used to record Rain’s voice creates an eerie aural intimacy, locking the listener into a quasi-erotic aural bind with HAL, who does not fit within the binary architecture of sex and gender. Hannah Bosma calls his voice “all too gentle, effeminate,” and suggests that as HAL’s memory modules are taken away, his embodied self is exposed, and in this feminized position he must die.<sup>52</sup> Indeed, HAL does not fit in binary architecture of gender: only at the point of his castrative exit does exhibit a feeble attempt to sing the heteronormative message of a song romancing a female subject. Dave is the film’s masculine archetype, and his impassive, cold character contrasts with HAL’s emotional exit (“Stop Dave. I’m afraid. I’m afraid, Dave”) and HAL’s motherly concern for the astronaut (“I honestly think you ought to sit down calmly, take a stress pill and think things over.”). Judith Peraino has

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<sup>51</sup> Marie Lathers, *Space Oddities: Women and Outer Space in Popular Film and Culture, 1960-2000* (New York: Continuum, 2010), 9.

<sup>52</sup> Hannah Bosma, "Bodies of Evidence, Singing Cyborgs and Other Gender Issues in Electrovoical Music," *Organised Sound* 8/1 (2003): 15.

described their conversations as a “homoerotic standoff,”<sup>53</sup> and the figuring of Dave as Daisy can be read as elaborating this erotics.

It is when HAL is being shut down that he regresses to the time of his earliest programming, his primal state. He reiterates a few government secrets and sings the very same “Daisy Bell” that was synthesized by Kelly, Lochbaum, and Mathews. In Mathews’ last interview only weeks before his death in 2011, the composer remembers how Kubrick had sent “one of his people” to Bell Labs, where Mathews showed him “Daisy Bell” and thus inspired “HAL’s swan song.”<sup>54</sup> For HAL’s “Daisy Bell,” Rain’s acoustic singing is passed through Eltro with extreme pitch-shifting together with a moderate amount of time stretching.<sup>55</sup> Although Mathews notes that Kubrick “didn’t actually use the tape that [Mathews] sent him,” he incorrectly supposes that Kubrick must have synthesized another version himself – a testament to the quality of the Eltro simulation.<sup>56</sup> What results between Kubrick’s and Mathews’ covers of “Daisy Bell” is a stunning ontological loop between an acoustic vocal simulation of a sound technology whose very purpose is to simulate acoustic voice. Even without the use of physical modeling synthesis,

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<sup>53</sup> Judith Peraino, “Synthesizing Difference: The Queer Circuits of Early Synthpop,” in *Rethinking Difference in Music Scholarship*, eds. Olivia Bloechl, Melanie Lowe, and Jeffrey Kallberg (Cambridge: Cambridge University Press, 2015), 295.

<sup>54</sup> Mathews, “Max Mathews (1926-2011),” interview by Geeta Dayal.

<sup>55</sup> Carlos, *WendyCarlos.com*.

<sup>56</sup> Mathews, “Max Mathews (1926-2011),” interview by Geeta Dayal.

the voice of HAL stimulates a preexisting intertextual link between synthesized voice and outer space only to use the undefined, malleable condition of outer space to envoice a queer subject. The next section elaborates the experimental flexibility of outer space narratives, tying them to the persistent notion of the electronic music studio as a spaceship.

### **Wendy Carlos, Astronaut, Alien**

Wendy Carlos, born Walter, was a composer and engineer from an early age, writing music for classical instruments and building simple computers as a teenager.<sup>57</sup> These interests were mirrored in her Music and Physics double major at Brown University (B.A. 1962) and her Master's degree in electroacoustic composition (M.A. 1965) at the Columbia-Princeton Electronic Music Center (CPEMC) housed in Prentis Hall, a former milk-bottling plant on West 125<sup>th</sup> Street.<sup>58</sup> Brown featured separate colleges for men and women until 1971 and Columbia College did not admit women until 1983 though it had long admitted a small number of women into graduate programs.<sup>59</sup> The male gender Carlos was assigned at birth thus certainly

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<sup>57</sup> Christine Lee Gengaro, *Listening to Stanley Kubrick: The Music in his Films* (Plymouth, UK: Scarecrow Press, 2013), 133.

<sup>58</sup> Elizabeth Hinkle-Turner, *Women Composers and Music Technology in the United States: Crossing the Line* (Burlington, VT: Ashgate Publishing Company, 2006), 214.

<sup>59</sup> "Two and a Half Centuries of History," *Brown*, accessed May 20, 2016, <https://www.brown.edu/about/history>. "Women at Columbia," *Columbia250* (March 2004), accessed May 20, 2016, [http://c250.columbia.edu/c250\\_events/symposia/history\\_women\\_timeline.html](http://c250.columbia.edu/c250_events/symposia/history_women_timeline.html).

shaped the particular path of her higher education and early professional life and doubtless opened doors that would have remained closed for her otherwise.<sup>60</sup>

From 1964, Carlos advised Robert Moog on the synthesis of orchestral sounds and the build of his synthesizer at the CPEMC.<sup>61</sup> Vladimir Ussachevsky, Charles Dodge, Milton Babbitt, Mario Davidovsky, Pril Smiley, Alice Shields, Otto Luening, and other electronic music composers worked at the CPEMC with various degrees of affiliation during the time of Carlos' involvement with the institution. In testimony to the gender politics of the CPEMC, Elizabeth Hinkle-Turner has noted that although Shields and Smiley took on teaching and research duties equal to Bulent Arel and Ussachevsky, "neither woman was ever named a faculty member at the Center. Smiley was listed as a 'clerk' [and] Shields was classified as 'Science Technician II' even after receiving her doctorate."<sup>62</sup> Next to her work at the CPEMC, Carlos

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<sup>60</sup> With acknowledgment of Carlos' current gender identity, I use female pronouns and the name Wendy throughout this chapter even though the repertoires I discuss come from years at the beginning of her transition and Carlos was still legally and publicly using her given name Walter at the time.

<sup>61</sup> Hinkle-Turner, *Women Composers and Music Technology in the United States*, 214.

<sup>62</sup> Hinkle-Turner, *Women Composers and Music Technology in the United States*, 21. An exhibition of documents and photographs celebrating the Centennial of the Department of Music in 1996 reflects the male composition of the Composition faculty and the former CPEMC, which had by then become the Computer Music Center at Columbia University. Mary Monroe, *Music at Columbia: The First 100 Years*, exhibition catalogue (1996), 36-8.

worked on her own composition with producer Rachel Elkind from her first private studio on West End Avenue and 79<sup>th</sup> Street between 1966 and 1971. This timeframe included the release of the first production models of the Moog synthesizer (1967) and Carlos' subsequent composition of *Switched-On Bach* (1968), a synthesized orchestration of J.S. Bach's *Brandenburg Concerti*, which sold over a million copies, won three Grammy awards in 1969 including Best Classical Album, and sparked broad public interest in synthesized sound.<sup>63</sup> It is likely that Kubrick invited Carlos and Elkind to compose pieces for *A Clockwork Orange* in light of the global popularity of *Switched-On Bach*.

*Switched-On Bach* was still attributed Walter and the 1972 release of *Walter Carlos' Clockwork Orange* following the premiere of Kubrick's film brought some level of celebrity to Carlos' given name.<sup>64</sup> The unfortunate flipside of this success of was that Carlos' decision to transition and enter public life as Wendy was hindered and delayed until the late 1970s. Carlos largely withdrew from the public eye during this decade and understandably still prefers to avoid discussions of her gender-transition. After all, even now in 2016, mainstream attitudes towards gender-nonconformity are still

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<sup>63</sup> Judith Rosen, "Carlos, Wendy," *Grove Music Online. Oxford Music Online*. Oxford University Press, accessed April 6, 2015, <http://www.oxfordmusiconline.com/subscriber/article/grove/music/47301>.

<sup>64</sup> Walter [Wendy] Carlos, *Switched-On Bach*, Columbia Masterworks Records MS 7194, 1968. LP. Walter [Wendy] Carlos, *Walter Carlos' Clockwork Orange*, Columbia Records KC 31480, 1972, LP.

uninformed, unsophisticated, and hostile in the United States. That Carlos' prolific musical career continued through the 1970s should be credited in part to Rachel Elkind, who grew to be Carlos' dependable collaborator and live-in companion during the decade.

Elkind's production work often goes uncredited by music scholars but as Carlos notes on her extensive website, "there was a 'silent partner' for all these projects."<sup>65</sup> Her website is also the only source I have come across that describes Elkind's work as a producer in the studio in great detail. Carlos thought of Elkind's musical and personal background as perfectly complementary to her own: Elkind started in San Francisco as a jazz singer, whereas Carlos grew up on the East Coast, receiving classical education and a degree in Composition from a prestigious university. "Rachel helped me to shed some of the stuffer conceits one can acquire from formal music studies in Ye Olde Ivy League," says Carlos.<sup>66</sup>

Carlos' private studio was a monument to the golden era of American-made studio electronics. Carlos dubbed the space her "Moog Studio" because of its crown jewel, a modular Moog synthesizer, which was "custom-assembled over period of five years" and fitted with a custom Vocoder on top, a "homemade 10-in 2-out mixer below (on pullout glides), flanked by two

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<sup>65</sup> Carlos, *WendyCarlos.com*.

<sup>66</sup> Carlos, *WendyCarlos.com*.

homemade 8' ducted-port speakers."<sup>67</sup> The studio also boasted a two-track Ampex recorder, a custom 1' eight-track Ampex recorder, several Dolby A-301 units (which compress and expand signal in order to reduce noise), two Marantz power amplifiers, and a Klangumwandler frequency-shifting unit designed by Ussachevsky at the CPEMC and built by Harald Bode in 1966. With the rigor of an ethnographer, Carlos includes two Tensor lamps and "a big potted palm tree" on her list of studio equipment.<sup>68</sup> From the vantage point of the new millenium, it is quite remarkable that all of the studio equipment came from the United States, often the hyper-local New York area, and that much of it was custom-built and handmade.<sup>69</sup> Even the Tensor lamps are New Yorker Jay Monroe's invention originally home-assembled from an "auto-light bulb, a transformer, a shoestring length of low-voltage wire, [and] a bit of styling."<sup>70</sup> These were the short peak years for American companies making studio electronics. In his book on electronic music, Joel Chadabe wrote that "1969 was a good year for Moog synthesizers"<sup>71</sup> but as

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<sup>67</sup> Carlos, *WendyCarlos.com*.

<sup>68</sup> Carlos, *WendyCarlos.com*.

<sup>69</sup> Ampex and Dolby were based in California at the time; Marantz was a company from Queens, New York. Tensor Corp. is still registered at a Brooklyn, New York address.

<sup>70</sup> John H. Ingersoll, "Big Light in a Little Package," *Popular Science* (January 1965): 151.

<sup>71</sup> Joel Chadabe, *Electric Sound: The Past and Promise of Electronic Music* (Upper Saddle River, NJ: Prentice Hall, 1997), 144.

Trevor J. Pinch and Karin Bijsterveld note, “this was quickly followed by a downturn, as the market became glutted” and by the early 1970s, Moog was facing bankruptcy.<sup>72</sup>

In the 1980s, the composer’s friends dubbed one of her studios The Spaceship: it was in an oblong sweatshop in Greenwich Village.<sup>73</sup> “I’m not quite a full-fledged “space nut,” but can come close to it,” writes Carlos in a preface to a story about taking a trip to Cape de Rachel to witness the 1975 launch of the Apollo shuttle of Apollo-Soyuz.<sup>74</sup> The metaphor of the studio as spaceship resonates with the perception of synthesized voices as inhuman and with outer space viewed through a colonial narrative.<sup>75</sup>

Outer space went through a colonial era – Lathers refers to it as “the new Orient, the new Africa.”<sup>76</sup> Meanwhile, the home studio became man’s

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<sup>72</sup> Trevor J. Pinch and Karin Bijsterveld, “Should One Applaud?: Breaches and Boundaries in the Reception of New Technology in Music,” *Technology and Culture* 44/3 (2003): 553.

<sup>73</sup> Susan Reed, “After a Sex Change and Several Eclipses, Wendy Carlos Treads a New Digital Mooncape,” *People* July 1, 1985: 83. Carlos, *WendyCarlos.com*.

<sup>74</sup> Carlos, *WendyCarlos.com*.

<sup>75</sup> Asif A. Siddiqi, “Spaceflight in the National Imagination,” in *Remembering the Space Age: Proceedings of the 50<sup>th</sup> Anniversary Conference*, ed. Steven J. Dick (Washington, DC: Government Printing Office: 2008), 17; Marie Lathers, *Space Oddities*, 129.

<sup>76</sup> Lathers, *Space Oddities*, 180-181.

“colonization of the [traditionally feminized] private sphere.”<sup>77</sup> The traditionally male user demographic of electronic music studios was, as documented by Canadian composer Andra McCartney, compounded by militaristic, misogynist, and even violent language surrounding equipment – a workstation full of controls, transports, transducers, meters, consoles, and the sexualized terminology of female jack connectors housing male plugs.<sup>78</sup> This heterosexist, macho language is used in computer music as well – programs are “crashed,” “killed,” “abort[ed],” and so on.<sup>79</sup> McCartney draws on the work of Sandra Harding, who has conceptualized early scientific culture as modeled on misogynistic and violent relationships to women, a “cowboy”/“outlaw” culture that later defines electronic and computer music studios.<sup>80</sup>

It was not only music studios that collected some of the pixie dust of the Cold War: in a 1984 lecture, Jean Baudrillard drew a homology between the “recording and broadcasting studios” of television and “the command and

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<sup>77</sup> Paul Théberge, *Any Sound You Can Imagine: Making Music / Consuming Technology* (Hanover, NH: University Press of New England, 1997), 125.

<sup>78</sup> Andra McCartney, “Inventing Images: Constructing and Contesting Gender in Thinking about Electroacoustic Music,” *Leonardo Music Journal* 5 (1995): 57-66.

<sup>79</sup> McCartney, “Inventing Images,” 57. See also Bosma, “Bodies of Evidence,” 5-17.

<sup>80</sup> McCartney, “Inventing Images,” 58, 65-66.

control centre of the [nuclear] reactor.”<sup>81</sup> He argued that the “core” of both spaces “remains concealed from us,” while “the drama is acted out on the screens and nowhere else.”<sup>82</sup> The image of the electronic studio as a technology of national colonial power, both because of its U.S.-made equipment and its space-colonial figuration, thus fits into a broader view of technologized America as a leader in the post-war global order.

As the colonial mission became the extraterrestrial imperative in the 1960s and 70s, white women as well as women and men minorities (descendants of the colonized) posed a problem for NASA.<sup>83</sup>

Lathers argues that the astronaut and the alien are Othered similarly to women; however, she says, the colonial figuration of outer space is also a frequent site of experimentalism: “These apparently untainted spaces promote the interaction among race, gender and species as open to negotiation,” she writes.<sup>84</sup> In other words, that a woman in outer space is “in some sense labeled as a monstrosity”<sup>85</sup> opens up a space for carnivalesque,

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<sup>81</sup> Jean Baudrillard, “The Evil Demon of Images,” in *Film Theory: Critical Concepts in Media and Cultural Studies, Volume 4*, eds. Philip Simpson, Andrew Utterson, and K. J. Shepherdson (New York: Routledge, 2004), 184.

<sup>82</sup> Baudrillard, “The Evil Demon of Images,” 184.

<sup>83</sup> Lathers, *Space Oddities*, 148.

<sup>84</sup> Lathers, *Space Oddities*, 181.

<sup>85</sup> Lathers, *Space Oddities*, 6.

or queer possibility. In a survey of songs about Laika, the mixed-breed dog sent into the orbit in 1957, historian Amy Nelson identifies the same musical impulse for experimentation with subjectivity and species, enabled by the black-boxing of the actual events of Laika's orbit – the hidden core of Baudrillard's reactor, so to speak.<sup>86</sup> Nelson even gestures to Laika as a queer Oscar Wilde-esque figure.<sup>87</sup> Carlos' position in the studio, composing synthesized voices that have been heard as "inhuman-sounding"<sup>88</sup> and "futuristic,"<sup>89</sup> similarly straddles the edge between astronaut and alien, cowboy and outlaw, particularly because she does not compose from the subjective position of a White man.

### **Synthesizing Beethoven**

In 1971, Carlos moved into an Upper West Side brownstone owned by Elkind and Elkind's mother, and brought her equipment from the Moog Studio into a ground-floor space in the building, sinking the floor to achieve better acoustics.<sup>90</sup> Hinkle-Turner has documented that a number of university and

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<sup>86</sup> Amy Nelson, "The Music of Memory and Forgetting: Global Echoes of Sputnik II," in *Remembering the Space Age: Proceedings of the 50<sup>th</sup> Anniversary Conference*, ed. Steven J. Dick (Washington, DC: Government Printing Office: 2008), 249.

<sup>87</sup> Nelson, "The Music of Memory and Forgetting," 250.

<sup>88</sup> Théberge, *Any Sound You Can Imagine*, 214.

<sup>89</sup> Blair Jackson, "Wendy Carlos' 'March from A Clockwork Orange,'" *Mix* 26/5 (April 2002): 144.

<sup>90</sup> Carlos, *WendyCarlos.com*.

research electronic music studios in the U.S. were successfully founded and directed by women between the late 1960s and mid 1980s,<sup>91</sup> but home studios were still extremely rare and it was especially atypical that this one was owned and operated by two women. Music for *A Clockwork Orange* was only the second project completed there. Although Carlos' *March from A Clockwork Orange* is the most recognized part of her extensive score, *March* and *Timesteps* predate Carlos' work on the film in both idea and execution and were likely begun at her previous Moog studio.

the main vocoded portions were done BEFORE getting assigned to do the film, for the last mvmt of Beeth Symph #9, and Timesteps, nearly a year before working with Kubrick<sup>92</sup>

Carlos' *March* should therefore be treated as autonomous from Kubrick's film and considered, indeed heard, within Carlos' rather than Kubrick's professional, musical, and material networks. This is especially important because of Kubrick's auteur's tendency to override and eclipse the composers he worked with during his career. He had famously commissioned, and then discarded Alex North's film score for *2001: A Space*

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<sup>91</sup> Elizabeth Hinkle-Turner, "Women and Music Technology: Pioneers, Precedents, and Issues in the United States," *Organised Sound* 8/1 (April 2003): 31-47.

<sup>92</sup> Carlos, *WendyCarlos.com*.

*Odyssey*, adopting instead three György Ligeti pieces among other preexisting music without alerting either North or Ligeti to the change.<sup>93</sup>

*March from A Clockwork Orange* is a fully synthesized, edited version of the finale of Beethoven's Symphony No. 9, Op. 125 (1824), which famously sets portions of "Ode to Joy," a poem by Friedrich Schiller, for a large chorus accompanied by orchestra. The Ninth Symphony has been on the boilerplate of music scholars perhaps more than any other piece of music precisely because of the composer's innovative decision to stage a chorus within the "the flagship genre of absolute music."<sup>94</sup> Since "the musical public had a massive emotional investment in [Beethoven's] music,"<sup>95</sup> the composer's radical inclusion of a staged chorus within the finale had to be reconciled, explained, or, as Giuseppe Verdi, Louis Spohr, and Fanny Mendelssohn (later Hensel) had done, emphatically rejected.<sup>96</sup> The reaction to Carlos' *March* in

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<sup>93</sup> Richard Steinitz, *György Ligeti: Music of the Imagination* (London: Faber and Faber, 2003), 161-164.

<sup>94</sup> Nicholas Cook, *Beethoven: Symphony No. 9* (Cambridge: Cambridge University Press, 1993), vii.

<sup>95</sup> Nicholas Cook, *Music: A Very Short Introduction* (Oxford: Oxford University Press, 1998), 22.

<sup>96</sup> Cook, *Beethoven*, 93. Richard Taruskin, "Resisting the Ninth," rev. of Beethoven's Symphony No. 9 in D Minor, op. 125 performed by Yvonne Kenny, Sarah Walker, Patric Power, Petteri Salomaa, and the Schütz Choir of London, The London Classical Players, Roger Norrington, conductor, *19<sup>th</sup> Century Music* 12/3 (Spring 1989): 246, 249.

1970 was no less divisive, if on a smaller scale: “people hated it. They thought imitating an instrument was O.K. but a human voice? No!”<sup>97</sup>

Carlos’ decision to synthesize the “Ode to Joy” was somewhat circular: “The Ninth, m. IV, has a singing chorus – so the suggestion to use a Vocoder was automatically made by choosing to realize the piece.”<sup>98</sup> The possibility of setting the “Ode to Joy,” of course, hinged on the ability to synthesize voice: having advised Moog on his synthesizer design for years, Carlos commissioned Moog to build a Vocoder, which they originally called a spectrum encoder-decoder. Like Clark’s Vocoder from 1942, except analog, the Moog Vocoder could reconstitute the spectral makeup of input signal of speech sounds, and synthesize new pitches for musical purposes.

There is a lot of personification in Carlos’ account of the Vocoder, most evident on her 1987 release *Secrets of Synthesis*, a kind of audio lecture-demonstration with sonic and musical examples from her early work.

Personified, the Vocoder describes itself starting off in monotonous speech:

*I am a 10-band Vocoder. I was designed by  
Transelectronic Music and built by R. A. Moog in the  
summer of 1970.*

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<sup>97</sup> Wendy Carlos, *Secrets of Synthesis*, 1987 by East Side Digital, ESD 81692, LP.

<sup>98</sup> Carlos, *WendyCarlos.com*.

The personification of the Vocoder thus falls in the lineage of the Phonograph, which delivered a similar first-person message to the press in 1888 in an act of “impossible self-reference.”<sup>99</sup>

*Gentlemen, in the name of Edison, to whose rare genius, incomparable patience, and indefatigable industry I owe my being, I greet you.*

To reference this genealogy is likely a self-conscious act on the part of Carlos. The intonation of the Vocoder becomes increasingly melodically animated as its melodic possibilities emerge. By the end of the following excerpt, the voice is shrill in pitch, percussive and brassy.

*If a synthesizer output is fed into my voicing circuit, I can even sing songs and chorus parts, as follows...*

Finally, the personified Vocoder bursts into the synthesized *alla marcia* portion of Beethoven’s symphonic finale, complete with a synthesized orchestra:

*Froh, froh, wie seine Sonnen, seine Sonnen fliegen [...]*

Like the Moog synthesizer, Carlos’ Vocoder boasted the musician-friendly interface of the keyboard. To synthesize a melody in the timbre of the singing voice or an orchestral instrument required a lot more than playing through the pitches, however. In order to achieve the desired timbral depth of every tone, Carlos and Elkind often used all of the synthesizer’s

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<sup>99</sup> Kane, *Sound Unseen*, 184.

oscillators. As a result, the assembly of *March* was tedious, progressing a few notes at a time, recorded in monophonic layers, and assembled with multitrack overdubbing. In the words of Robert Moog, Carlos showed a “near-fanatical concern for subtlety and delicacy of detail” in composition.<sup>100</sup> On *Secrets of Synthesis*, she describes her concern with distinguishing the hard downbow and the soft upbow of synthesized strings, as well as her moderation of the Vocoder’s vibrato “to avoid sounding vulgar.” Says Carlos: “If the tonal quality didn’t change much over a phrase, you could get down a measure or two. To create a chord, you’d play the second line, then the third. With counterpoint, you’d play the melodies that wove together [one at a time, a measure at a time].”<sup>101</sup> Carlos has frequently compared sound synthesis to “sculpting,”<sup>102</sup> “chipping,” and “carv[ing] away”<sup>103</sup> – in short, physical labor. Capturing the laboriousness of analog synthesis seems to be one of the central projects of her extensive website, providing a counterpoint to the Vocoder’s personification.

The guiding question of Nicholas Cook’s *Beethoven: Symphony No. 9* is whether and how it might be possible to access a cultural text that has been

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<sup>100</sup> Robert Moog, “Wendy Carlos: New Directions for a Synthesizer Pioneer,” *Keyboard* (November 1982): 51.

<sup>101</sup> Carlos qtd. in Jackson, “Wendy Carlos’ ‘March from A Clockwork Orange,’” 144.

<sup>102</sup> Carlos qtd. in Jackson, “Wendy Carlos’ ‘March from A Clockwork Orange,’” 144.

<sup>103</sup> Carlos, *WendyCarlos.com*.

“interpreted out of existence,” “swallowed up by ideology,” and “consumed by social usage.”<sup>104</sup> Indeed, the “Ode to Joy” theme in particular has been an ideological chameleon.<sup>105</sup> I nominate Carlos’ sound-by-sound, layer-by-layer synthesis as a generative enterprise in this regard, indeed as an analytical rehearing of the last movement, which has been at the heart of the symphony’s social consumption. As an anti-grammatical kind of music analysis, Carlos’ exercise takes a step away from *The Work* and instead spotlights sound, all the way to the timbral properties of every individual soft upbow. In a 1994 colloquy in the *Computer Music Journal* titled “Why Is Good Electroacoustic Music So Good? Why Is Bad Electroacoustic Music so Bad?” Bill Matthews noted the irony that instrumentalists “spend their lives trying to smooth over timbral differences, while professional electroacoustic composers struggle to overcome such regularity.”<sup>106</sup> By listening for performance and recreating its gestures, Carlos places the labor of performance at the center of the Ninth Symphony.

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<sup>104</sup> Cook, *Beethoven*, 2.

<sup>105</sup> The “Ode to Joy” theme functions as the anthem by Rhodesia, NATO, the European Union, a recent European Football Championship, and countless commercial enterprises. See Peter Tregear, “The Ninth After 9/11,” *Beethoven Forum* 10/2 (2003): 227. It has also been played after the fall of the Berlin Wall (conducted by Leonard Bernstein who authorized the change of “Joy” to “Freedom”), represented the Marxist slogan “victory through struggle” in China and national socialization in Japan, where it is called Daiku. Cook, *Beethoven*, 93-98.

<sup>106</sup> Bill Matthews, “Letters: Why Is Good Electroacoustic Music So Good? Why Is Bad Electroacoustic Music so Bad?” *Computer Music Journal* 18/3 (Autumn 1994): 7.

Just as Beethoven's *Symphony* both represented and troubled the rules of Classical symphonic form, *March* is both a shorthand symbol of the Ninth and its radical revision. In 1971, *March* was at the vanguard of sonic surrealism but compared to an orchestral performance, it still must have sounded tinny and thin. Thus, the re-synthesis of the choral symphony is both a music-technological feat and a poor cover version, both impressive and bad, both triumphant and melancholy. Because Elkind's speech formants were lower, and therefore "easier to pitch and process" (that is, more intelligible as a result), Carlos used mostly Elkind's speech samples.<sup>107</sup> Still, during the second and third stanzas, which sit in a higher register, the phonemes are so garbled that they do not sound like language anymore and come across effectively indistinguishable from orchestral sounds. The timbral fashioning of *March*, which sounds groundbreaking and expert, and at the same time distinctly unimpressive vis-à-vis Beethoven's *Ode*, is not only a testimony to the technological historicity of the piece but also its conceptual strength.

The early Vocoder also makes vocal gender ambiguous. Perceived vocal gender is the primary generator of meaning in listening to voices, whether acoustic, electronic, or synthesized: it is the first and foremost filter through which we hear others. Clifford Nass and Scott Brave's study of listening to synthesized voices proves that even when listeners change their

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<sup>107</sup> Carlos qtd. in Jackson, "Wendy Carlos' 'March from A Clockwork Orange,'" 144.

minds about whether they are listening to a male or a female synthesized voice, the gender they assign influences their interpretation of everything that is said.<sup>108</sup> It is therefore not a stretch to argue that 1970s listeners' "emotional resistance to artificial voices"<sup>109</sup> was at least partially grounded in a fear of aural disorientation within the binaries of sex and gender. I hear the Vocoder chorus of *March* as gender glitch enabled by the plasticity of the technologized Other such as we see in the outer space imaginary. Unlike Peraino, who maintains that the indistinctness of vocal gender in *March* is a direct reflection of Carlos' gender transition, and "despite [Carlos' own] protestations" provocatively describes the piece as "radical reassignment surgery,"<sup>110</sup> I maintain that there is more contextual and musical fabric to Carlos' composition than what can be justified by the scarce and sometimes sensationalist journalistic documentation of her transition.

For one, I believe that a listener-based approach to electronic music can be equally as revealing, if not more so, than mapping musical processes onto composers' lives. Linda Dusman has persuasively argued that although tape music is often understood as participating in the Modernist de-feminization of music by not being performed, it has on the other hand a

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<sup>108</sup> Clifford Nass and Scott Brave, *Wired for Speech: How Voice Activates the Human-Computer Relationship* (Cambridge, MA: MIT Press, 2005), 9-31.

<sup>109</sup> Tompkins, *How to Wreck a Nice Beach*, 165.

<sup>110</sup> Peraino, "Synthesizing Difference," 300.

capacity to make listeners more aware of their bodies “because [they] have no performer’s body to which to attend.”<sup>111</sup> Jennifer Iverson has analyzed the music of Björk under the same hypothesis: “we experience electronic music as embodied not because we see the body of the performer, but because we perceive sound through our own bodies.”<sup>112</sup> Dusman, however, goes a step further in tying this listening to gender and sexuality:

Listening to this unnatural music while having one’s own body rather than the body of the missing performer foregrounded doubles the effeminizing and homosexualizing threat [of music]. In acousmatic performance there is no body on which to transfer that anxiety, no possibility of the safety of voyeurism. To use a metaphor of sexuality, the only possible mode of engagement is autoerotic.<sup>113</sup>

Carlos herself has expressed a similar interest in the listener’s position: in a 1986 interview for *Keyboard* magazine, the interviewer Dominic Milano diagnoses an “infatuation with the concept of one person as orchestra” in her

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<sup>111</sup> Linda Dusman, “No Bodies There: Absence and Presence in Acousmatic Performance,” in *Music and Gender*, eds Pirkko Moisala and Beverley Diamond (Urbana: University of Illinois Press, 2000), 339. Dusman gestures to Suzanne G. Cusick’s 1994 article “On a Lesbian Relationship with Music” as a rare model for thinking about the sexual body of a listener.

<sup>112</sup> Jennifer Iverson, “Mechanized Bodies: Technology and Supplements in Björk’s *Electronica*,” in *The Oxford Handbook of Music and Disability Studies*, eds. Blake Howe, Stephanie Jensen-Moulton, Neil Lerner, and Joseph Straus (Oxford: Oxford University Press, 2015), 169.

<sup>113</sup> Dusman, “No Bodies There,” 340.

work, but Carlos maintains that “music [still] needs the interaction between audience and performer.”<sup>114</sup> By reorganizing the voice-body regime of performance, *March* reopens the case of voices in Beethoven’s symphony. Carlos replicates the innovative presence of *voices* in the symphony, but the Vocoder nullifies the presence of singer’s *bodies* on the Classical stage, thus drawing attention to it. The ontological equivalence of synthesized instruments and synthesized voices, both decoded from electronic signal, highlights the Classical cultural inequality of vocal and instrumental music in continental Europe where the symphony stood decidedly superior to the opera. Moreover, in the recording-as-performance model of *March*, the sexual ambiguity of the Vocoder provocatively maps onto the bodies of listeners.

Carlos sets the *alla marcia* portion of the finale, the so-called Turkish music, which has been widely read as a representation of Otherness within Friedrich Schiller’s idea of universal brotherhood.<sup>115</sup> It is one of the dramatic ironies of music history that the new mouthpiece of universal brotherhood is

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<sup>114</sup> Dominic Milano, “Wendy Carlos: Defying Convention, Discovering New Worlds,” *Keyboard* (November 1986): 73-4.

<sup>115</sup> See, for example, Lawrence Kramer, “The Harem Threshold: Turkish Music and Greek Love in Beethoven’s ‘Ode to Joy,’” *19<sup>th</sup>-Century Music* 22/1 (Summer 1998): 78-90; Mary Hunter, “The *Alla Turca* Style in the Late Eighteenth Century: Race and Gender in the Symphony and the Seraglio,” in *The Exotic in Western Music*, ed. Jonathan Bellman (Boston: Northeastern University Press, 1998) 43-73; and Timothy D. Taylor, *Beyond Exoticism: Western Music and the World* (Durham: Duke University Press, 2007), 65-66.

composed by Carlos and Elkind working collaboratively in a close, live-in partnership that resists the heterosexist plot of Western epistemology. Where the original 'Ode to Joy' chorus performs the Turkish moment only to "celebrat[e] the decline of the Ottoman Empire and the triumph of European Enlightenment values,"<sup>116</sup> Carlos' Vocoder chorus resists the Orientalizing move: the caricature of the Other never "becomes a normalized or domesticated part of 'civilized' discourse"<sup>117</sup> because it is in fact normativity that is being caricatured. Where the Other is typically feminized, racialized, and embodied, the Vocoded Other bypasses the classical assemblage of the sounding body altogether.

### ***March in A Clockwork Orange***

In musicological monographs on Kubrick's use of music in film published in 2013, Kate McQuiston and Christine Lee Gengaro explore the way Kubrick's musical design blurs diegetic music with the soundtrack, and other times creates a critical, even ironic, distance between diegetic and musical components.<sup>118</sup> In addressing the fragments of Carlos' rendition of

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<sup>116</sup> Hunter, "The *Alla Turca* Style," 54.

<sup>117</sup> Hunter, "The *Alla Turca* Style," 54.

<sup>118</sup> Kate McQuiston, *We'll Meet Again: Musical Design in the Films of Stanley Kubrick* (Oxford: Oxford University Press, 2013), 167-170; and Christine Lee Gengaro, *Listening to Stanley Kubrick*, 132-138. For a precedent treatment of this topic, see Michel Chion, *Kubrick's Cinema Odyssey*, trans. Claudia Gorbman (London: British Film Institute, 2001), 5-7.

Beethoven's Ninth Symphony that appear in the film, Gengaro draws an analogy between the struggles of Alex DeLarge and those of Beethoven, a composer "consistently associated with the narrative of overcoming," and interprets the Vocoder chorus as "voices – disconnected from their humanity – ironically singing about [a] universal brotherhood" that includes Alex's cruel and criminal gang.<sup>119</sup> McQuiston gestures to Cook's and Fanny Mendelssohn/Hensel's descriptions of Beethoven's finale as "anachronistic" and "burlesque" respectively.<sup>120</sup> In her account, the irony of universal brotherhood is already apparent in Beethoven's own finale and the Vocoder only highlights this property.

*March* appears two times in the film: first when Alex DeLarge (played by Malcolm McDowell) flirts with two women in a record store called Music Bootick (incidentally, a still from this scene is on the cover of Gengaro's book), and then again when Alex undergoes torture as part of the reconditioning Ludovico Treatment. During the treatment, Alex's eyes are forced open so he cannot avert his gaze from a film of Nazi atrocities, but he is more disturbed by the affront to his beloved Ludwig Van (Carlos' *March* playing overhead diegetically) than the violence in the documentary.

McQuiston reminds musicologists that the figuration of Beethoven's music as "troublesome" and "violent" is quite at home in cinema, even though Susan

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<sup>119</sup> Gengaro, *Listening to Stanley Kubrick*, 140, 132.

<sup>120</sup> McQuiston, *We'll Meet Again*, 170-174.

McClary's hearing of "explosive violence"<sup>121</sup> in Symphony No. 9 remains a radical perspective in musicology.<sup>122</sup> McQuiston then notes thematic similarities between Kubrick's *A Clockwork Orange*, McClary's analysis of the Ninth in *Feminine Endings*, and a poem by Adrienne Rich titled "The Ninth Symphony of Beethoven Understood At Last As a Sexual Message," which McClary quotes in full.<sup>123</sup>

McQuiston stops short of hypothesizing that Rich's collection of poems, published in 1973 but dating from 1971-1972 might be a reaction to Carlos' *March* in Kubrick's film, which was released on December 19, 1971 in Great Britain and February 2, 1972 in the United States. Incidentally, the instrumental version of "Ode to Joy" was also announced as the European anthem on January 19, 1972.<sup>124</sup> Rich's poem, which refers to impotence, infertility, menopause, and "music without the ghost of another person in it" – is then quite possibly not only about Beethoven's Ninth Symphony, but also about Carlos' *March* featured in Kubrick's score, indeed about Carlos' understanding, at last, of the sexual violence of the Ninth symphony.

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<sup>121</sup> Susan McClary, *Feminine Endings: Music, Gender, & Sexuality* (Minneapolis: University of Minnesota Press, [1991] 2002), 127.

<sup>122</sup> McQuiston, *We'll Meet Again*, 43.

<sup>123</sup> Adrienne Rich, "The Ninth Symphony of Beethoven Understood At Last As a Sexual Message," in *Diving into the Wreck: Poems 1971-1972* (New York: W. W. Norton & Company, 1972), 43.

<sup>124</sup> The official announcement was made by the Committee of Ministers of the Council of Europe.

## **A New Universal Brotherhood**

Technologized acts, especially those that engage the body, have long promised encounters with alterity. On a 2015 panel discussion on sound studies, Ana María Ochoa noted that scholars of technology have often tended to sidestep an explicit engagement with social difference in favor of the problematic juxtaposition of human and non-human.<sup>125</sup> Synthesized voices are a textbook example of our aural fascination with the Other. By unpacking several sites, scenes, and sounds that underlie narratives of vocal disembodiment, I hope to have shown that renderings of early vocal synthesis oscillate between colonial interest, sexual threat, and malleable reconfiguration of identity. In dominant narratives such as *2001*, difference cannot win out in the disembodied position of power – HAL must die. However, in Carlos' and Elkind's studio, the Vocoder is a vocal vantage point from which all things Earth can critiqued, redefined, and reinvented. Owing to the perception of studio work as space exploration, synthesized voice becomes a platform for the experimental re-configurations of the production of gender and voice.

There is a similarity between synthesized voice and virtual identity as described by cybertheorist Sherry Turkle in that they both allow us to “run around with names and genders of our choosing unhindered by the weight

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<sup>125</sup> Ana María Ochoa, “Keywords in Sound: A Roundtable Discussion” (panel discussion at Columbia University, New York, NY, September 21, 2015).

and physicality of embodiment.”<sup>126</sup> However, embodiment and disembodiment are not opposites. Synthesized voices always necessarily engage the body. By queering the voices of Universal Brotherhood, Carlos’ and Elkind’s spaceship studio untethers the universal voice from a gender-particular body, but highlights the body in Classical music in a way that has not happened since the premiere of Symphony No. 9. Universal Brotherhood and the Universe are themes that trail Beethoven’s symphony (the former in Schiller’s text, the latter in the behemoth life of the work in modernity) and reappear as the five-men crew of Discovery One in *2001: A Space Odyssey*, a five-some of men on a voyage through outer space.

In reference to the modernist discomfort with women working with technology, cybertheorist Sadie Plant writes: “women’s emergence is man’s emergency [...] the future is unmanned.”<sup>127</sup> I hear Carlos’ *March from a Clockwork Orange* and as the voice of HAL 9000 in *2001: A Space Odyssey* as futuristic, experimental un-manning. That *March* queers not only the bodies of the chorus but also the listeners’ bodies only raises the stakes of Carlos’ space exploration. Crucially, the “unmanning” gesture, which happens through women’s work with technology read as hi-tech, should be viewed through the critical prism of the gender politics of labor history. As Alice-

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<sup>126</sup> Sherry Turkle, *Life on the Screen: Identity in the Age of the Internet* (New York: Simon & Schuster, 1995), 249.

<sup>127</sup> Sadie Plant qtd. in Zoë Sofia, “Contested Zones: Futurity and Technological Art,” in *Women Art and Technology*, ed. Judy Malloy (Cambridge: MIT Press, 2003), 63.

Kessler Harris advises, women's work has always been there, not only in the realm of the family (e.g. motherhood, caring, and affective labor, which I treat in Chapter 1) but also, since the eighteenth and nineteenth centuries, in the realm of the factory.<sup>128</sup> In the following chapter, I interpret Laetitia Sonami and Pamela Z's thematization of women's domestic work, racialized labor, and physical effort in performance. Sonami and Z's "unmanning" of the hi-tech arena goes hand in hand with a recognition of the political underpinnings of the hi-tech industry and the history of women's labor, testifying to the possibilities of performance as critical practice.

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<sup>128</sup> Alice Kessler-Harris, *Gendering Labor History* (Urbana: University of Illinois Press, 2007), 98. For an account of the feedback between women's familial/domestic labor and wage labor in the United States see particularly Chapter 5, "Stratifying by Sex: Understanding the History of Working Women," 97-116.

## Chapter Four ♦ Denaturalizing Musical Gesture: Laetitia Sonami and Pamela Z

This chapter reviews early uses of gesture control in musical performance focusing on performance with kinetic and biofeedback sensor systems worn on the hand and wrist by Michel Waisvisz, Atau Tanaka, and especially Laetitia Sonami and Pamela Z. Situating composers' interest in gesture control in juxtaposition to the button-heavy instruments of the 1980s, I interpret Sonami's negotiations of the gestural paradigms of video gaming and sign language translation using data gloves, and Z's use of biofeedback with regards to its medical uses. My analysis spotlights the gendered descriptions of gesture control in scholarly and popular literature as 'natural' and 'embodied' on the one hand, and 'prosthetic' and 'technological' on the other. I argue that the tension between gendered meanings in performances with gesture control is a source of musical and theatrical, sonic and scenic drama. In particular, the experimental impulse to foreground timbral elements productively deconditions the posthuman musical body.

The French-American composer Laetitia Sonami stands on the stage at Fondation Cartier in Paris on June 1, 2015. Her eyes are closed and she is moving her arms apart as if expanding an accordion with only her left index finger bent to play a key. The gesture triggers a swooshing sound, which swells dynamically with faint thuds underneath. The distance between her hands exceeds the would-be accordion and Sonami stands with arms outstretched, now looking at her left hand clad in a tight black glove. She cocks the gloved wrist back and forth to a sudden whammy bar sound effect bending a single pitch. She is wearing the Lady's Glove, a controller she has performed with for twenty years, for one last time, she says, in a concert honoring her former Parisian composition teacher, the electronic composer Éliane Radigue.

Musical performance with wearable gesture controllers summons two strands of recent scholarship: multidisciplinary studies of the performing body and literature on custom-built musical interfaces. This chapter reviews composers' work with wearable gesture controllers that collect discrete and continuous, kinetic and biofeedback data to activate pre-designed electronic sounds, algorithmic processes, and recorded samples. Surveying Michel Waisvisz's *The Hands* (1984) and Atau Tanaka's *BioMuse* interface (1992) as points of departure for kinetic and biofeedback systems respectively, the chapter focuses on Sonami's work with the *Lady's Glove* (1991) and Pamela Z's performance with the *BodySynth* (1994). Although a number of composers and engineers address the conceptual richness of these systems – their challenge to classical notions of instrumentality and virtuosity and their productive confusion of technology and technique, for instance – they tend to neglect the musicality and theatricality of gesture-controlled performances by particular musicians. I argue that it is precisely on the platform of sonic and scenic theater that composers stage interventions in the gender-, race-, and bodily stereotypes that constrict and define the technological paradigms of the late 1980s and 1990s. Therefore, I turn to the work of scholars interested in gestural performance outside of electronic music composition (opera, classical music-making, theater, dance, performance art, sign language), who conceptualize the theatrical body as corroding the boundary

between nature and culture.<sup>1</sup> My focus on the work of Sonami and Z stems from an interest in the attachment of *gestural* data to *vocal* processing. Their vocal performances with gesture control offer a poignant intervention in the classical musical economy of masculinized hands and feminized voices. Studying these performances offers musicologists and feminist scholars another perspective on negotiating the contrary efforts to “give women a voice” and at the same time to de-essentialize vocality. The broad aim of this chapter, then, is to hear musical performance with gesture control as a cyborg intervention in our gendered and musical understandings of performance broadly conceived.<sup>2</sup>

Wasivisz, Sonami, Tanaka, and Z’s controllers all use somewhat different processes to gather different types of data, which are then converted by a computer from analog to digital. For Wasivisz and Sonami, the

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<sup>1</sup> Johannes Birringer, “Contemporary Performance/Technology,” *Theatre Journal* 51/4 (December 1999): 361-381; Jennifer Parker-Starbuck, *Cyborg Theatre: Corporeal/Technological Intersections in Multimedia Performance* (New York: Palgrave Macmillan, 2014); Anne Balsamo, *Technologies of the Gendered Body: Reading Cyborg Women* (Durham, NC: Duke University Press, [1996] 1999); Brenda Farnell, “Ethno-Graphics and the Moving Body,” *Man New Series* 29/4 (1994): 929-974; and Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: University of Chicago Press, 1999).

<sup>2</sup> Some of the most stimulating work in this regard comes from George E. Lewis, “The Virtual Discourses of Pamela Z,” *Journal of the Society for American Music* 1/1 (2007): 55-77; Axel Mulder, “Getting a Grip on Alternate Controllers: Addressing the Variability of Gestural Expression in Musical Instrument Design,” *Leonardo Music Journal* 6 (1996): 30-40; and Pamela Z, “A Tool is a Tool,” in *Women in New Media* ed. Judy Malloy (Cambridge, MA: MIT Press, 2003), 348-360.

essential component of performance is macroscopic, physical, “real world input and output.”<sup>3</sup> Waisvisz’s The Hands “sense relative position and orientation in space, and contain switches and potentiometers for controlling pitch, timbre, and selection of instruments (patches) via [a] MIDI protocol.”<sup>4</sup> Sonami’s Lady’s Glove, the original version of which was improved upon by Bert Bongers in 1994, is similarly fitted with magnetic sensors, switches, resistor strips, ultrasound speakers, and accelerometers, which all produce fluctuating voltage converted to the MIDI standard in SensorLab software developed at the Studio for Electro-Instrumental Music (STEIM) in the Netherlands in 1989.<sup>5</sup> In contrast, Tanaka’s controller uses biofeedback: built in 1992 by Hugh Lusted and Ben Knapp, the BioMuse system uses “electrodes penetrating the skin to measure muscular activity.”<sup>6</sup> Z’s

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<sup>3</sup> I borrow the phrase from the Studio for Electro-Instrumental Music’s (STEIM) description of SensorLab software, a successful analog-to-MIDI interface designed in 1989. “Legacy Products,” *STEIM* January 25, 2010, accessed October 10, 2014, <http://stem.org/product/discontinued-products/>.

<sup>4</sup> Curtis Roads, “The Second STEIM Symposium on Interactive Composition in Live Electronic Music,” *Computer Music Journal* 10/2 (Summer 1986): 45-46.

<sup>5</sup> Sonami in *the ear goes to the sound: the work of Laetitia Sonami*, dir. Renetta Sitoy, 2014. Accessed as pre-DVD version shared by the director.

<sup>6</sup> Eva Sjuve, “Gestures, Interfaces and Other Secrets of the Stage,” *Transdisciplinary Digital Art: Sound, Vision, and the New Screen*, eds. Randy Adams, Steve Gibson, Stefan Muller Arisona (Berlin: Springer Verlag, 2008), 309. Tanaka also participates in SensorBand (1998), a trio of musicians using instruments built by Bongers. The trio comprises Tanaka playing the BioMuse, Edwin van der Heide on the MIDI-Conductor and Zbigniew Krakowski using a system of infrared motion sensors. Bert

BodySynth, built by Chris Van Raalte and Ed Severinghaus in the early nineties and copyrighted in 1996, also reads muscle electricity to produce a continuous stream of electromyographic (EMG) data to which the composer assigns various musical processes, alongside her use of pre-designed, discrete triggers. Each composer effectively assigns various musical processes and events to data stemming from physical and/or physiologic actions.

Choreographer and performance scholar Johannes Birringer writes: “[I]nteractive electronic art does not depend on a particular technological mode (analog, digital, radio, video, modem, satellite) but on the quality or conceptual structure of the meeting points and conduits of interactive levels.”<sup>7</sup> Performance scholar Jennifer Parker-Starbuck goes even further, opening her 2011 monograph *Cyborg Theater* with the following qualification: “I am more concerned with the body than the technologies, on

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Bongers, “An Interview with Sensorband,” *Computer Music Journal* 22/1 (Spring 1998): 13.

<sup>7</sup> Birringer, “Contemporary Performance/Technology,” 375. Z speaks to the same point in an interview with Kathy Kennedy: “It is interesting how absorbed people are with new technology right now. I think I’m most interested in artists who are just making good work with whatever tools they choose to use, and not focusing so much on being seduced by the tools themselves. The artists I like range from high to low tech, electronic to acoustic, organic to synthetic etc.” See Kathy Kennedy, “A Few Facets of Pamela Z,” *Musicworks* 76 (Spring 2000), accessed on *Pamela Z*, December 12, 2012, <http://www.pamelaz.com/musicworks.html>.

[sic] the relationships that emerge through their proximity to each other.”<sup>8</sup>

To some degree, performances using gesture control rely less on the ontological differences among modes of control and more on the musical “action-perception loops,”<sup>9</sup> to borrow a phrase from Jin Hyun Kim and Uwe Seifert, that are activated in performance. As Adorno cautions in his discussion of television, the “technical” and “social” elements of a practice “cannot be treated in isolation from one another.”<sup>10</sup> Paul Théberge similarly criticizes traditional organology for its overwhelming focus on the classification of musical instruments instead of discussing their “broader cultural significance.”<sup>11</sup> Drawing on these critical approaches, I position gesture controllers as participants in the less visible technologies of musical articulation and bodily performance, participating most obviously by literally attaching to the body but also by asserting their agency as composed instruments.

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<sup>8</sup> Parker-Starbuck, *Cyborg Theatre*, 4.

<sup>9</sup> Jin Hyun Kim and Uwe Seifert, “Embodiment: The Body in Algorithmic Sound Generation,” *Contemporary Music Review* 25/1-2 (2006): 147.

<sup>10</sup> Samuel Weber, *Theatricality as Medium* (New York: Fordham University Press, 2004), 110.

<sup>11</sup> Paul Théberge, *Any Sound You Can Imagine: Making Music / Consuming Technology* (Hanover, NH: University Press of New England, 1997), 6.

## Keyboards vs. Composed Instruments

Through the 1970s and 80s, electronic music technologies were becoming increasingly standardized and their market centralized.<sup>12</sup> In the 1960s and early 1970s a handful of names such as the now-iconic Buchla and Moog defined a boutique synthesizer market, while American companies such as Peavey and Fender occupied the commercial sphere.<sup>13</sup> Connecting these enterprises was the image of the mastermind White male American inventor who lent his name to a company as a personal guarantee of intelligent design and high quality. The gendered and raced dimensions of this image only tended to be amplified in the companies' advertising and manufacturing practices, as well as in journalistic and scholarly press: women, stereotyped for their tolerance of tedium, often worked in the companies' electronics assembly but appeared only as passive listeners or sexualized props in their advertising.<sup>14</sup> By the late 1970s Japanese corporations such as Casio, Roland, Yamaha, and KORG expanded the music electronics market in terms of price

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<sup>12</sup> See Théberge, *Any Sound You Can Imagine*; Jonathan Sterne, *The Audible Past: Cultural Origins of Sound Reproduction* (Durham: Duke University Press, 2003); and Timothy Taylor, *Strange Sounds: Music, Technology, and Culture* (New York: Routledge, 2001).

<sup>13</sup> Richard R. Smith, *Fender: The Sound Heard 'Round the World* (Garfish Publishing Company, 1995); Ken Achard, *The Peavey Revolution: Hartley Peavey: the Gear, the Company, and the All-American Success Story* (San Francisco, CA: Backbeat Books, 2005).

<sup>14</sup> Timothy Taylor, *Strange Sounds*, particularly chapter 4 titled "Men, Machines, and Music in the Space-Age 1950s," 72-96.

and ease of use, but only built on the chauvinist advertising of their predecessors.<sup>15</sup> The development of the microprocessor in 1971 and the U.S.-Japanese co-formulation of the MIDI standard in 1983 opened the floodgates for a period defined by “an enormous outpouring of commercial digital instruments as well as software to control them.”<sup>16</sup> In the wake of increased accessibility and portability, music technologies came to be seen as democratizing musical production. Robert Moog, the high priest of the American synthesizer himself, was one of the most dogmatic proponents of this idea.<sup>17</sup> In contrast, Don Buchla called the ubiquitous keyboards “dictatorial.”<sup>18</sup> With the proliferation of digital technologies and electronic

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<sup>15</sup> Paul Théberge, “Musicians’ magazines in the 1980s: The creation of a community and a consumer market,” *Cultural Studies* 5/3 (1991): 270-293. Reprinted in *Popular Music: Critical Concepts in Media and Cultural Studies*, ed. Simon Frith, Volume 1 (2004), 245-269.

<sup>16</sup> Charles Dodge, *Computer Music: Synthesis, Composition, and Performance*, 2<sup>nd</sup> edition (New York: Schirmer Books, 1997), 402.

<sup>17</sup> Robert Moog in Henning Lohner, “Interview with Robert Moog,” *Computer Music Journal* 9/4 (Winter 1985): 65. See also Robert Moog, “The Keyboard Explosion: Ten Amazing Years in Music Technology,” *Keyboard* 10/11 (October 1985): 36-48.

<sup>18</sup> Buchla quoted in Trevor Pinch and Frank Trocco, *Analog Days: The Invention and Impact of the Moog Synthesizer* (Cambridge, MA: Harvard University Press, 2002), 44.

music magazines that housed advertisements for them, the promise of a “whole band in your hand,”<sup>19</sup> as one Casio print ad put it, only grew.

The belief in technology’s democratic potential became especially important to literature on 1980s and 1990s popular genres such as hip-hop, Caribbean music, House, and Dance. These genres’ technologized musical practices ran counter to “the historical exclusion of black people from the technological sphere and the systematic consignment of the African to the domain of the antilogical, the noncerebral, and the body.”<sup>20</sup> In hip-hop, for instance, the techniques of dubbing, scratching, and sampling are understood as affording a musical democracy that both repairs and accentuates the lack of representation for Black Americans in social life and the political process. However, the too-optimistic technophilic accounts have been critiqued for ignoring the ways “the computerisation [sic] of music worked to exclude women and girls from pop production,” and a growing body of scholarship seeks to remedy this situation.<sup>21</sup> These gender barriers are often based in the

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<sup>19</sup> “[E]ven a person who’s never played Chopsticks can compose a recognizable song the first time out,” reads the small print of a full-page ad for Casio VL-Tone that ran in 1981. *Popular Science: The What’s New Magazine* (July and September 1981).

<sup>20</sup> Keith Piper in Michelle-Lee White, Keith Piper, Alondra Nelson, Arnold J. Kemp and Erika Dalya, “Afrotech and Outer Spaces,” *Art Journal* 60/ 3 (2001): 96.

<sup>21</sup> “We like to believe [the current cultural climate] has released us from the constraints of identity, [but] mechanisms of exclusion still persist,”<sup>21</sup> writes Michelle-Lee White. Michelle-Lee White, Keith Piper, Alondra Nelson, Arnold J. Kemp and Erika Dalya, “Afrotech and Outer Spaces,” 91. See also Barbara Bradby, “Sampling Sexuality: Gender, Technology and the Body in Dance Music,” *Popular Music* 12/2

precedent gendering of jazz genres and R&B, the culture of the Civil Rights Movement,<sup>22</sup> and the male-controlled recording industry. Neither lower costs, nor MIDI standardization of equipment across manufacturers or greater processing power that allowed the Live use of digital samples broke down the significant barriers of social access to music-making.<sup>23</sup> The persistence of the notion that technology democratizes music is evident, for example, in Giulia Loli's (DJ Mutamassik) interview with Tara Rodgers, where Loli disapproves of the low barriers to entry into music production.<sup>24</sup>

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(May 1993): 156; Lindsey Eckenroth, "Once Again, on the Music of Laurie Anderson's 'O Superman (for Massenet)," *American Music Review* XLIII/ 2 (Spring 2014): 2; Rebekah Farrugia and Thom Swiss, "Producing Producers: Women and Electronic/Dance Music," *Current Musicology* 86 (Fall 2008): 79-99; Tricia Rose, "Sound Effects: Tricia Rose Interviews Beth Coleman," *Technicolor: Race, Technology, and Everyday Life*, ed. Alondra Nelson and Thuy Linh N. Tu (New York: New York University Press, 2001), 142-153; and Andrew Goodwin, "Rationalization and Democratization in the New Technologies of Popular Music," in *Popular Music and Communication*, ed. James Lull (London: Sage, 1992), 147-168.

<sup>22</sup> Civil Rights scholar Brian Ward writes: "Women in the blues were sirens, irresistible yet lethal; they were to be loved, but more importantly, to be tamed and possessed," and Robin D. G. Kelley speaks of a "fear of black female sexuality" in rap, and addresses the "ignoble tradition of sexism" in African-American culture as the indisputable basis of sexism within the lyrics as well as musical and social networks of gangsta rap. See Brian Ward, "Sex Machines and Prisoners of Love: Male Rhythm and Blues, Sexual Politics and the Black Freedom Struggle," in *Gender in the Civil Rights Movement*, eds. Peter J. Ling, Sharon Monteith (New York: Garland Publishing, 1999): 42-43; Robin D. G. Kelley, *Race Rebels: Culture, Politics, and the Black Working Class* (New York: The Free Press, 1994), 216. See especially Chapter 5, "Kickin' Reality, Kickin' Ballistics: 'Gangsta Rap' and Postindustrial Los Angeles," 183-227.

<sup>23</sup> Théberge, *Any Sound You Can Imagine*, 89-90.

<sup>24</sup> Giulia Loli in Tara Rodgers, *Pink Noises: Women on Electronic Music and Sound* (Durham: Duke University Press, 2010), 188.

Composers' work with custom-built gesture controllers in the 1980s and 1990s is, in part, a confrontation of the commercial, industrial, social, and aesthetic ramifications of these changes in the music technology market. Multimedia artist, dancer, and experimental vocalist Moniek Toebosch, who had collaborated with Vaisvisz between 1972 and 1983, astutely characterized Vaisvisz's controller, built of bits and pieces of commercial electronics, as "technology 'povera'" in reference to the 1960s Italian art movement Arte Povera, whose artists often decontextualized commercial materials to critique the sanctity and commercialization of art.<sup>25</sup> Relatedly, Z has lamented the prevailing "feeling that if you get the right software, then you don't even have to be an artist because the computer will just make the art for you."<sup>26</sup> At Apple Expo West 1993, she performed a performance art piece with multimedia artist Randall Packer consisting of a faux demo presentation of a fictional product called the Art-o-matic, ridiculing the idea that technology delivers instant art: "Why bother with practicing?" Z claimed, "No matter how dull or uninteresting your iife [sic] has been, Art-O-Matic will

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<sup>25</sup> Toebosch in Brigitte van der Sande, "Setting Limits and Overstepping Limits: Concerning Moniek Toebosch's Work," *Open! Platform for Art, Culture & the Public Domain* (November 1, 2005), accessed January 13, 2016, [www.onlineopen.org/setting-limits-and-overstepping-limits](http://www.onlineopen.org/setting-limits-and-overstepping-limits).

<sup>26</sup> Pamela Z in Kennedy, "A Few Facets of Pamela Z."

bring an instant lifestyle change.”<sup>27</sup> Only three years prior, Waisvisz similarly emphatically cautioned that the standardized production of electronic musical interfaces limits creative production. In an uncommon appeal to musicologists, he called for a historical-materialist approach to electronic music, asking scholars to take seriously the industrial origins and technological format of a performance as carrier of expressive meaning.

I would humbly suggest that information shouldn't be monopolized in stupid rat races among music institutions, industry, and individuals. Musicologists should feel more responsible for transferring as much knowledge as possible to the next generation instead of trying to become overcreative artists in explaining what art means.<sup>28</sup>

Waisvisz specifically deplores the aesthetic limits of early keyboard synthesizers, which, in his view, waste the theoretically limitless possibilities of sound synthesis. Note his reference to the concrète ideal of sonic ‘purity.’

I experienced that the early synthesizers didn't bring the real grip on electronic sound. Beautiful promising electronic sound worlds were hidden in these instruments, but fitted with traditional organ/piano

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<sup>27</sup> David Morgenstern, “Mac Performance Art,” *Microtimes* 110 (June 28, 1993). Accessed on *PamelaZ.com*, accessed June 12, 2015, <http://www.pamelaz.com/macexpo.html>.

<sup>28</sup> Volker Krefeld and Michel Waisvisz, “The Hand in the Web: An Interview with Michel Waisvisz,” *Computer Music Journal* 14/2 *New Performance Interfaces* 2 (Summer 1990): 32-33.

keyboards they seemed better suited for melodic music than for 'sound-music'. At that time I was on a quest to create electronic music in it's [sic] purest sense.<sup>29</sup>

Charles Dodge also argued that commercial electronic musical interfaces of the 1980s were too suggestive of the idea that performance is merely the live triggering of consecutive musical events, with little room for live mixing of sound or interactive designs for programmed synthesizer and live performer.<sup>30</sup> Joel Chadabe similarly described the predictable output of standardized instruments as “deterministic.”<sup>31</sup>

For Waisvisz, a performer’s musicality was inherently linked to the musician’s *touching* an instrument. Throughout his compositional practice, he juxtaposed touch-based (i.e., haptic and gestural) and non-touch-based (trigger-based) electronic musical interfaces to critique high-tech culture.<sup>32</sup> In a piece called *The Electricity* (1974) performed with bassist Maarten Altena (part of the Electric Music Theater series from the 1970s), Waisvisz set aside the keyboard controller of his Putney VCS3 synthesizer and

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<sup>29</sup> Michel Waisvisz, “The Hands,” *The Crackle*, accessed November 11, 2014, <http://www.crackle.org/TheHands.htm>.

<sup>30</sup> Dodge, *Computer Music*, 402-4.

<sup>31</sup> Joel Chadabe, “The limitations of mapping as a structural descriptive in electronic instruments,” *Proceedings of the 2002 conference on New interfaces for musical expression* (2002), 1–5.

<sup>32</sup> Lohner, “Interview with Robert Moog,” 64-5.

connected its patch board (which used a matrix of color-coded pins instead of the typical cables) to touchpads.<sup>33</sup> This interface, which he called the CrackleSynth, harnessed skin's property of conductance to run voltage through a performer's fingers.<sup>34</sup> Since galvanic skin response depends on the sympathetic nervous system, electrified touch speaks not only to a physical command but also the psychological and physiological arousal of the performer. In a paper on haptic interfaces in musical performance, Jaime Oliver La Rosa reminds us that "[t]he way sounds are controlled define the sounds" – a point expressed by Z and Sonami as well.<sup>35</sup> Oliver La Rosa borrows the term "composed instrument" to capture the way personalized electronic interfaces in music fulfill not only the function of the traditional instrument but also that of the musical score.<sup>36</sup> For Tanaka, the BioMuse even instrumentalizes his body:

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<sup>33</sup> In a happy coincidence, it was the discovery of a Putney VCS3 in the basement of the Boston School of Fine Arts, which directed Sonami towards electronic music composition. Sonami in *the ear goes to the sound*.

<sup>34</sup> Michel Waisvisz, "mid seventies: Electric Music Theatre," *The Crackle*, accessed November 11, 2014, <http://www.crackle.org/Electric%20Music%20theatre.htm>. The Putney Voltage Control Studio 3-oscillator synthesizer was the first portable synthesizer, housed in a kind of suitcase, and highly affordable at 330 GBP in 1969.

<sup>35</sup> Jaime Oliver La Rosa, "To un-button: Strategies in Computer Music Performance to Incorporate the Body as a Re-Mediator of Electronic Sound" (M.A. diss., University of California, San Diego, 2008), 41. Sonami in Rodgers, *Pink Noises*, 229. Pamela Z in Kennedy, "A Few Facets of Pamela Z."

<sup>36</sup> Oliver La Rosa, "To un-button: Strategies in Computer Music Performance to Incorporate the Body as a Re-Mediator of Electronic Sound," 41.

This is an example of real-time performance with computers, synthesisers [sic] and an instrument like this – I like to call it an instrument rather than an interface. Although it can be thought of as a general purpose interface, my approach to working with the Biomuse [sic] has been to think of it like a new kind of musical instrument, or one that can turn my body into a musical instrument.<sup>37</sup>

Composed instruments perform and are performed; they control the performance and are controlled. They blur the boundary between instrument, score, and performing body. They are legible as sound but they also embody the process of writing the score through movement. It is in this intimately musical sense that the specificity of technologies does matter to a musical performance. Moreover, as George Lewis notes with reference to his interactive, improvising computer program *Voyager* created at STEIM between 1986 and 1988, “notions about the nature and function of music become embedded into the structure of software-based musical systems and compositions.”<sup>38</sup> As I shall discuss, the notion of “nature” (both cultural and bodily) is a key operative term surrounding performance with gesture control.

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<sup>37</sup> Atau Tanaka, “Biomuse [sic],” *Doors of Perception*, 1993, accessed September 10, 2014, <http://museum.doorsofperception.com/doors1/transcripts/tanaka/tanaka.html>.

<sup>38</sup> Lewis argues that *Voyager* reflects a lineage of African-American musical practice. George E. Lewis, “Too Many Notes: Computers, Complexity and Culture in *Voyager*,” *Leonardo Music Journal* 10 (2000): 33, 34.

One of the more patent consequences of working with gestural designs is composers' preoccupation with non-pitch elements such as timbral dynamics and rhythmic activity. Listening for timbral dynamics reveals the richest aspect of organization in Sonami's work – a trait Sonami has on occasion credited to women composers' gender.<sup>39</sup> Understandably, to demote pitch elements from their supremacy means to get away from musical elements that represent the patriarchal values not only of the Common Practice Era but also much electronic music composition. Sonami's musical forms indeed stand out from most French concrète and American electronic composition in the unhurried and deliberate development of timbral events that is also a feature of Radigue's work. Waisvisz has said that his own preoccupation with timbre comes from satisfaction with the fact that there is no "notation system [for it], which relieves us from a boring reproduction culture."<sup>40</sup> Z, too, views composition and notation as separate endeavors that might have gone "hand in hand [in classical music,] but that doesn't mean that notating was actually the composing process."<sup>41</sup> Along a similar vein, Sonami "strongly dislikes making recordings of her performances" because of her interest in the Buddhist concepts of "magic"

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<sup>39</sup> Sonami in *the ear goes to the sound*. Sonami in Rodgers, *Pink Noises*, 231.

<sup>40</sup> Krefeld and Waisvisz, "The Hand in the Web: An Interview with Michel Waisvisz," 31.

<sup>41</sup> Pamela Z in Kennedy, "A Few Facets of Pamela Z."

and “impermanence,” and a distaste for “the idea of ‘objective’ sounds adaptable to any situation or time.”<sup>42</sup> As different as Waisvisz, Sonami, and Z’s aesthetics are, it is in part because of their common non-commitment to notation and recording that scholars seldom discuss their musical material: the musical and music-industrial elements of their performance design and practice – their composed instruments so to speak – place them squarely in the blind spot of score-obsessed music-historical writing described by Nicholas Cook in *Beyond the Score*.<sup>43</sup>

### **Gesture, Nature, Normalcy**

Bodily gesture is commonly described as having a ‘natural’ relationship to sound.<sup>44</sup> Music scholars have studied gesture from two perspectives: that of performers and that of listeners. The gestures of classical performers have been studied for some time, particularly those of pianists: Charles Rosen’s study of the pianist spans everything from fingering technique to full body movements; Peter Elsdon analyzes movement in the improvised piano-playing of Keith Jarrett; Ivan Raykoff unpacks the synergy of performing and

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<sup>42</sup> Rodgers, *Pink Noises*, 8.

<sup>43</sup> Nicholas Cook, *Beyond the Score: Music as Performance* (Oxford: Oxford University Press, 2013).

<sup>44</sup> Giorgio Agamben’s descriptions of the late nineteenth-century fascination with gesture’s pathological corrosions, as exemplified by the experiments of Gilles de la Tourette and Jean-Martin Charcot, attest to the strong sense of gestural normativity. Giorgio Agamben, *Infancy and History: Essays on the Destruction of Experience* (London: Verso, 1993), see especially “Notes on Gesture,” 135-137.

signifying gestures in nineteenth-century piano performance; David Sudnow has published a detailed phenomenological account of his own piano-playing; and Marcelo M. Wanderley has written on the significance of expressive gestures in instrumental performance focusing on his own instrument, the clarinet.<sup>45</sup> Opera scholars, too, have contributed a great deal to the study of gesture onstage: Mary Ann Smart's pivotal study of nineteenth-century opera reveals how singers' gestures animate the singer's vocal performance, miming the operatic body within and without.<sup>46</sup>

Paul Théberge writes that listeners commonly perceive a "physical/structural 'fit' between bodily gesture and [a] resulting sound."<sup>47</sup> To better understand the roots of this relationship, Mariusz Kozak, Kristian

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<sup>45</sup> Charles Rosen, *Piano Notes: The Hidden World of the Pianist* (New York: Free Press, 2002). Peter Elsdon, "Listening in the Gaze: the Body in Keith Jarrett's Solo Piano Improvisations," in *Music and Gesture*, eds. Anthony Gritten and Elaine King (Aldershot: Ashgate, 2006), 192-207. David Sudnow, *Ways of the Hand: The Organization of Improvised Conduct* (Cambridge, MA: Harvard University Press, 1978). Marcelo M. Wanderley, "Non-obvious Performer Gestures in Instrumental Music," in *Gesture-Based Communication in Human-Computer Interaction*, eds. A. Braffort et al. (Berlin: Springer Verlag, 1999), 37-48. Marcelo M. Wanderley, "Quantitative Analysis of Non-Obvious Performer Gestures," in *Gesture and Sign Language in Human-Computer Interaction*, eds. I. Wachsmuth and T. Sowa (Berlin: Springer Verlag 2002). Marcelo M. Wanderley, Bradley Vines, Neil Middleton, Cory McKay, and Wesley Hatch, "The Musical Significance of Clarinetists' Ancillary Gestures: An Exploration of a Field," *Journal of New Music Research* 34/1 (2005), 97-113.

<sup>46</sup> Mary Ann Smart, *Mimomania: Music and Gesture in Nineteenth-Century Opera* (Berkeley: University of California, Berkeley, 2004).

<sup>47</sup> Théberge, *Any Sound You Can Imagine*, 199.

Nymoén, and Rolf Inge Godøy have conducted research based in a collection of sensor data from subjects moving to music.<sup>48</sup> They identified commonalities in listeners' movements to music and proposed an understanding of listeners' movements as acts of situated analysis.<sup>49</sup> The team's position elaborates the legacy of phenomenologist Maurice Merleau-Ponty and builds on cognitive research on so-called "enaction" from the 1990s, which proposes that bodily life always shapes cognitive function. Indeed, Godøy defines embodiment as "movement-based mental schemata," or "cognitive embodiment," a perspective that resonates with Sudnow's account of his piano-playing as thinking with his fingers."<sup>50</sup> Michel Waisvisz also concurs: "I see the hand as part of the brain, not as a lower instrument of the brain. Of course, you can see a hand as a transmitter and sensor, but in the consciousness of the performance, the hand is the brain."<sup>51</sup> Sonami, too,

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<sup>48</sup> Mariusz Kozak, Kristian Nymoén, and Rolf Inge Godøy, "Effects of Spectral Features of Sound on Gesture Type and Timing," *Gesture and Sign Language in Human-Computer Interaction and Embodied Communication*, eds. Eleni Efthimiou, Georgios Kouroupetroglou, and Stavroula-Evita Fotinea, *Lecture Notes in Computer Science / Lecture Notes in Artificial Intelligence* (Berlin: Springer, 2012), 69-80.

<sup>49</sup> Mariusz Kozak, *Embodied Cognition: Music and Movement workshop*, Heyman Center for the Humanities, Columbia University (February 11, 2016).

<sup>50</sup> Alexander Refsum Jensenius, Marcelo M. Wanderley, Rolf Inge Godøy, and Marc Leman, "Musical Gestures: Concepts and Methods in Research," in *Musical Gestures: Sound, Movement, and Meaning*, ed. Rolf Inge Godøy and Marc Leman (New York: Routledge, 2010), 18. Sudnow, *Ways of the Hand*, 92.

<sup>51</sup> Waisvisz in Krefeld and Waisvisz, "The Hand in the Web: An Interview with Michel Waisvisz," 28.

identifies this hand-as-brain metaphor as an important movement away from the “19<sup>th</sup> century model of decision,” which views the body as an object of control.<sup>52</sup> Embodied cognition is valuable for addressing sound as contingent on time and the body – as changing, dynamic, physical, and both figuratively and literally moving. Where Kozak’s research seems more focused on commonalities between gesturing listeners, I am more interested in *differences*, in those analytical situated knowledges. Vijay Iyer presents such a view of what he calls “situated cognition” dependent on bodily constraints, ability, and one’s sociocultural conditioning.<sup>53</sup>

Anthropologist Brenda Farnell issues a valuable reminder about agency: “*bodies do not move and minds do not think – people do.*”<sup>54</sup> She cautions that our “paradigm of embodiment” too often results in a tendency to view the body as text, a metaphor, a political avatar (Anne Balsamo uses the words “conceptual placeholder”<sup>55</sup>): “Absent, on the whole, are accounts of persons *enacting* the body, that is, using physical actions in the agentive

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<sup>52</sup> Laetitia Sonami in Matt Mehlan, dir., “Roulette TV: Laetitia Sonami.”

<sup>53</sup> Vijay Iyer, “Microstructures of Feel, Macrostructures of Sound: Embodied Cognition in West African and African-American Musics” (PhD diss., University of California, Berkeley, 1998), 19-30.

<sup>54</sup> Original emphasis. Farnell, “Ethno-graphics and the Moving Body,” 934.

<sup>55</sup> Anne Balsamo, *Technologies of the Gendered Body*, 35.

production of meaning; actions that may be either out of awareness through habit, or highly deliberate choreographies,” she writes.<sup>56</sup>

The threshold between cognitive research on musical gesture and popular rhetoric framing gesture-as-nature is blurry: wearable controllers in and outside of music are often marketed as “providing *intuitive* and unmistakable confirmation.”<sup>57</sup> Musician Imogen Heap describes her use of a gesture control glove as making music “in the flow and more *humanly*, [and being able to] more *naturally* engage with my computer software and technology.”<sup>58</sup> Multimedia artist Kathy Brew has summarized Sonami’s work with sensors with the statement, “*In essence*, her movements become music,”<sup>59</sup> as if referring to wizardry. Although the current “paradigm of embodiment”<sup>60</sup> frames gesture as natural, the volatility of this dogma is nowhere more clear than in the history of American Sign Language (ASL): the post Civil-War ascension of ASL in schools for the Deaf owes to the language

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<sup>56</sup> Farnell, “Ethno-graphics and the Moving Body,” 930-931.

<sup>57</sup> Kramer’s haptics company based in Stanford, thus describes their products on their website. Emphasis mine. “What is Haptics?: Haptics is Quite Literally The Science of Touch,” *Immersion*, accessed May 25, 2014, <http://uximmr.com/haptics-technology/what-is-haptics/index.html>.

<sup>58</sup> Imogen Heap, “The gloves that will ‘change the way we make music’,” *Vimeo* video, posted by Deezen, March 27 2014, accessed March 29 2014, <https://vimeo.com/90252137>.

<sup>59</sup> Kathy Brew, “Though the Looking Glass,” in *Women, Art, and Technology*, ed. Judy Malloy (Cambridge, MA: MIT Press, 2003), 94.

<sup>60</sup> Farnell, “Ethno-Graphics and the Moving Body,” 930-931.

of evangelical Protestant teachers, who believed gesture was “a language closer to God and nature than speech, uncorrupted and pure, more honest because more direct as a means of emotional expression.”<sup>61</sup> Their opposition, which won out between the 1890s and 1970s, were mostly women inspired by “the suffrage movement and the struggle for the right to speak in public, [which] gave them different perspectives on the relative worth of ‘possessing a voice’,” as well as social and bodily normativity.<sup>62</sup>

A conspicuous feature of the gesture-as-natural dogma is confidence in technological transparency. In a survey of gesture control from the mid-nineties, David J. Sturman and David Zeltzer describe the glove-clad hand as a “*natural* interface[...]<sup>63</sup> that is “*free* from the limitations of intermediary devices.”<sup>64</sup> Sturman and Zeltzer do not count data gloves, or hands for that matter, as intermediary devices: in their account, the gesturing hand is so perfectly embodied that the body recedes from view altogether. Elizabeth

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<sup>61</sup> Douglas C. Baynton, *Forbidden Signs: American People and the Campaign Against Sign Language* (Chicago: University of Chicago Press, 1996), 9.

<sup>62</sup> Baynton, *Forbidden Signs*, 9. A widespread effort to eliminate ASL in favor of lip-reading and speech had devastating effects on generations of the American Deaf between the 1890s and 1970s. Writes Baynton, “The number of children taught entirely without sign language was nearing 80 percent by the end of the First World War, and oralism remained orthodox until the 1970s.” Baynton, *Forbidden Signs*, 5.

<sup>63</sup> ...such as “keyboards, mice, and joysticks.” David J. Sturman and David Zeltzer, “A Survey of Glove-based Input,” *IEEE Computer Graphics and Applications Journal* 14/1 (January 1994): 38.

<sup>64</sup> Sturman and Zeltzer, “A Survey of Glove-based Input,” 30. Emphasis mine.

Hinkle-Turner similarly sees Z's BodySynth as allowing the body to be "unfettered in any way by an instrument."<sup>65</sup> I am reminded of Charles Ives' description of his famously impossible-to-perform vocal music as similarly "free [...] from the dominion of the thorax, the diaphragm, the ear."<sup>66</sup> Whereas Ives' voices are actually non-present, Sturman and Zeltzer's gesture system is merely (super)naturally integrated, only so much so that it remains unaccounted for and unaccountable, slipping through the cracks of musical discourse.

Feminist art historian Craig Owens has poignantly corrected his own "remarkable oversight" of the gesturing hand in a reinterpretation of an image sent to outer space on the Pioneer Plaque: The image shows a nude man and woman standing side by side, the man's arm raised in a gesture of greeting.<sup>67</sup> In the context of Laurie Anderson's *Americans on the Move* (1980), Owens sees the arm – "less [...] raised than erected" – as the central marker of sexual difference in the image, further amplified by the Marxist understanding of "production as the *definitively human activity*" in contrast to

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<sup>65</sup> Elizabeth Hinkle-Turner, *Women Composers and Music Technology in the United States: Crossing the Line* (Burlington VT: Ashgate Publishing Company, 2006), 136.

<sup>66</sup> Charles Ives, *114 Songs*, (Redding, CT: C. E. Ives, 1922), accessible as an electronic reproduction through the HathiTrust Digital Library (2010), accessed November 2, 2014, <http://catalog.hathitrust.org/Record/008948340>. Emphasis mine.

<sup>67</sup> The Pioneer Plaque is an engraving of a man and woman standing side by side sent to outer space on the *Pioneer 10* and *11* spacecraft in 1972 and 1973.

the feminized non-production and reproduction.<sup>68</sup> In music, the most literal example of the gendered executive gesture is the modern conductor, historically always male, who plays the orchestra as if it were his musical instrument. The gesturing hand is a site of gender and race contestation that often outlines a relationship of discipline or hierarchy, as in the etiquette of a handshake, the Hitler salute, the magician's wand, 'hands up, don't shoot,' the baton of a conductor, the raised hand on the Pioneer Plaque, and countless others.

Descriptions of gesture control as natural and intuitive strike me as essentializing, and I consider both the glove controller and the hand to be consequential mediating technologies. Like Jennifer Iverson, I believe that "the 'wholeness' or 'naturalness' of bodies is a fiction," just as "able-bodiedness is a fiction."<sup>69</sup> Critiquing the rhetoric of intuitiveness, Waisvisz has noted: "The Hands is really difficult for other people to play."<sup>70</sup>

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<sup>68</sup> Craig Owens, "Feminists and Postmodernism," *Anti-Aesthetic: Essays on Postmodern Culture*, ed. Hal Foster (New York, New Press, 2002), 60.

<sup>69</sup> Iverson, in irony, refers to "the organic wholeness" we look for in the voice. Jennifer Iverson, "Mechanized Bodies: Technology and Supplements in Björk's *Electronica*," in *The Oxford Handbook of Music and Disability Studies*, eds. Blake Howe, Stephanie Jensen-Moulton, Neil Lerner, and Joseph Straus (Oxford: Oxford University Press, 2015), 171, 164.

<sup>70</sup> "This is not just because the synthesizers are made to fit my own hands; it's also because the way one approaches the synthesizers through *The Hands* is heavily influenced by my timbral conceptions." Waisvisz in Krefeld and Waisvisz, "The Hand in the Web: An Interview with Michel Waisvisz," 30.

Researcher and engineer Axel Mulder situates MIDI controllers in the lineage of traditional musical instruments, and stresses 1) the differing physical and cultural limits of different performers' gestural vocabulary, and 2) the unsuitability of gesture controllers for musicians with non-normative bodily morphology and/or function.<sup>71</sup> Where most literature on gesture control takes the difference between controllers and instruments as an implicit corollary, Mulder addresses the two in unison based on their shared exigencies on the musical body, and conversely, their limited adaptability. As is true for gesture controllers, he argues, "the capability of musical instruments to accommodate persons with limb proportions outside the norm is relatively underdeveloped."<sup>72</sup> The personalization of wearable controllers in musical performance remains largely unaddressed, but when composers make public the design of their controllers on personal websites and in press, the goal is to encourage hacks, not copies. Imogen Heap, for example, makes her data glove available open source not to seek exact reproductions of her model but because, she says, "it's really exciting to see what people might do with hacking [the glove]."<sup>73</sup> One only need to scan the websites of Waisvisz, Tanaka, Sonami, and Z, as well as other composers interested in personalized wearable interfaces, such as Paul de Marinis,

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<sup>71</sup> Mulder, "Getting a Grip on Alternate Controllers," 38.

<sup>72</sup> "[A]ge and/or bodily traumas" affect the "ability of a performer." Mulder, "Getting a Grip on Alternate Controllers," 33.

David Wessel, David Ostrowski, John Bischoff, Frankie Mann, and Rich Gold, to see that they share this ethos.

Performances with wearable gesture controllers also de-essentialize the gesturing hand by constructing ambiguous and impermanent relationships between sonic and scenic gesture. In his monograph on music in video games, William Cheng describes falling for the illusion of an unplugged “Player 2 controller” as a child, and trusting that he is in fact in the driver’s seat of the music and action on the screen.<sup>74</sup> In listening to musical performances with gesture control, it is sometimes similarly difficult to link a performer’s physical gestures to sonic effects. In part, this is due to the counter-classical foregrounding of timbral organization, and in part due to composers’ employment of gestural algorithms that shirk the processes of signification that we know from classical instrumentality and virtuosity: a slow movement can prompt rhythmically active sounds, a raised arm can lead to a drop in register, the curling of fingers can enact a vocal sample, and so on. Tanaka describes an audience’s difficulty with processing a single stream of electronic sounds coming from three band members of the Sensorband ensemble:

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<sup>73</sup> Imogen Heap, “The gloves that will ‘change the way we make music.’”

<sup>74</sup> William Cheng, *Sound Play: Video Games and the Musical Imagination* (Oxford: Oxford University Press, 2014), 1-8.

It is kind of a natural reaction on the part of the audience to try to make a connection between the physical gesture they see and what they hear. However, to do so is difficult because these sounds are unknown. These are abstract, computer-generated sounds, whereas with acoustic ensemble music there is always some prior knowledge of how the individual instruments sound.<sup>75</sup>

What Tanaka calls “abstract” sounds refers, I think, not only to their computer-generated origins but also, and perhaps primarily, to their musical character defined by timbre rather than more legible musical elements such as pitch or rhythm.

Tanaka’s BioMuse is a set of bands and gloves worn on the forearms and hands, and one of his performance practices involves splitting the same sound between the left and right arm and playing with pitch and amplitude differences to build timbral tension.<sup>76</sup> This tension is then manipulated to give form to the performance. The swooshing and granulated noises of Sonami’s sound-world, and the dry sputter and crackle of Waisvisz’s performance are similarly abstract. Waisvisz’s performance is also littered with clicking sounds – acoustic traces of performance with *The Hands*, which

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<sup>75</sup> Tanaka quoted in Bongers, “An Interview with Sensorband,” 18-19.

<sup>76</sup> A short lecture-demonstration of the BioMuse system is available online. Atau Tanaka, “Atau Tanaka – new Biomuse demo,” Vimeo video posted by STEIM Amsterdam, December 8, 2008, Accessed December 11, 2015, <https://vimeo.com/2483259>.

both obscure and are obscured by the composer's choice of electronic sounds from the same timbral family. Finally, through the frequent use of concrete audio samples in performance, these composers further disrupt the idea that they are performing their body: in an archival video of a performance at STEIM, Waisvisz samples the initial applause of the audience to use it as material for his gestural performance with *The Hands*; Sonami frequently uses short vocal samples.

Where Judith Butler's theory of gender performativity explains why gender is treated as natural when it is really not, we might as well substitute *gender* with *gesture*: "[g]ender," she writes, "is the repeated stylization of the body, a set of repeated acts within a highly rigid regulatory frame that congeal over time to produce the appearance of substance, of a natural sort of being."<sup>77</sup> The critical mass of essentialist descriptions of hands, hand gestures, and gesture controllers work to establish a rigid regulatory frame to understand the role of the body in music, its gender notwithstanding. The changeability of algorithmic logics in performances with gesture control, as well as Waisvisz, Sonami, Tanaka, and Z's preference for experimental elements in musical composition create gesture-queer sounds and spaces that trouble the fixity of sounds and bodies.

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<sup>77</sup> Judith Butler, *Gender Trouble: Feminism and the Subversion of Identity* (New York: Routledge, 1990), 33.

## Video Games and Sign Language in the Work of Laetitia Sonami

The use of gestural data as a mechanism of commercial video-game control represents an extreme of the inflexibility and non-personalization of gesture-controlled interfaces. It is also a transparent case study of the co-constitution of gender and gesture, a source of inspiration for Sonami's controller. One of the most famous early gesture controllers is the Power Glove, a 1989 Nintendo gaming controller released by the toy company Mattel. The Power Glove translates human hand movement to on-screen gestures. The shape of a Power Glove's gesture is determined through a combination of ultrasonic and optic sensors: ultrasound feedback between the glove and a TV monitor determines location (fairly inaccurately, but cheaply), and the bend of optic cables running alongside fingers limits light transmitted through them and determines finger flex.<sup>78</sup>

In one of the first instances of product placement, the Power Glove appeared in Todd Holland's 1989 film *The Wizard*, spurring a cult following based on, oddly enough, the controller's perceived low fidelity.<sup>79</sup> In a famous scene, California-blond wayfarer-wearing child actor Jackey Vinson, who plays the film's antagonist, holds the glove over his heart tightened into a fist. He smirks at his adversary: "I love the Power Glove. It's so bad." The clip

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<sup>78</sup> In its day, the Power Glove was "cheapest by a factor of 100." Sturman and Zeltzer, "A Survey of Glove-based Input," 34-34.

<sup>79</sup> *The Wizard*, dir. Todd Holland, (Universal Pictures, 1989).

highlights three characteristics of gesture-control that come into play in gaming culture: the masculinist economy of control, the theatrical practice of masking, and the awkwardness of early glove controllers. The Power Glove was marketed with the telling tagline, “Everything else is child’s play,”<sup>80</sup> a curtain call for a theater of war that trumped the toy’s ludic character. Like army equipment, the glove was “not particularly comfortable.”<sup>81</sup> Musicologist Roger Moseley has written about the intersection of militarism, digital gaming, and musicality in his article about the videogames *Guitar Hero* and *Rock Band*.

[T]he post-war military-industrial complex in the U.S. [...] gave rise to digital games in general, and to *Simon* in particular [...] While this might seem jarring, it is entirely commensurate with the history of both toys and digital play: consider bows and arrow, cap guns, and *Call of Duty* in the light of Friedrich Kittler’s assertion that ‘the entertainment industry . . . is an abuse of army equipment’<sup>82</sup> Inflecting this perspective with Agamben’s historicity, we might suggest that as weapons age, they become more toy-

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<sup>80</sup> Power Glove television commercial and print advertising, Nintendo, United States, 1990.

<sup>81</sup> Sturman and Zeltzer, “A Survey of Glove-based Input,” 34.

<sup>82</sup> Friedrich A Kittler, *Gramophone, Film, Typewriter*, trans. Geoffrey Winthrop-Young and Michael Wutz (Stanford, CA: Stanford University Press, 1999), 96-7.

like; in the case of the axe, at least *Guitar Hero* seems to bear the hypothesis out.<sup>83</sup>

The 1965 Czech film *If a Thousand Clarinets* tells the story of a military base where all weapons magically turn into musical instruments during a shoot-to-kill capture operation of a deserter.<sup>84</sup> The transformation happens at the gesture of drawing firearms, scored with the opening of Bach's Toccata in D minor, the deserter's *idée fixe*. The film pivots on slippage between control over an instrument (virtuosity) and control over people with an instrument (power). In *The Wizard*, Vinson's character similarly *wields* the Power Glove, gives it *commands*, and holds it clenched into a fist to prepare for an upcoming *battle* with the film's boy protagonist. Writings on gesture control commonly speak of "targets" that are "reached", "visual" and "auditory targets", and "target-oriented movement."<sup>85</sup> The economy of control, helped in no small part by slippage between the language of audio-technological paradigm, the language of theater, and the rhetorical arsenal surrounding

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<sup>83</sup> Roger Moseley, "Playing Games with Music (And Vice Versa): Ludomusicological Perspectives on Guitar Hero and Rock Band," in *Taking It to the Bridge: Music as Performance*, eds. Nicholas Cook and Richard Pettengill (Ann Arbor: University of Michigan Press, 2013), 279-318. Accessed on *Roger Moseley*, accessed February 7, 2014, [http://www.rogermoseley.com/Music/musicology/Entries/2012/1/19\\_Playing\\_Games\\_with\\_Music,\\_and\\_Vice\\_Versa\\_Performance\\_and\\_Recreation\\_in\\_Guitar\\_Hero\\_and\\_Rock\\_Band.html](http://www.rogermoseley.com/Music/musicology/Entries/2012/1/19_Playing_Games_with_Music,_and_Vice_Versa_Performance_and_Recreation_in_Guitar_Hero_and_Rock_Band.html).

<sup>84</sup> *If a Thousand Clarinets* [*Kdyby Tisíc Klarinetů*], dir. Jan Roháč and Vladimír Svítáček (1965; Prague: Filmové Studio Barrandov), film.

<sup>85</sup> Mulder, "Getting a Grip on Alternate Controllers," 35.

military technology (the origin site of many sound technologies as I describe in Chapter 3), is always necessarily at play in performances with data gloves, musical and otherwise.<sup>86</sup> In an excellent study of boys' toys, sociologist Wendy Varney argues that the "very masculine connotations"<sup>87</sup> of toys like the Power Glove changed "men who brandish prostheses"<sup>88</sup> into "representations of men as machines [and/or] machines as men, [running] counter to the broadening of roles which have, albeit rather gradually, been opening up for both genders in Western societies."<sup>89</sup> Anne Balsamo's critique of Donna Haraway's cyborg optimism sits well in the neighborhood of the Power Gloves, Robocops and Terminators, for Haraway "fails to consider how the cyborg has already been fashioned in our cultural imagination."<sup>90</sup> These images are crucially always necessarily at play in musical performance with gesture control.

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<sup>86</sup> For the military connotations of theatrical spectacle, see Samuel Weber, *Theatricality as Medium* (New York: Fordham University Press, 2004), 97-99. For an account of the military origins of many twentieth-century audio-technologies, see Dave Tompkins, *How to Wreck a Nice Beach: The Vocoder from World War II to HipHop* (New York: Melville House Publishing, 2010).

<sup>87</sup> Wendy Varney, "Of Men and Machines: Images of Masculinity in Boys' Toys," *Feminist Studies* 28/1 (2002): 153.

<sup>88</sup> Varney, "Of Men and Machines," 161.

<sup>89</sup> Varney, "Of Men and Machines," 153. While women are, in fact, often portrayed as technologies, their representation is more as appliances than intelligent technologies.

<sup>90</sup> Balsamo, *Technologies of the Gendered Body*, 151. Parker-Starbuck, *Cyborg Theatre*, 2.

Hinkle-Turner has hypothesized that women's participation in electronic music-making drops off in the late 1980s because "most initial encounters with computer technology and electronic sounds [start happening] through the use of video games which are often cited for their violent and misogynistic content."<sup>91</sup> In the same vein, Sonami conceptualized the Lady's Glove as a gendered counterpart to the Power Glove in 1991. She built the first Lady's Glove for a performance with Paul DeMarinis titled *Mechanization Takes Command* at Ars Electronica Festival in Linz, Austria. Her work on the glove started as "somewhat of a joke, a response to the heavy masculine apparel used in virtual reality systems,"<sup>92</sup> a rejoinder to "all the other gloves [which] were so macho."<sup>93</sup> Sonami kept returning to the glove project, however, building four more versions between 1991 and 2003, the last two with the engineering expertise of Bert Bongers and the financial support of the Studio for Electro-Instrumental Music (STEIM) in the Netherlands.

Like a theatrical mask, the glove is a historically and technologically constituted discipline, just like gender. It can be uncomfortable to wear and

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<sup>91</sup> Hinkle-Turner, *Women Composers and Music Technology in the United States*, 250.

<sup>92</sup> Sonami in Whitney Phaneuf, "Viewing the Sound of Laetitia Sonami," *East Bay Express*, August 14, 2013, accessed August 20, 2013, <http://www.eastbayexpress.com/oakland/viewing-the-sound-of-laetitia-sonami/Content?oid=3681158>.

<sup>93</sup> Sonami in *the ear goes to the sound*.

difficult to read. Mulder's article on hacking the Power Glove aimed at "independent technerd[s]" and "independent artist[s]" is entirely focused on its technological limitations, its poor measure of joint angle and very low 8-bit resolution in particular.<sup>94</sup> Attention to "accidents, breakdowns, and strikes," writes Bruno Latour, is an opportunity to open the 'black boxes' that reduce emergence to its result, and process to its effect.<sup>95</sup> The infamously bumpy (and far from natural) translation between user and early data gloves draws attention to the gender-constitutive action itself. In fact, it was in part the Power Glove's lack of seamlessness – its uncomfortable and unreliable intimacy – that inspired Laetitia Sonami take the toy as a point of departure for her own controller. It is in this sense of grappling with an external technology that delivers imperfect results that her musical performances are very much about human-technological interaction. In an interview with Tara Rodgers, Sonami muses about the Lady's Glove: "I sometimes dream it could be [...] grafted in the skin. But then, I would miss the awkwardness of an external apparatus, a mechanical system that the body's trying to adapt to, and the struggle that comes with it."<sup>96</sup>

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<sup>94</sup> Axel Mulder, "How to build and instrumented glove based on the Power Glove flex sensors," *PCVR Magazine* (1994), 10. Mulder, "Getting a Grip on Alternate Controllers," 37.

<sup>95</sup> Bruno Latour, *Reassembling the Social: An Introduction to Actor Network Theory* (New York: Oxford University Press, 2005), 81.

<sup>96</sup> Rodgers, *Pink Noises*, 229.

An interest in fissure, limits, imperfection, and even mistakes is something that Sonami, Z, Waisvisz, and Tanaka have in common. Waisvisz, too, has said that to “try to overcome [The Hands’] limitations” is a part of his musical project.<sup>97</sup> For Waisvisz, the point was not to eliminate but to address limitations. The “theatrical” way Waisvisz’s “body has usually been significantly constrained by dangling cables” is the most patent example of such a limitation, writes musician and cognitive scientist Roger Dean.<sup>98</sup> The focus on limitations also takes the controller out of the progress-driven economy of a computer game and into the creative realm of options, choices, and indeterminate outcomes. Z sees “mistakes [as] an enriching force” and “far more interesting to me than anything I might have thought up on my own.”<sup>99</sup> Tanaka, too, has stressed that he is not interested in “the perfection of a generalized [sic] human-machine interface:”

[I]n fact, I prefer certain imperfections, certain glitches and funny things that [the BioMuse] might do and [I] play on those for musical material. This, to me, makes a connection with traditional musical

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<sup>97</sup> Krefeld and Waisvisz, “The Hand in the Web: An Interview with Michel Waisvisz,” 30. Between *The Touch Monkeys* and *The Archaic Symphony*, Waisvisz controls a varying number of synthesizers, sometimes, as in *TAS*, requiring a macro MIDI computer system. Waisvisz cited in Roger Dean, *Hyperimprovisation: Computer-interactive Sound Improvisation* (Middleton, WI: A-R Editions, 2003), 40.

<sup>98</sup> Dean, *Hyperimprovisation*, 40.

<sup>99</sup> Z, “A Tool is a Tool,” 352.

instrument writing: I can use the old metaphors of musical instrument composition with this system.<sup>100</sup>

Counter to the analogy to classical instrumentality, when Sonami gradually retired the Lady's Glove between 2014 and 2015, she cited excessive familiarity with what was once awkward: "I felt like I knew it ... I had mastered it, and it had been for so many years unclear how I would think of music outside of the Glove," she said ahead of one of her last concerts with the Glove.<sup>101</sup> To come close to classical virtuosity, a perfectionist mix of familiarity and control, became a problem for Sonami. Specifically, the desire to play "with" the glove (or "play on" its temperamental "funny things," as Tanaka put it) runs counter to the classical economy of control we call virtuosity.

The theme of labor, especially women's domestic work, looms large in Sonami's oeuvre. Sonami has compared tinkering with homemade electronics in the 1970s to cooking, and the original 1991 Lady's Glove system was mounted on a pair of yellow rubber gloves – the kind worn to

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<sup>100</sup> Tanaka, "Biomuse [sic]."

<sup>101</sup> Laetitia Sonami quoted in Emily Dupuis, "Musician Explores Gender in Electronic Genre," *The Brown Daily Herald*, March 21, 2014, accessed February 1, 2015, <http://www.browndailyherald.com/2014/03/21/musician-explores-gender-electronic-genre/>.

wash the dishes, kitchens, and bathrooms.<sup>102</sup> In a 2006 sound installation for the Yerba Buena Center for the Arts in San Francisco presenting one of her many musical objects mounted on ready-mades, Sonami accessed the theme of housework again, embedding speakers inside rubber plungers. Titled *Sounds of War*, the piece invited visitors to pick up every plunger and hold it up to their ear to hear the voices of women and children from war-plagued regions such as Darfur and Palestine. In the gesture of picking up a cleaning tool and holding it to the ear, visitors symbolically assumed the feminized role of listening. Cynically, Sonami thus thematized the modern home as a site of female labor and male leisure, where men play videogames while women cook and clean, and invited visitors to confront the (in)appropriateness of her tools. Conversely, she framed she framed women's electronic composition as valuable housework.

Aside from visual images of female labor (later models of the Lady's Glove address a different aspect of femininity with a clingy, above-the-elbow, satin opera glove), work is actualized in many of Sonami's performances with controllers that deliberately respond only to a disproportionate amount of physical effort: if "unreliability" is one pillar of her work with custom-built instruments, "inefficiency" is another.<sup>103</sup> She follows the premise of

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<sup>102</sup> A photo gallery showing the evolution of the controller from rubber glove to satin glove is available on Sonami's website. Laetitia Sonami, "Lady's Glove," *Sonami.net* (n.d.), accessed February 5, 2016, <http://sonami.net/ladys-glove/>.

<sup>103</sup> Sonami quoted in Dupuis, "Musician Explores Gender in Electronic Genre."

SensorLab software, which emphasizes macroscopic movement as essential to performance. In a 2015 documentary by Renetta Sitoy, Sonami works a large bellow fitted with infrared sensors and remarks: “You really get sweaty.”<sup>104</sup> Waisvisz has similarly argued that “the physical effort you make is what is perceived by listeners as the cause and manifestation of the musical tension of a work,”<sup>105</sup> and in the case of *Z’s BodySynth*, which reads muscle electricity, each of its four channels is programmed to interpret the continuous stream of EMG data differently, such that what is sounded are various algorithmic interpretations of literal physical effort. Sonami’s performances stand out, however, for their conceptual *and* physical thematization of women’s labor, binding the gendered life of the female electronic composer to the gendered experience of the American everywoman, cooking, cleaning, and really getting sweaty.

It was arguably Sonami’s many fortuitous encounters with feminist practice that empowered the composer to be explicit about her gendered experience in electronic music. Sonami relocated to the United States in 1975 on the advice of her Parisian composition teacher Radigue.<sup>106</sup> It was the year

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<sup>104</sup> Sonami in *the ear goes to the sound*.

<sup>105</sup> Krefeld and Waisvisz, “The Hand in the Web,” 30.

<sup>106</sup> Radigue’s work rarely received recognition from “institutions – what was considered serious music,” deplores Sonami. Sonami in *the ear goes to the sound*. Radigue was arguably also disenfranchised for writing very different music from her famous teacher Pierre Henry. Sonami in Rodgers, *Pink Noises*, 227.

*Time* magazine wrote that “feminism has transcended the feminist movement [and] matured beyond ideology to a [...] sometimes unconscious [...] acceptance,”<sup>107</sup> and many university and research electronic music studios across the U.S. were being founded and directed by women, a genealogy documented by Elizabeth Hinkle-Turner.<sup>108</sup> *Time*’s assessment misses the reality of non-White women’s lives: Patricia J. Williams recalls that being among the ten black women graduates of Harvard Law School in 1975 was still “an especially curious exoticism,” and Michele Wallace describes entering a PhD program in American Studies at Yale in 1980 as a place “where I was lost before I started.”<sup>109</sup> For the White European Sonami, however, the road was easier and fortuitous. Radigue introduced Sonami to Joel Chadabe, and Sonami moved to the Bay Area in 1978, enrolling in an MFA program at Mills College, graduating in 1980. She has said that Mills faculty Robert Ashley, David Berman, and Terry Riley “made a concerted effort to have women in the program.”<sup>110</sup> Moreover, the experimental

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<sup>107</sup> “Women of the Year: Great Changes, New Chances, Tough Choices,” *Time* (January 5, 1976), accessed on <http://content.time.com/time/magazine/article/0,9171,947597,00.html>.

<sup>108</sup> Hinkle-Turner, “Women and music technology: pioneers, precedents and issues in the United States.”

<sup>109</sup> Patricia J. Williams, “Notes from a Small World,” *The New Yorker* (April 29, 1996): 87. Michele Wallace, *Invisibility Blues: From Pop to Theory* (New York: Verso, 1990), 97.

<sup>110</sup> Sonami in *the ear goes to the sound*.

atmosphere of Mills was a saving grace for Sonami, who had previously wanted to attend the Groupe de Recherché Musicale, but was told she should attend the conservatory for two years first.<sup>111</sup>

Instead of founding her gestural style on the masculinized and militarized choreographic language of video-gaming, Sonami found inspiration in Sign Language, the curling hands of Indian dancers, and “the gestures, the communication” of the woman toreador protagonist of Pedro Almodovar’s 2002 film *Talk to Her*.<sup>112</sup> I already glossed the history of American Sign Language as central to debates about the meanings and relationships of “‘nature’ and ‘normality’” in the United States since the late-nineteenth century.<sup>113</sup> Since the 1970s, data gloves had been at the vanguard of these debates.<sup>114</sup> Whereas in 1883 Alexander Graham Bell was a prominent sponsor of the anti-ASL movement, it was the Bell Telephone Laboratories who developed the 1983 Digital Data Entry Glove (DDEG),

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<sup>111</sup> Sonami earned her MFA degree from Mills in 1980. Rodgers, *Pink Noises*, 227.

<sup>112</sup> Sonami in *the ear goes to the sound*. Sonami in Rodgers, *Pink Noises*, 230.

<sup>113</sup> Baynton, *Forbidden Signs*, 1. See also Anabel Maler, “Nineteenth-Century Perspectives on Deafness and Music: An Introduction,” *Official Blog of Music and Disability Studies at the American Musicological Society and the Society for Music Theory* (2013), accessed August 1, 2014, <https://musicdisabilitystudies.wordpress.com/2013/10/12/nineteenth-century-perspectives-on-deafness-and-music-an-introduction-by-anabel-maler/>.

<sup>114</sup> For a survey of finger-spelling controllers between 1977 and 1994, see David L. Jaffe, “Evolution of mechanical fingerspelling hands for people who are deaf-blind,” *Journal of Rehabilitation Research & Development* 31/3 (August 1994): 236.

which recognized the Single Hand Manual Alphabet for the American Deaf enabling translation from fingerspelling.<sup>115</sup> Stanford University researcher James Kramer's 1988 Talking Glove could "[analyze] a nonvocal person's fingerspelling hand formations and [output] spelled words as synthesized speech, [written text, and Braille,]" and his CyberGlove, which improved upon the DDEG, went on the market in 1995.<sup>116</sup> As much as the Lady's Glove is engineered after the Power Glove, it also speaks to this lineage of data gloves thought Sonami's application of the gestural style of ASL and through her own performative negotiation of nature and normality in musical performance.

Sign language is also a useful point of access to musical performance with gesture control because it challenges the false dichotomy of embodiment and disembodiment as well as that of musical and physical gesture. Far from being a sequence of pure signifiers, sign language, writes

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<sup>115</sup> Bell's mother was deaf as a result of a congenital disorder but Bell was an agnostic unswayed by the spiritual promise of evangelical teachers of ASL. In 1883, Bell presented a thesis to the National Academy of Sciences proposing the eradication of deafness by limiting the reproduction rights of the Deaf. Alexander Graham Bell, "Memoir Upon the Formation of a Deaf Variety of the Human Race," presented to the National Academy of Sciences (New Haven, November 13, 1883). For more about the Digital Data Entry Glove, see Baynton, *Forbidden Signs*, 6. Sturman and Zeltzer, "A Survey of Glove-based Input," 32.

<sup>116</sup> James Kramer and Larry Leifer, "The talking glove," *ACM SIGCAPH Computers and the Physically Handicapped* 39 (Spring 1988), 12. The CyberGlove's software, called Gesture Plus, cost a prohibitive \$3,500 not including the glove. Sturman and Zeltzer, "A Survey of Glove-based Input," 34.

anthropologist Brenda Farnell, challenges the disembodied ideology of traditional linguistics.<sup>117</sup> Movement continues between signs: even though they contain discrete signifiers, they rely on a continuous stream of information: Anabel Maler's research, for example, accounts for manipulations of signing space and alterations of signs in the signing of songs.<sup>118</sup> Sonami's use of ultrasound emitter-receiver pairs on her two hands and foot is inspired by this manipulation of signing space, engaging the entire body to produce a 'hand' sign.<sup>119</sup> Finally, Sonami describes Sign Language as "loud (even though you don't hear it) because so much data is being transmitted"<sup>120</sup> – "busy and noisy" at the same time.<sup>121</sup> To this point, she also collects spools of wire, which "imply communication by their nature [...but] you just really don't know what [is being transmitted] if you're not familiar with that language."<sup>122</sup> East-German-born composer Helmut Oehring, born to

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<sup>117</sup> Brenda Farnell, "Theorizing 'The Body' in Visual Culture," in *Made To Be Seen: Perspectives on the History of Visual Anthropology*, ed. Marcus Banks and Jay Ruby (University of Chicago Press, 2011), 153.

<sup>118</sup> Anabel Maler, "Songs for Hands: Analyzing Interactions of Sign Language and Music," *Music Theory Online* 19/1 (March 2013), accessed June 23, 2015, <http://www.mtosmt.org/issues/mto.13.19.1/mto.13.19.1.maler.html>.

<sup>119</sup> Laetitia Sonami in "Roulette TV."

<sup>120</sup> Laetitia Sonami in "Roulette TV."

<sup>121</sup> Sonami in *the ear goes to the sound*.

<sup>122</sup> Sonami in *the ear goes to the sound*.

deaf-mute parents and isolated from spoken language until the age of four, agrees:

Owing to my having been born into sign language, while being myself able to hear, all gestures and movements are for me intimately bound to the ear. Thus the 'choreographic' elements of a piece are very important to me: this is especially true of the double bass, which often requires big movements just to get around it.<sup>123</sup>

Roland Barthes has conceptualized gesture as “the surplus of an action,” merely amplifying performance, playing up the unfolding of texts in time, and emphasizing the materiality of signs.<sup>124</sup> For Barthes, the calligraphic paintings of Cy Twombly are preeminently gestural for example – Rosalind Krauss even likens them to graffiti, which is “performative, suspending representation in favor of action: I mark you, I cancel you, I dirty you.”<sup>125</sup> Writing about “extended musical instruments” including gesture controllers, computer scientist Steve Benford uses the terms “ancillary

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<sup>123</sup> Oehring also often uses lower tunings on classical instruments to approximate the lower frequency speech sounds of Deaf-Mute persons. Carlos Maria Solare, “Helmut Oehring in Profile,” *Tempo* New Series 213 (July 2000): 2.

<sup>124</sup> Roland Barthes, “Cy Twombly: Works on Paper,” in *The Responsibility of Forms: Critical Essays on Music, Art, and Representation*, trans. Richard Howard (Berkeley: University of California Press, 1985), 157-159.

<sup>125</sup> Rosalind E. Krauss, “Cy Was Here : Cy’s Up,” *Artforum* (September 1994), accessed on *Artforum.com* on December 10, 2015, [http://www.cytwombly.info/twombly\\_writings6.htm](http://www.cytwombly.info/twombly_writings6.htm).

gestures” to define “gestures that naturally occur ‘around the instrument’ but that are not sensed and thus do not trigger music.”<sup>126</sup> Ancillary gestures, he writes, are a key carrier of meaning because, one, they “lend a degree of physical expression to a performance, revealing the performer’s emotional engagement as well as their skill and control over the instrument” and two, like the preparatory movement of a calligrapher’s brush or the opening of a golfer’s swing, they ensure the proper execution of gestural shapes that enact compositional designs.<sup>127</sup> Could it be that this “ancillary” gestural “surplus” is in fact central (i.e., neither ancillary, nor surplus) to musical performance with gesture control? The difference between ancillary gestures and triggering actions seems based in normative assumption: are the freely swinging arms of a walking woman essential to the walking motion? Is the bend of the knees? All movement structures space and draws attention to the unfolding of sound in time. Even the readying phase of a sound event thus has a musical result. It is a dynamic map that guides our listening. Neither the performer nor the listeners altogether know where ancillary gestures end and triggering gestures begin. Like graffiti, sound events in Sonami’s performances indeed declare *I mark you* but at the same time de-essentialize the *I*: I hear the flapping of wings, droning backgrounds, machinic clicks,

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<sup>126</sup> Steve Benford, “Performing Musical Interaction: Lessons from the Study of Extended Musical Instruments,” *Computer Music Journal* 34/4 (Winter 2010): 52.

<sup>127</sup> Benford, “Performing Musical Interaction,” 52.

rustling sounds, percussive noises, crackle, and cut-up vocal samples that approach abstraction. These sounds effects reflect not Sonami's body but the gestural marking of space itself.

### **Prostheses and Extensions**

Technologies that visually simulate the shape or function of the body are often described as prostheses or extensions. In classical Cartesian thinking, the body itself is seen as an extension of the mind.<sup>128</sup> In Modernist performance art, the body was likewise seen as an object of control, an extension of the canvas.<sup>129</sup> In contrast, 1960s and 70s performance art, “a reaction against the erasure of people from art”<sup>130</sup> that culminated in feminist Body Art, framed technologies as extensions of the body.<sup>131</sup> The predominant Whiteness of feminist performance artists such Hannah Wilke, Lynda Bengis, Cindy Sherman, Mierle Laderman Ukeles, and Marina Abramović to name just a few, betrays the privilege of this position. The concept of technological extension seems to have little to do with bodily boundaries and more to do with whose body it is.

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<sup>128</sup> Farnell, “Ethno-Graphics and the Moving Body,” 932.

<sup>129</sup> Birringer, “Contemporary Performance/Technology,” 366.

<sup>130</sup> Susan McClary, *Feminine Endings: Music, Gender, and Sexuality* (Minneapolis: University of Minnesota Press, [1991] 2002), 137.

<sup>131</sup> Birringer, “Contemporary Performance/Technology,” 366.

The notion of technology as *prosthesis* likewise participates in the metaphor of *lack* that often defines many oppressed groups: women who lack the phallus, Deaf persons who lack hearing, and so on. A worthwhile critique of the term from the perspective of disability studies comes from Jennifer Iverson, who emphatically rejects it.<sup>132</sup> Ironically, it is often persons “traditionally classified as ‘disabled’ who are currently at the vanguard of human enhancement technologies.”<sup>133</sup> It is, after all, the U.S. military industrial complex that produces many amputees that also develops many “new prosthetic and robotic technologies.”<sup>134</sup>

The metaphors of prosthesis and extension echo the equally (if less obviously) troubling terminologies of embodiment and disembodiment that I address in Chapter 3. Kim and Seifert critique the common description of gesture control as embodied, and propose avoiding subject/object, mind/body, and culture/nature dualisms, highlighting instead processes of “interaction” and “agency.”<sup>135</sup> Indeed, interaction is concomitant to STEIM’s philosophy of touch, which is reciprocal, sensuous, and immediate, “neither

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<sup>132</sup> Iverson, “Mechanized Bodies,” 157-161.

<sup>133</sup> Michael John Gorman, “HUMAN+ explores the technologically enhanced future of our species,” *The Guardian Online* (April 22, 2011).

<sup>134</sup> Gorman argues that a key driver in the development of new prosthetic and robotic technologies is the military, fuelled in the US particularly by demand from increasing numbers of veteran amputees from the Iraq and Afghanistan wars. Gorman, “HUMAN+ explores the technologically enhanced future of our species.”

<sup>135</sup> Kim and Seifert, “Embodiment,” 143, 146.

[...] extended nor immaterialized.”<sup>136</sup> David Wessel, long time director of UC Berkeley’s Center for New Music and Technology (CNMAT), articulated similar goals as a preference for “shaping” over “triggering,” and “fabric” over “buttons.”<sup>137</sup> Oliver La Rosa poetically speaks of an effort “to-unbutton.”<sup>138</sup>

As Birringer points out, however, interactivity is somewhat of a “new technological catchword” used even in instances – such as our case of musical performance with gesture control – when a “compositional method is still based on design and on the instant feedback that we have known since the rise of closed-circuit video.”<sup>139</sup> Margaret Morse takes this critique a step further, illustrating the discursive depreciation of the term with the example of “pushing a button on a vending machine and having a Coke delivered into

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<sup>136</sup> Kim and Seifert, “Embodiment,” 147.

<sup>137</sup> David Wessel, “Expressive Shaping for Generative Musical Processes in Live Performance” (presentation, Bone Flute to Auto Tune: A Conference on Music & Technolgy in History, Theory and Practice, University of California, Berkeley, April 26, 2014). George E. Lewis has expressed his own “personal quibbles with using ‘magic buttons’ to introduce precomposed material.” Lewis in Dean, *Hyperimprovisation*, 167.

<sup>138</sup> Oliver La Rosa, “To un-button.”

<sup>139</sup> Birringer, “Contemporary Performance/Technology,” 368. Attesting to its catchword character, Margaret Morse notes that “the critical discourse on ‘interactivity’” is ideologically loaded, even schizophrenic in its tension between pejorative connotations and utopian values and expectations.” Margaret Morse, “The Poetics of Interactivity,” in *Women, Art, and Technology*, ed. Judy Malloy (Cambridge, MA: MIT Press, 2003), 17.

the slot.”<sup>140</sup> She also deplores the understanding of interactivity as a “tool for getting ‘into’ the other scene presented on screen or projected elsewhere,” and therefore as the antithesis of immersion.<sup>141</sup> This other scene is also often called virtuality. Does performance with gesture control have a virtual dimension? The sonic space drawn by gesture control is virtual to the extent that the performer is executing her gestural choreography based on aural feedback, not just Cartesian space information. This sonic space, however, is all but disembodied because it is predicated on constant feedback from the performer’s body. In other words, the “virtual body [...] embodies the physical body in a manipulable data form” without the physical body ever disappearing.<sup>142</sup> Real life and virtual reality become codependent, not separated. As Oliver La Rosa writes, “the body isn’t extended but somehow [...] demarcated. Only through this demarcation, is it able to demarcate its environment and interact with it.”<sup>143</sup>

That this demarcation happens through sound, and often specifically through timbral dynamics, rather than the traditional physical, medical, and

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<sup>140</sup> Morse, “The Poetics of Interactivity,” 23.

<sup>141</sup> Morse, “The Poetics of Interactivity,” 19.

<sup>142</sup> Kim and Seifert, “Embodiment,” 147. Conversely, it would be incorrect to call the network embodied: “integrating the physical body through musical interfaces into algorithmic sound generation does not necessarily imply embodiment.” Kim and Seifert, “Embodiment,” 149.

<sup>143</sup> Oliver La Rosa, “To un-button,” 44. See also Guy Garnett, “The Aesthetics of Interactive Computer Music,” *Computer Music Journal* 25/1 (Spring 2001): 21-33.

visual signifiers of embodiment is radically experimental. This experimentalism lies in the liquefaction of the traditional lexicon of performing bodies and their sounds through the design of temporary relationships between bodily movement and sonic gesture. The sonic demarcation of the body's movement, simultaneously virtual and body-dependent, echoes Katherine Hayles's understanding of the "posthuman," which refers not to cyborg assemblages as such, but to constructions of subjectivity that counter the humanist construction of the White male subject. Hayles issues a warning about the tendency of scholars working within cybernetic-posthumanist frameworks to erase the body: she urges theorists to dispel the fantasy of virtual disembodiment in favor of understanding "human life [as] embedded in a material world," even in its posthuman modes.<sup>144</sup> In the "Cyborg Manifesto," Haraway also emphasizes the generative potential of new kinds of "writing" through microelectronics but also biotechnology, which "subvert command and control."<sup>145</sup> Parker-Starbuck makes a compelling case for using the analytical category of cyborgness over virtuality precisely because the former "can address the

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<sup>144</sup> Hayles, *How We Became Posthuman*, 5.

<sup>145</sup> Donna J. Haraway, "A Cyborg Manifesto: Science, Technology, and Socialist Feminism in the Late Twentieth Century," in *Simians, Cyborgs, and Women: The Reinvention of Nature* (London: Free Association Books, 1991), 175.

interdependence between the live and the technological,"<sup>146</sup> which the latter separates.

[T]he cyborg also offers a metaphoric concept to explore how not necessarily literal mergings between live bodies and technologies can destabilize various binaries: body/technology, able/disabled, even human/non-human and allow a reflection upon bodies emerging through this destabilization in performance.<sup>147</sup>

I identify Waisvisz, Sonami, Tanaka, and Z's performances with wearable gesture control as cyborg because they use technology to cleave performance from performativity. The body, we have learned from cyborg feminism, especially the female body, has always been technological. In the words of Balsamo, it has always been a "boundary concept between nature and culture."<sup>148</sup> The destabilization of these sticky binaries in performance reveals the multiplicity of *logics* offered by the *technological*.

### **Digitality and the Body in the Work of Pamela Z**

Pamela Z's performance with the BodySynth in conjunction with her voice offers another perspective on gesture that does not revolve around a sonic

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<sup>146</sup> Parker-Starbuck, *Cyborg Theatre*, 6.

<sup>147</sup> Parker-Starbuck, *Cyborg Theatre*, 6. Merce Cunningham used a similar set-up in a piece called *Biped*, also from 1999, but his projected figures appear and disappear from view throughout the piece.

<sup>148</sup> Balsamo, *Technologies of the Gendered Body*, 5, 9.

manifestation of an essential body. Z studied classical voice, graduating from the University of Colorado, Boulder in 1980. Her voice is powerful and rich, running a gamut of tone colors from center-of-the-body velvet to a piercing chesty sound turbocharged by the lungs. Z incorporates classical-style vocal production into her performances but she rarely, if ever, sings classical-style melodic material, and even eschews referring to cohesive parts of her performances as “songs” because their melodic character does not define them.<sup>149</sup> Aside from classical vocality, Z also employs spoken word and extended techniques frequently.

Her BodySynth was conceived as a MIDI controller with discretely assigned triggers, a biofeedback system for the modulation of sound according to continuous data, and also as a creative feedback tool for learning about one’s own movement through musical performance: “learn about how you move as you hear yourself move,” beckons its description.<sup>150</sup> This promise of revealing secrets about one’s body betrays the fact that the sonification of biofeedback is most at home in hospital soundscapes. Tom Rice has argued that these soundscapes make for a challenging aural experience for patients, who are often disoriented by the “sonic reconfiguration of the private body in relation to the public spaces of the

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<sup>149</sup> Kennedy, “A Few Facets of Pamela Z.”

<sup>150</sup> “The BodySynth,” *Synthzone*, accessed October 2, 2013, <http://www.synthzone.com/bsynth.html>.

hospital,” garnering “feelings of humiliation, anxiety, and even fear.”<sup>151</sup> The stakes of digitizing muscular processes through biofeedback in music are clearly high, but can this disorientation be politically productive and musically pleasurable? What exactly is the musical relationship of the body to its digital and sonic description? And what is the relationship of the digital gesture of looping to physical kinetic labor?

Z’s wired gestures tend to be self-contained, self-referential, indeed Brechtian in that they *appear performed*.<sup>152</sup> Sonami has similarly described her own gestural choreography as “very precise, kind of surgical” and decidedly “not so improvisational.”<sup>153</sup> Z cites Butoh dance theater, the work of Pina Bausch, Samuel Beckett, and “experimental theater that combines layers and elements in interesting ways” as influences.<sup>154</sup> These genres’

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<sup>151</sup> Tom Rice, “Broadcasting the body: the ‘private’ made ‘public’ in hospital soundscapes,” in *Music, Sound, and Space: Transformations of Public and Private Experience*, ed. Georgina Born (Cambridge: Cambridge University Press, 2010), 171.

<sup>152</sup> Brecht writes: “The actor must not only sing but show a man singing. His aim is not so much to bring out the emotional content of his song [...] but to show gestures that are so to speak the habits and usage of the body.” Bertolt Brecht, *Brecht on Theatre: The Development of an Aesthetic*, ed. and trans. John Willett (New York: Hill and Wang, 1964), 44-45.

<sup>153</sup> Sonami in Rodgers, *Pink Noises*, 232-233.

<sup>154</sup> Tom Sellar, “Parts of Speech: Pamela Z, Interviewed by Tom Sellar,” *Theater Magazine*, a publication of Yale School of Drama/Yale Repertory Theatre 30/2 “New Music Theatre,” (Winter 2000). Z has collaborated with various Butoh artists, for instance with Butoh artist Kinji Hayashi (Nov 8, 2003, 21 Grand, Oakland) and with three Butoh dancers as part of her Room Series ‘Poetry and Motion’ (July 30, 2011, Royce Gallery, San Francisco).

reliance on kinesthetic memory is far from the perceived “struggle” of voice and body described by Mary Ann Smart in traditional opera.<sup>155</sup> Z’s critical awareness of being in a performance situation, and the bearing of this awareness *on* a performance, underwrites what Lewis calls “[Z’s] considerable challenge to a post-Cage aesthetic stance based in sonic autonomy.”<sup>156</sup> Z has produced a number of large-scale multimedia works, such as *Parts of Speech*, *Gaijin*, or the more recent *Voci* and *Carbon Song Cycle*, which consist of semi-detached scenes, pieces, and musical forms: the personal narratives that surface in these performances work in tandem with their sutured form to stage Z as a performer rather than a neutral conduit for a work of art.

In performance, Z’s kinesthetic apparatus is palpably *designed*, even if the listener does not quite understand the specific algorithmic relationships at play. When she “makes scales ripple up or down simply by raising or lowering her arm,” our attention is overcome by the “gesture of immense power,” writes Ellen Pearlman in one review of Z’s performance.<sup>157</sup>

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<sup>155</sup> Sondra Fraleigh, *Butoh: Metamorphic Dance and Global Alchemy* (Urbana: University of Illinois Press, 2010), 114. Smart writes about the “voice and body [as] engaged in an evenly matched struggle for representational primacy” in opera. Mary Smart, *Mimomania*, 21.

<sup>156</sup> Lewis, “The Virtual Discourses of Pamela Z,” 73.

<sup>157</sup> Ellen Pearlman, “Ze Cat’s Meow: Pamela Z: “New Strategies with DJ Spooky” at Symphony Space, the Cutting Room, and the Stone,” *Brooklyn Rail: Critical Perspectives on Arts, Politics, and Culture* (September 2, 2006), accessed May 1, 2012, <http://www.brooklynrail.org/2006/09/music/ze-cats-meow-pamela>.

Sometimes one gets the feeling that Z is drawing her voice out of her vocal chords with the unfurling of her fingers. Other times, the changing timbre of her acoustic voice can falsely appear dependent on her hand gestures.

Z has worked with delays since 1982, starting with tape and moving on to a combination of keyboard and gesture-controlled Max/ MSP software. Drawing on James Snead's article on repetition in Black creative practice, George Lewis has argued that Z's practice of repetition highlights the material qualities of sound and indeed the 'grain of the voice.' Building on Snead, Lewis also identifies Z's engagement with gender codes in sound and further situates Z's use of the cut, edit, and loop within Afrodiasporic creative practice in the lineage of musical forms such as call and response.<sup>158</sup> The texture constructed by Z's looped voice confuses classical notions of the voice as musical foreground and instrumental accompaniment as musical background. The staged and musical *display* of a singer in front of a backdrop of instrumentals thus productively recedes, taking with it the gendered and racialized dimension of musical performance.

Building on Lewis, I hear Z's technique of looping the voice and singing alongside (or rather with) multiple looped tracks as a practice of listening to oneself. Listening to a recording of one's own voice is perhaps one of the strangest, most intimate, and sometimes disturbing auditory experiences in part exactly because it sits on the boundary of the acoustic-

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<sup>158</sup> Lewis, "The Virtual Discourses of Pamela Z," 70.

familiar and acousmatic-Other. Listening to Z listen to herself is therefore an especially poignant exercise in musical intimacy. When I have found myself part of such auditory circuitry at Z's performances, what resulted was a kind of auditory empathy. Typically, there are moments when it is difficult to parse out which voice is being sung and which voice is being sung alongside. The idea of the acousmatic voice (a voice whose source is hidden from view) is challenged by this formal strategem. The effect of a vocal loop is surreal not because we cannot see the voice's source but because we *could* see it, earlier.

When looping a live vocal sample, Z also often uses pedals or her laptop to record the sample, and subsequently plays with the looped segment using the BodySynth. She often sings polyphonically with the loop, or uses the loop as a textural backdrop for storytelling. In several different performances I have seen Z map a sampled vocal gesture onto a particular movement that the BodySynth can read, such as a rotation of the wrist. Imperfectly triggered by a continuous stream of data generated by this wrist rotation, the sample then appears fragmented into short, spitting hiccups, which Z describes as "bursts of quick-cut audio" in another work.<sup>159</sup> Though the triggered vocal samples pull on our musical memory of their original acoustic renditions, these bursts are no longer clearly vocal and sound like

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<sup>159</sup> Pamela Z, *Sonic Gestures*, Recombinant Media Labs (San Francisco, 2007), sound and video installation, 18 minutes. Available on *Pamela Z* (August 5, 2009), accessed September 10, 2014, <http://pamelaz.com/SonicGesturesInstallationMov.html>.

abstract glitches, pulses, or explosions that are only momentarily pitched. In this deconstructed, handheld, digital form, the vocal loop is Z's surrealist shadow – the familiar made unfamiliar. Indeterminacy made audible by glitch in the hand's reading of the vocal sample foregrounds technological agency: the controller is not transparent, it participates.

Black artists rarely have the luxury of discursive disembodiment: as Michelle Lee-White puts it, they are “not allowed *not* to have a body.”<sup>160</sup> So what happens to identity – gender, ability, but especially race – when the body is rendered in terms of digital codes? In Z's performance, this happens twice: first when her muscle electricity is read as a stream of continuous data sent to the BodySynth, and second when her voice is detached from performance, digitally looped, played back, and played *with*.

I find it useful to think about Z's use of loops and gesture through the lens of Bill T. Jones' multimedia dance performance *The Breathing Show* (1999). In an opening solo, Jones uses motion-capture technology to produce animated mockups of his own movements, which are projected onto the stage. Jones then dances alongside them. Parker-Starbuck argues that there is

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<sup>160</sup> Lee-White in Lee-White et al., "Afrotech and Outer Spaces," 91. See also Richard Dyer, *White* (New York: Routledge, 1997). Donna Haraway writes about the “embodied others, who are not allowed *not* to have a body,” in the context of the “paranoid fantasies” of many women/academic feminists/activists/etc. (herself included) that this notion describes us all. Donna Haraway, “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective,” in *Simians, Cyborgs, and Women: The Reinvention of Nature* (London: Free Association Books, 1991), 184.

a cyborg relationship between Jones and these “abjected bodily images,” which she calls “ghosts,” and she critiques scholars who discuss technology but elude questions of race and labor, themes that lay at the core of Jones’ dance with ghosts.<sup>161</sup> Dance scholar Danielle Goldman proposes that *The Breathing Show* pivots on our confrontation of our own racialized perception of the dancer.<sup>162</sup> Jones’ physical body – his muscle, sweat, effort, and also his race – always implicates issues of labor, she argues: “while the virtual motion-captured figure itself has no sweat or racial markings, its juxtaposition with the live dancing Jones invigorates their absence in a way that problematizes any simple celebration or comfort that the audience might take in the slick blue images appearing on the screen.”<sup>163</sup>

Z’s performance with vocal loops and gesture is a similar staging of the vacuum behind racialized listening – a negative space that is really a confrontation. Like Jones, Z refigures virtuality as difference. Parker-Starbuck argues that the cyborg bodies that emerge in digitality “have the potential to fill a space too often vacated by fears of the unknown, whether the fears relate to the loss of the live presence on stage, or are fears of what is

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<sup>161</sup> Parker-Starbuck, *Cyborg Theatre*, 66-67.

<sup>162</sup> Danielle Goldman, “Ghostcatching: An Intersection of Technology, Race and Labor,” *Dance Research Journal* 35/2 and 36/1 (Winter 2003 and Summer 2004).

<sup>163</sup> Goldman, “Ghostcatching,” 76.

abject or different.”<sup>164</sup> I hear the looped vocal sample as shedding the expressive markers of Z’s performing body – her skin color, braided black hair, surface markers of gender, as well as the strain and energy of her singing. The listener, however, is never left alone with these crisp, post-racial, post-gender fantasies of vocal digitality: Z’s effortful and expressive vocal and gestural performance is foregrounded. In contrast to Jones’ performance, which pivots on a clear demarcation of digitality vs. dancer, the acoustic and the digital in Z’s work are often difficult to disentangle and I hear these moments as building structural and conceptual tension in her compositions. The theatricality of Z’s performance is an insistence on the listener’s confrontation of the history of Black American bodily performance and labor.

### **Hands and Voices**

In the 2007 multimedia installation *Sonic Gestures*, Pamela Z took on the subject of the digitized Black body and gesture again: on twelve-screens set up three by two around a rectangular room, one sees Z’s detached hands performing gestures to electronics. In one of the work’s four movements, a pair of hands claps on each screen in slow motion to slowed-down audio rumblings; in another, Z’s arm reaches across two, then three screens to a sustained sung note. *Sonic Gestures* exploits the McGurk effect (the

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<sup>164</sup> Parker-Starbuck, *Cyborg Theatre*, 91.

perceptual phenomenon of joining simultaneous visual and sonic signals), but the assortment of Z's bodily fragments on screens around the room gets at something larger: her body is both represented and digitized, multiplied and cloned. What is a sonic gesture per the piece's title? What do we hear when surrounded by digital video of Z's cloned extremities? What do we see when we watch her hand gestures to "bursts of quick-cut audio?" What do we understand when we hear Z's voice recite, in the work's third movement titled *The Long URL*, an "out-of-control Internet address"?<sup>165</sup>

As I have argued, the hand and the voice are both gendered instruments of power: what is at stake when they become musical instruments? Sonami and Z's performance with gesture control *and* voice places in dialogue the gendered discourses surrounding the gesturing hand with the gendered epistemologies of the singing and speaking voice. In an important essay titled "A Tool is a Tool," Z assesses the gender-appropriateness of instruments in electronic music: "electro-acoustic music that combines vocal practice with electronics [...] was mainly pioneered by women and continues to be female dominated."<sup>166</sup> Elsewhere, Z argues that women feel freer to experiment with musical production that is perceived as

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<sup>165</sup> Pamela Z, *Sonic Gestures*.

<sup>166</sup> Z, "A Tool is a Tool," 360.

embodied because they are historically “socialized to use our bodies as a way of communicating with the world,” she writes.<sup>167</sup>

Sonami, too, is critically sensitive to her own performance: “On my dark days I feel like I’m just a glamorous waitress! [...]There’s this traditional, classical sense of performance as a way of offering a situation, and being aware of how the situation is being received.”<sup>168</sup> John Berger’s assessment of women’s tragic position in art history – “[w]omen watch themselves being looked at”<sup>169</sup> – hints at the latent potential of women’s performance: the coming-together of the feminized awareness of the gaze and political and conceptual perspectives on gesture in the performance of Pamela Z and Laetitia Sonami should stimulate music scholars to reconsider musical performance with gesture control as a move away from the linguistically-constructed body, but not towards the “natural,” “embodied,” or “human.” Instead, Sonami and Z offer a shifting assemblage of body-sound algorithms that dissolves traditional subjectivity in favor of what Eric Salzman terms (with reference to Pamela Z) “a borderless subject.”<sup>170</sup>

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<sup>167</sup> Z in Rodgers, *Pink Noises*, 222.

<sup>168</sup> Sonami in Rodgers, *Pink Noises*, 229.

<sup>169</sup> John Berger, *Ways of Seeing* (London: Penguin Books, 2008), 47. Original emphasis.

<sup>170</sup> Eric Salzman and Thomas Desi, *The New Music Theater: Seeing the Voice, Hearing the Body* (Oxford: Oxford University Press, 2008), 101.

The timbral and rhythmic-textural focus of the performances I described de-essentializes the culturally constructed relationships of sonic and scenic gesture. In other words, it collapses the expectation that particular bodies will sound a certain way. Crucially, as I have shown, the body never disappears from performance: for one, data from the detected body are ever-critical for its musical fashioning, however experimental this fashioning may be; second, bodily particularity is ever-asserted by Sonami's and Z's performative and musical representations of gendered and raced labor. My identification of Sonami and Z's performance as *cyborg* thus refers equally to their feminist interventions in the oculo-centric representations of cyborgs as masculinist, White, militaristic, able-bodied, and control-driven, and to the wholesale dissolution of traditional constructions of subjectivity in favor of sonic, aural, and kinesthetic relationships, which do not erase the body but which de-essentialize it. That Sonami and Z shrink away from music-technological economies of control and instead perform *with* (not *on*) intimate but indeterminate musical systems betrays a critical approach to technoscience that is defined by humility, anti-monumentality, and relationality. In order to address electro-bodily performance as critique, scholars must first shed the technoscientific rhetorical apparatus that currently circumscribes our engagement with electro-bodily music.

## **Conclusion: Listening and Labor**

Music and technology are two male-dominated spheres and women composers of electronic music often address this disparity, explicitly or implicitly, in their performance and compositional design. From the outset of this research, the gendered stakes of composition and performance with sound technologies have been at the center of my inquiry, with a special focus on technologies that attach – literally and/or discursively – to the body. As this project evolved, my focus broadened to musicology itself, specifically the language surrounding electronic musical practices. This language circumscribes the body in a way that is challenged by much electro-bodily composition and performance.

One important aim of the dissertation is to bring the work of particular composers of electronic music to musicological attention. The related feminist projects of restoring women to written electronic music history and studying the extent of their exclusion from institutional sites and attendant musical practices is far from complete. Critical work by Elizabeth Hinkle-Turner, Hannah Bosma, and others shows the continued necessity of studying broad patterns of women's participation in electronic music-making.<sup>1</sup> These and other studies prompted me to focus my research on the

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<sup>1</sup> Elizabeth Hinkle-Turner, *Women Composers and Music Technology in the United States: Crossing the Line* (Burlington VT: Ashgate Publishing Company, 2006); Elizabeth Hinkle-Turner, "Women and Music Technology: Pioneers, Precedents, and Issues in the United States," *Organised Sound* 8/1 (April 2003): 31-47; and Hannah

work of women composers. It is in light of these issues of representation that I discuss specific pieces of music, performances, sounds, and listening experiences.

The dissertation thus contributes a number of case studies of works by composers whose actual musical output is rarely discussed. In considering works by Joan La Barbara, Laurie Anderson, Wendy Carlos, and performances by Laetitia Sonami and Pamela Z, I argue that women composers have particular stakes in rethinking the musical body through technology. To this end, I identify and problematize gendered, universalizing, essentializing, ableist, and racialized overtones of language commonly used to describe electronic sound and performance, and I demonstrate composers' complex engagement with the gendered and technologized vocal body, the bodies of listeners organized by broadcast culture, the imagination of synthesized voices as alien Others, and the negotiation of "the natural" in gesture controlled musical performance. I also situate feminist experimentalist techniques of imagining a non-essential musical body (whether through extended vocal technique, vocal processing, telepresence, vocal synthesis, or bodily performance with hand-bound controllers) in a

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Bosma, "Bodies of Evidence, Singing Cyborgs and Other Gender Issues in Electrovoical Music," *Organised Sound* 8/1 (2003): 5-17. See also Karen Pegley, "Gender, Voice, and Place: Issues of Negotiation in a 'Technology in Music' Program," in *Music and Gender*, edited by Pirkko Moisala and Beverley Diamond (Urbana: University of Illinois Press, 2000), 336-346.

long lineage of musical imagination of alterity in recorded sound, the non-Western World, outer space, and human-machine hybrids.

My initial focus on particular human-technological networks of composition and performance was quickly broadened by composers' own engagements with cultural, industrial, and political developments in the 1970s and 1980s. If new musicology has taught us that music should be thought about in the contexts of its production and consumption, electronic music in the late twentieth century necessitates profoundly global thinking. The local institutional contexts of Mills College, the Columbia-Princeton Electronic Music Center, the Dutch Studio for Electro-Instrumental Music (STEIM), and Bell Telephone Laboratories weave in and out of the study and could have provided another way of organizing the dissertation. Critical histories and ethnographies of these sites have yet to be written, after all. For musicologists attuned to issues of race and gender, STEIM's guest-artist program and network of collaborators are of particular interest for featuring a remarkably diverse (for an electronic music research center) and international cast of experimental composers, jazz musicians, and sound artists.<sup>2</sup>

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<sup>2</sup> STEIM has been guest-directed by "a very diverse array of experimenters" including George Lewis, Atau Tanaka, experimental video artist Steina Vasulka, media artist(s) working under the pseudonym Netochka Nezvanova, and multimedia performance artist Sally Jane Norman among others, and the institute has hosted an equally diverse roster of artists including Laetitia Sonami, DJ Spooky, Alvin Lucier, Bob Ostertag, and Laurie Anderson. See Will Montgomery, "Machines for Living," *Wire* (February 2013): 33; Nicolas Collins, *Handmade Electronic Music:*

As a dissertation on music made largely in the United States, however, the project is primarily concerned with composers' work in the context of cultural and political developments in the U.S. and their global implications. I situated Joan La Barbara's early compositions for extended voice and manipulated multitrack tape within the peak years of the Second Wave Feminist Movement and showed how La Barbara uses technique and technology to negotiate two different gendered genealogies, namely her conflicted relationship with the older superstar vocalist Cathy Berberian, and a rethinking of the maternal voice in a piece for *Sesame Street*. A radio interview sample and medium of television define these works, testifying to the rise of broadcast media culture and its destabilization of the public/private binary.

The voices of broadcast are also the central topic of my inquiry into the music of Laurie Anderson. In contrast to art historians' and musicologists' frequent focus on the drag aspects of Anderson's technologized voices, I foreground her thematization of *listening to* voices of broadcast. Her works, I argue, foreground the relational politics and regulatory mechanism of audio culture through a theater of allegorical speakers and listeners, authority and obedience, musical concert and political process. I also newly recognize

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*The Art of Hardware Hacking* (New York: Routledge, 2006), 191-195; and Roland Spekle and Michel Waisvisz, "STEIM, a reconstruction," *STEIM*, accessed February 5, 2016, <http://steim.org/archive/steim/texts.php?id=1>.

Anderson's recurrent appeals to states of emergency as figuring listeners as citizens whose very life is at stake.

I show that composers also draw on the military and industrial histories of sound technologies to intervene in the gendered paradigms surrounding the musical body. The wartime origins of early vocal synthesis and the subsequent intertextual feedback between synthesized sound and the Space Age imaginary brings the indefinite bodies of the astronaut/alien into the purview of Wendy Carlos' synthesis of Beethoven's choral finale. These morphologies, coupled with the gender-ambiguous voices of early Vocoder, imprint on the listener's body. This interest in Otherness is coterminous, I argue, with experimental vocalists' mission to develop new musical "languages" through the use of extended technique.

Whereas Carlos' work from the early 1970s marks the peak era of American boutique manufacturing of electronic instruments, my final chapter situates Michel Waisvisz, Atsu Tanaka, Laetitia Sonami, and Pamela Z's performance with custom-built haptic controllers as a reaction to the button-heavy instruments that emerge from the globalization and standardization of the music technology market from the mid-1970s. This development bears with it a false promise of music's democratization and a restructuring of transnational labor practices. The latter involves the emergence of a colossal workforce largely made up of third world and immigrant women who assemble electronics for any number of industries

including music.<sup>3</sup> The theme of women's labor punctuates this study in a number of disguises (as caring, protest, motherhood, the unrecognized tedium of analog synthesis, physical effort in staged performance, housework, and women's bodily performance as such); I expand my discussion on factory work that has produced sound technologies since the mid-1970s in a separate research project that examines the feminization of electronics assembly with regards to electronic sound.<sup>4</sup> The feminization of labor is, after all, a considerable theme in Donna Haraway's conceptualization of the Cyborg, and she even suggests that the third world factory worker might be an exemplary model of Cyborg consciousness.<sup>5</sup>

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<sup>3</sup> See Chandra T. Mohanty, "Under Western Eyes Revisited': Feminist Solidarity Through Anticapitalist Struggles," *Signs* 28/2 (2002): 499-535; Aihwa Ong, "The Gender and Labor Politics of Postmodernity," *Annual Review of Anthropology* 20 (1991): 279-309; Shruti Rana, "Fulfilling Technology's Promise: Enforcing the Rights of Women Caught in the Global High-Tech Underclass," *Berkeley Journal of Gender, Law, and Culture* 15/1 (September 2013): 272-311; and Chela Sandoval, *Methodology of the Oppressed* (Minneapolis, MN: University of Minnesota Press, 2000).

<sup>4</sup> I presented two conference papers on the topic thus far, arguing that the myth of technology's democratization of music (in terms of access and skill) conceals transnational labor, and offering a critical reading of the acoustic spaces of Western contemporary art centers housed in abandoned factory buildings. Lucie Vágnerová, "Black Box White Box: Electronics Assembly and the Factory Museum," Yale Graduate Music Symposium, Yale University, March 2016. "Women in Electronic Sound Production: Expanding Categories," Women in Sound / Women on Sound, Lancaster University, England, November 2015.

<sup>5</sup> Donna J. Haraway, "A Cyborg Manifesto: Science, Technology, and Socialist Feminism in the Late Twentieth Century," in *Simians, Cyborgs, and Women: The Reinvention of Nature* (London: Free Association Books, 1991), 166-167, 174-177.

I gesture to works and practices that indicate a different understanding of the relationship of technology and the body than what is suggested by popular and scholarly descriptions of electronic sound. It is in this sense of politically consequential non-normative bodily assemblages that Haraway's Cyborg framework stimulated my thinking. My current research on women's factory labor and electronic music takes up the challenge of bridging a transnational context with actual music, sound, audio, works, and practices. Nevertheless, I consider listening to be a key social and bodily process of sense-making both material and relational, and one that has certainly been affected by feedback between sound and the new technology industry.

Theories of the voice in music and women's technologized voices in particular have received a swell of attention in twenty-first century musicology.<sup>6</sup> Some of the most instructive comments for those of us working on the intersection of voice and electronics come from scholars addressing much older repertoires. Emily Wilbourne's work on *commedia dell'arte* and

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<sup>6</sup> The Colloquy titled *Why Voice Now?* convened by the *Journal of the American Musicological Society* 68/2 (Fall 2015), and the Voice-themed issue of *Twentieth-Century Music* 13/1 (March 2016) are two representative examples. For recent work on the interaction of voice and technology, see James Q. Davies "Voice Belongs," in *Colloquy Why Voice Now?*, ed. Martha Feldman, *Journal of the American Musicological Society* 68/3 (Fall 2015): 677-681; Freya Jarman-Ivens, *Queer Voices: Technologies, Vocalities, and the Musical Flaw* (New York: Palgrave Macmillan, 2011); and Nina Sun Eidsheim, *Sensing Sound: Singing & Listening as Vibrational Practice* (Durham: Duke University Press, 2015).

her theoretical remarks on the voice capture a vocal paradox that listeners to technologized voices have to reconcile: in a certain subset of vocal performances, the romantic ideal of the voice dripping with truths about the body recedes in favor of hearing the voice as a mask, as a sound object and object of control.<sup>7</sup> While this notion appears to echo the reified and sovereign *objet sonore* of electronic music, this voice mask is not disembodied but rather denaturalized and anti-essentialist. Such performances suggest that the voice is not so much a site of subjectivity as a site of agency. And *agency to (dis)articulate*, not essential subjectivity, is the locus of “having a voice,” even as social identity often organizes the “having.”

In stark contrast to this recent interest in the voice, women’s non-vocal work with electronics has received comparatively less attention, especially from the standpoint of gender. This disproportion, articulated by Pamela Z and Hannah Bosma in two articles from 2003 that were foundational for my own work,<sup>8</sup> thus continues to define the kind of critical attention paid to women’s electronic musicmaking. Even though my final chapter on gesture control in musical performance defies this trend and

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<sup>7</sup> Emily Wilbourne, “Lo Schiavetto (1612): Travestied Sound, Ethnic Performance, and the Eloquence of the Body,” *Journal of the American Musicological Society* 63/1 (2010): 1-44, and “Demo’s Stutter, Subjectivity, and the Virtuosity of Vocal Failure,” in *Colloquy Why Voice Now?* ed. Martha Feldman, *Journal of the American Musicological Society* 68/3 (Fall 2015): 659-663.

<sup>8</sup> Hannah Bosma, “Bodies of Evidence,” 5-17. Pamela Z, “A Tool is a Tool,” in *Women, Art and Technology*, ed. Judy Malloy (Cambridge: The MIT Press, 2003), 348-361.

provides an example for addressing non-vocal performance as a site of gender contestation, the aggregate of this dissertation corroborates the overwhelming focus on women's technologized voices. It is certainly crucial that musicologists develop a richer literature on women's electro-instrumentality. At the same time, we should continue asking (as I self-consciously ask myself) why the voice is given primacy in accounts of women's electronic composition and performance. Moreover, why might women working with electronics overwhelmingly gravitate to making music with the voice?

I hypothesize that since the political stakes of women's performance with technology play out on the discursive site of the (gendered and racialized, performer's or listener's) body, the voice – an ambassador for the malleable morphologies of the body, a radically non-essential force, Cyborg rather than Cartesian, but always pushing against romantic assumptions of its unity with the body – provides an opportunity to challenge the formalized gestures of performativity and experiment with subversive articulations. In other words, since the voice is the boundary agent of the body, it has proven to be a rich space for emancipating sound from the body without tossing the body aside. Technologized voices explore variations on the project of extended vocal technique: there is no one kind of vocal production but even as the body is multiply differentiated, it never disappears.

Where voice studies often revolve around an in-house set of questions and frameworks, this dissertation connects this lively area of musicology to

inquiries surrounding electronic music beyond the voice and at its limits. Through a listener-oriented approach, I also newly rephrase questions centered on vocal identity as questions of relational ethics. As a contribution to a small and growing body of work in the critical history of music, gender, and technology, my research opens a space for future work to be written with an increasingly global purview tying together electronic music, various cultural, political, and industrial developments, and questions of transnational labor. This study may benefit not only musicology but also the diverse disciplines of sound studies and media studies, and any number of fields invested in the meetings of technology and women's work.

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