The Race of Sound
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Notes

INTRODUCTION


4. Mladen Dolar and Slavoj Žižek consider the acousmatic condition specifically in regard to the acousmatic voice. As Brian Kane summarizes, Dolar and Žižek investigate “acousmatic voice as a form of social interpellation” and they “explicitly describe the Lacanian ‘object voice’ as acousmatic” (*Sound Unseen*, 6, 11). In fact Kane argues “that Dolar reifies the acousmaticity of the voice, making it into a permanent condition, and that his treatment of the acousmatic voice is phantasmagoric, masking the technique at play in the psychoanalytic session” (11). In contrast, as I exemplify throughout this book, the acousmatic question presents an opportunity to undo reification.

5. For recent summaries and overviews of the assumed primacy of the voice as interiority within Western thought, see Konstantinos Thomaidos, “The Re-vocalization of Logos? Thinking, Doing and Disseminating Voice,” in Thomaidos and Macpherson, *Voice Studies*, 10–22; Weidman, “Anthropology and Voice” and “Voice.”


11. For an overview of this issue, see Smalls, “Linguistic Profiling and the Law.”

12. Early on, I took a seminar with George Lipsitz on race and popular culture, and I worked with George Lewis on issues of race in music generally, and in improvisation specifically. I also worked with Jann Pasler and Anne Seshadri on postcolonial theory and with Deborah Wong on the performativity of race in the United States. This eclectic training oriented my approach to scholarship.
13. These gaps in understanding of vocal production, product, and perception, often expressed as ambiguities, are found not only within a critical humanistic framework. Kreiman et al. noted as late as 2014 that “two important questions about voice remain unanswered: When voice quality changes, what physiological alteration caused this change, and if a change to the voice production system occurs, what change in perceived quality can be expected?” (“Toward a Unified Theory of Voice Production and Perception,” 1).

14. See, for example, Kreiman et al., “Toward a Unified Theory of Voice Production and Perception.”

15. “Color” was also a medieval Latin term used between the mid-thirteenth and mid-fifteenth centuries that pointed to repetitions as embellishments.


17. Similarly, working within linguistic anthropology, Nicholas Harkness has dealt with the tension of the “ongoing intersection between the phonic production and organization of sound on the one hand, and the sonic uptake and categorization of sound in the world on the other.” He writes, “Treating the voice as a phonosonic nexus has allowed me to explore how vocalization is situated at the intersection of multiple frameworks of meaningfulness and distinction as a form of culturally regimented semiotic engagement with and inhabitation of social worlds” (“Anthropology at the Phonosonic Nexus,” 5).

18. Kreiman et al., “Toward a Unified Theory of Voice Production and Perception,” 2. They go on to explain, “A significant body of behavioral and neuropsychological data . . . shows that listeners perceive voice quality as an integral pattern, rather than as the sum of a number of separate features” (2).


20. For example, countertenor Patrick Dailey speaks in a normative masculine voice but sings in falsetto in a manner that does not signal the female register, as many drag performers’ voices do. For more on this, see chapter 3.

21. Lipsitz, *The Possessive Investment in Whiteness*, has served as a major text for me while addressing homeownership, education politics, inheritance patterns, and federal policy.


26. Relatedly, in an article addressing the perception of female voices in leadership positions, Jordan Kisner writes that Michelle Obama has shared that, as a young woman, she was taunted for “talking like a white girl,” only to be criticized later for sounding “too loud, or too angry, or tooemasculating” during Barack Obama’s presidential campaign. Audie Cornish, an npr host, is “frequently accused of ‘code-switching’ to sound more white for public-radio audiences,” Kisner reports. Cornish observes that she speaks with the same voice whether she is on or off the air. Jordan Kisner, “Can a Wom-

27. Although, in reality, pitch also contributes to the timbral makeup, this is a frequent definition. What this definition does capture is that if two instruments or sound sources play the same pitch and duration, what distinguishes them from one another is timbre.

28. While it is impossible to entirely separate timbre from a statement’s pitch, duration, and verbal content, one way we know that timbre influences our perceptions independently of these categories of communication is that, if a verbal statement conveys one message but its tone communicates another, adult listeners will tend to believe the tone of voice rather than the words. Thus timbre can contribute to listeners’ consideration of identity, emotional state, truthfulness, age, and vocal genre, among other aspects of vocal expression. For the complexity and the enormous amount of literature addressing the recognition of identity, personality, emotion, age, and physical characteristics based on vocalizing, see Kreiman and Sidtis, Foundations of Voice Studies, 110–89, 302–98. For recognition of vocal (music) genres based on timbre, see Huron, Sweet Anticipation.

29. Such an argument has been made possible by the work of scholars such as Stuart Hall. “Cultural identity,” he explains, is not “a fixed essence . . . but a positioning,” and race is a matter of “‘becoming’” (“Cultural Identity and Diaspora,” 226, 225). Thank you to Shana Redmond, who reminded me about this foundational text.

30. It is noteworthy that voice as a signifier of uniqueness is set within an intensely Western metaphysics.

31. Farah Jasmine Griffin also explains recognizable vocal performances, such as “the black woman’s voice,” in terms of cultural style: “I do not mean the voice that comes out every time any black woman anywhere opens her mouth to sing. Nor do I want to imply that there is something in the structure of the black diaphragm, neck, throat, and tongue, teeth, or mouth that contributes to a certain vocalization. No, I don’t mean a black voice as markedly different as skin color or texture of hair. Instead I am talking of a cultural style. A particularly New World style with roots in West Africa. . . . In the United States it is a style transformed, nurtured, and developed in the tradition of the spirituals, field hollers, and work songs and sustained in black church and/or blues and jazz venues” (“When Malindy Sings,” 105–6, italics mine). While not using the terminology “style and technique,” Jason King also addresses performance as authorship in his discussion of Roberta Flack. King writes, “If we consider the role of energy as a defining factor in the production and reception of music, Flack emerges as an auteur precisely because of her ability to use her voice and complementary musical skills to traffic in ‘vibe’” (“The Sound of Velvet Melting,” 172–73).


33. To date, no work has been carried out regarding a given voice’s plasticity and possible vocal range and the actual amount that is used. One ongoing research project studies vocal patterns within everyday use. See Kreiman et al., “The Relationship between Acoustic and Perceived Interspeaker Variability in Voice Quality.”

34. Denes and Pinson, The Speech Chain, 5.

36. This position resonates with Alva Noë’s argument that “sound is not a physical phenomenon but a perceptual entity, arising within the mind.” If this were not the case, “then variation between listeners’ experiences... could not be satisfactorily explained” (Action in Perception, 112).


38. Woodson, The Mis-Education of the Negro; Foucault, Discipline and Punish.

39. There are recognizable affinities between this position and that of actor network theory’s material-symbolic dynamic recognition. I address some of the relations between the two in chapter 2, on the discursive networks formed around Marian Anderson.

40. This phrasing, which I found very useful, comes from one of the anonymous reader reports, conveyed in an email from Ken Wissoker, September 19, 2017.

41. See the collaborative project I direct, Keys to Voice Studies, http://keystovoice.cdh.ucla.edu/, as an example of putting different scholarly areas in conversation.

42. For an overview on work and views on the voice surviving from Occidental ancient times, see Shane Butler, “What Was the Voice?,” in Eidsheim and Meizel, The Oxford Handbook of Voice Studies; Butler, The Ancient Phonograph.

43. Thank you to Monica Chieffo for the stimulating conversation (June 11, 2015) that got me thinking along these lines.


45. The Family Group of the Katarrhinen (Die Familiegruppe der Katarrhinene), artist unknown, in Haeckel, Die Natürliche Schöpfungsgeschichte; Nott and Gliddon, Types of Mankind, 458.


50. Cruz, Culture on the Margins, 43.

51. In “The Secret Animation of Black Music,” Radano provides the following quote: “Despite their kinship with hogs in nature and habit, the Negro has music in his soul” (anonymous Georgia physician, 1860). I include the quote here to illustrate the connection between a concern with the body in its material, concrete form and a focus on the sound of the voice and its assessment.

52. “The social life of things” is Arjun Appadurai’s well-known phrase, and Radano
evokes it when describing the ways in which “the abstract labor behind the record’s production in world markets gives way to the life of exchange and re-imagined uses” (“The Secret Animation”).

53. Considering Charles Sanders Peirce’s model of the sign, the signified, and the active role of the interpretant—the listener—we can synthesize the takeaways from this book’s case studies into the following patterns. Aspects of the voice that were framed or understood as material and “objective” were used to argue for a particular meaning. These symbolic dimensions directed daily practice, and hence shaped the material. In other words, a composite meaning directly affected the range of possibilities for the vocal body, its daily habituation, and the resulting material vocal body. This circularity acted as a self-fulfilling prophecy around various (often unarticulated) focal points. The very focal point or meaning that was reinforced triggered the practice. In other words, if sonic fidelity with overall presentation (visual, identity expressed, etc.) is not experienced by the listener and interpretant, we see that the interpretant actively arranges various aspects of the thick vocal event to create coherence according to a given cultural and societal frame.

54. Davis, Blues Legacies and Black Feminism, 163, 165, 163.

55. Quoted in Gillespie, Film Blackness, 6; Stuart Hall, “New Ethnicities,” in Stuart Hall, 443.

56. Gillespie, Film Blackness, 158, 155, 6. This argument resonates with those of other scholars. See, for example, Johnson, “Black”; Wright, Physics of Blackness. Thank you to Shana Redmond for pointing me to these works.

57. Iyer, “5 Expansive Wadada Leo Smith Recordings.” The word ankhrasmation combines the Egyptian word for “vital life force” (ankh), the Amharic word for “head” or “father” (ras), and a word for “mother” (ma).

58. All the quotes in this paragraph can be found in West, “What I Am Interested in Is Sound.”

59. Lordi writes this about O’Meally and Griffin, and I consider her work to offer a contribution toward the same end (Black Resonance, 9).

60. The sixty-year timeframe spans Marian Anderson’s 1935 Metropolitan Opera debut to 2015.

61. Others have addressed the political aspect of listening, including Bickford, The Dissonance of Democracy; Bretherton, Christianity and Contemporary Politics; Cusick, “You Are in a Place That Is Out of the World”; Dobson, Listening for Democracy; Goodman, Sonic Warfare; Lacey, Listening Publics; McDermott, and Bird, Beyond the Silence; Muers, Keeping God’s Silence; Schmidt, Hearing Things.

62. I return to a more in-depth discussion of Peirce in chapter 1.


65. Carpenter, Coloring Whiteness, 195.

66. Moten, In the Break.

67. Brooks, “All That You Can’t Leave Behind”; Brooks, “Bring the Pain”; Brooks,
“Nina Simone’s Triple Play”; Stoever, *The Sonic Color Line*; Wald, *It’s Been Beautiful*. Echoing Moten (*In the Break*), while we share the approach of listening “in the break,” my work diverges from theirs (including Moten’s) in that I do not believe I can convey a more fine-grained story beyond tracing sounds and actions to their intermaterial vibrational node or performance and the perception and reception of that node, and observing that meaning is drawn. I also note that this meaning is recirculated into intermaterial vibrational practices but do my best to resist the urge to add another version to the mix.


70. As I do not parse the historically situated meaning of F-sharp, I also do not carry out historiographic readings of terms and concepts such as “black voice” and “white voice.” This book addresses the contextual dependency of meaning: as given pitches do not hold the same meaning across historical times and contexts, coding held within descriptions of voices are not static. While some readers will certainly think a book on voice and race should provide a detailed breakdown of the historic specificity of a vocal category’s coding, and I agree this is very necessary, I see as my main task in this particular book to establish the broader concept that people listen to vocal timbre according to racial categories.

71. This resembles Peter Szendy’s chapter “Listening (to Listening): The Making of the Modern Ear,” in *Listen*, 99–128.

72. Vocal fry goes under a number of other terms, including pulse register, laryngealization, pulse phonation, creak, popcornning, glottal fry, glottal rattle, glottal scrape, strohbass, irregular phonation, and evaluations such as an “epidemiological prevalence of vocal fry in young speakers” and vocal fry’s “potential hazards” to vocal health (Wolk et al., “Habitual Use of Vocal Fry in Young Female Speakers,” e115). See also, for example, Blomgren et al., “Acoustic, Aerodynamic, Physiologic, and Perceptual Properties of Modal and Vocal Fry Registers”; Hollien et al., “On the Nature of Vocal Fry.”

73. In the symbolic position, vocal fry would be considered in terms of its meaning and signaling, including its gendered and generational dimensions.

74. Within the disciplinary tradition of theater, Konstantinos Thomaidos probes “the role of voice in contemporary practice as research (PaR) in the performing arts” (“The Re-vocalization of Logos?,” 10).

75. I echo Alexandra T. Vazquez’s phrase from the title of her insightful book *Listening in Detail*.

76. Lott, *Love and Theft*.

77. Brooks, “‘This Voice Which Is Not One,’” 38.


80. Spivak and Rooney, “In a Word”; Muñoz, *Disidentifications*.

81. I echo Shana Redmond here. Her opening line in *Anthem* is “Music is a method.”

82. Cavarero, *For More Than One Voice*.

2. Foucault, Discipline and Punish, 136.
5. Hutcheon and Hutcheon, Bodily Charm, 123. For a detailed discussion of recognition, see the introduction to Bloechl et al., Rethinking Difference in Music Scholarship, 1–52.
6. As a classical singer, I trained in music conservatories in Norway and Denmark and took voice lessons in New York for five years. I then moved to Los Angeles and subsequently to San Diego, and in both places I participated in higher education vocal training communities. While I am still a member of these communities, I discontinued taking and giving lessons in 2007, so my account of sixteen years ends at that point.
7. Most of the interviews took place in teachers’ private studios. In one case the interview was conducted in a coffee shop, and on one occasion the interview took place by telephone. I conducted the interviews during the 2005–6 academic year, enabled in part by the UCSD Center for Study of Race and Ethnicity’s Chicano/Latino Studies and Ethnic Studies Summer Fellowship.
8. My participation in and knowledge of classical vocal communities is specific to the places and times I’ve noted. My observations have also been affected by what I, and my life circumstances, brought to the scene. My knowledge about vocality in the classical vocal world is broadly informed by the attitudes I have observed in response to others’ and my own visual presentation, accent within the context of the English-speaking United States, and vocal school—Korean, Norwegian, and Scandinavian, respectively. In this chapter I limit my inquiry to the specific observations made by the voice teachers I interviewed. As such, I do not purport to make broad statements about voice teachers per se. While some readers may find my interviewees’ observations extreme or at least out of the ordinary, based on my many years as a participant observer, they did not strike me as outliers—neither as statements by voice teachers nor as statements that might be made by the general public. Therefore, while these specific case studies come from the world of classical vocal practice, my observations here are much broader in both application and ramification.
9. I use pseudonyms throughout to refer to voice teachers and students who participated in this research. Words used by voice teacher identified as Allison in this chapter, interview with the author, Sept. 1, 2005.
10. Allison, interview.
11. I use the word “diagnosis” in a loose way here, but with a wink toward the porous boundaries between a voice teacher’s aesthetic and medical listening. Because the body is the singer’s instrument, it is more common for voice teachers and students to discuss overall health issues, offer health advice, and refer students to be examined by specific medical doctors, than in teacher-student relationships I have observed around other instrument learning in music conservatory environments. I make this observation based on personal and anecdotal experience. Additionally, otolaryngologists, who mainly
serve people who are not professionally dependent on their voices, stress general body
care (hydration, healthy work environment, avoiding drugs, treating gastroesophageal
reflux, etc.) in their work on vocal health, which also goes by the term “vocal hygiene.”

12. Voice teacher identified as Dorothy in this chapter, interview with author, June
20, 2005.

13. What may produce an Armenian or Korean versus an American sound? The
question is asked here within the context of the United States. While a distinct timbre
might be attributed to the singer’s mother tongue, this timbre is also believed to be
retained when singers sing in other languages. More important, I have not heard this
observation regarding vocal health made about singers who appear to be European
American. The parallel between Armenian Americans (who may or may not share Ar-
menian as their first language) and European Americans is that both sing in foreign
languages—say, Italian—but the connection between vocal health and ethnicity is
made only in regard to those appearing as Armenian American.

sic, 42.


17. Their rhetoric also evidences similar assumptions about nationality and ethnicity,
but the scope of this chapter only allows for a discussion of race.

18. The early twentieth-century teacher-student relationship between the Chinese
American Vaudevillian Lee Tung Foo and his voice teacher Margaret Blake Alverson
captures this dynamic. Theirs was a relationship that “broke racial barriers but never
transcended their limits” (Moon, “Lee Tung Foo and the Making of a Chinese Ameri-
can Vaudevillian,” 23). See also Alverson’s own account of the story in Margaret Blake

19. Potter, Vocal Authority, 54.

20. While past pedagogical texts connected race and vocal timbre, some current
respected pedagogical texts do not. For my in-depth discussion of racial formation in
classical vocal training, see Eidsheim, “Voice as Action.” For the latter, see Potter, Vocal
Authority, 47.

21. Miller, Solutions for Singers; Leslie Rubenstein, “Oriental Musicians Come of

22. For a thorough discussion of this concept, see Eidsheim, Sensing Sound.

23. The assessments here, in terms of gender, are infinitely complex. Why is it left
unexamined whether the voice in question could even be the sound of a male imitating
a female voice? Or, indeed, a female impersonating a man’s voice, a child’s, an animal’s,
and so on?

to-tal_n_109085.html/.


26. This phrase is close to Steven Goodman’s phrase “the micropolitics of frequency”
(Sonic Warfare, 187). While Goodman’s terminology is useful, I do have some strong
reservations about it, as I understand the term and concept of “frequency” to imply stability—akin to the figure of sound. I discuss this further in Sensing Sound.

27. What is now referred to as the international style of singing is based in the Italian bel canto school, but is also flexible enough to be well received in several other regions of the world. Indeed, the “international school of singing” generally refers to the style practiced by singers who travel among the most prominent world opera stages.

28. Richard Miller notes that, although there are recognizable national tonal preferences and techniques, no nation exhibits monolithic conformity. He estimates that over half of the teachers within a given national school adhere to the national tonal preference, while the remaining singers and teachers are devoted to international practices (National Schools, xix). Tone preference is also influenced by teacher migration and relocation. For example, many German teachers associate themselves with the historic international Italianate School as a result of the legacy of the master vocal pedagogue G. B. Lamperti, an Italian expatriate who taught in Munich. For more on voice teacher genealogy, see Sampson, “Operatic Artifacts.”

29. In addition one’s preference for a particular repertoire can affect the sound of one’s voice, as the repertoire’s method of “setting the voice” and demanding certain techniques from it will shape the voice.

30. A vocal onset is the way a singer performs the beginning of a musical phrase. This may be accomplished with an attack or by “easing” more softly into the note. To those unfamiliar with vocal technique this might not seem like such a radical difference, but for vocal pedagogues and singers it is very important. Listeners who are not voice professionals might not consciously register these different onset practices, but attentive listeners can develop an awareness of an overall difference in the sound.

31. In contrast, there is the Nordic “soft” onset, wherein airflow precedes sound; the German weicher Einsatz (whisper onset), a reaction against the earlier Sprenginsatz (hard onset), and so on (Miller, National Schools, xix–xx).

32. For a discussion of the concept of vocal work see Schlichter, “Un/Voicing the Self.”


34. When we move beyond monosensory ideas of music, we easily sense the “cracks” in these beliefs (Eidsheim, Sensing Sound).

35. See Stoever-Ackerman, “Splicing the Sonic-Color-Line” and “Reproducing U.S. Citizenship in Blackboard Jungle,” for fuller definitions of the term listening ear.

36. Aronowitz and Giroux, Education under Siege.

37. We can address this from an intensely material point of view. See Eidsheim, Sensing Sound; Moten, In the Break; Stras, “The Organ of the Soul.”

38. The “work” carried out through the FoS becomes clear when we consider it in contrast to multisensorial listening.


41. Of course much of the hermeneutic work that is carried out deconstructs the process of interpretation through interpretation itself. While much of that work is invaluable to understanding the process of racial construction, the challenge remains in

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areas that cannot easily undergo hermeneutic analysis, including certain aspects of vocal timbre and categories that, due to their naturalization, are impenetrable to any kind of critical analysis.

42. Doyle, *Hold It Against Me*, 94–95.

2. PHANTOM GENEALOGY


3. There are, of course, operas written in the United States in which the libretto is in American English; however, the core of the repertoire and certainly its historical roots are European.

4. Singers often acknowledge their teacher’s genealogy as others point to their family tree or academic mentor. For a network analysis of voice teachers and their students, see Sampson, “Operatic Artifacts.”

5. Moten, *In the Break*.

6. Kimberlé Crenshaw, “Why Intersectionality Can’t Wait,” *Washington Post*, September 24, 2015, https://www.washingtonpost.com/news/in-theory/wp/2015/09/24/why-intersectionality-cant-wait/?utm_term=.f36a372254ab. Crenshaw’s formulation in this opinion piece was especially clear, and I use it here. The full sentence: “Intersectionality, then, was my attempt to make feminism, anti-racist activism, and anti-discrimination law do what I thought they should—highlight the multiple avenues through which racial and gender oppression were experienced so that the problems would be easier to discuss and understand.” To read the detailed discussion in which she introduces her analytical framework of intersectionality, see Crenshaw, “Mapping the Margins.”

7. Piekut, “Actor-Networks in Music History,” 192. Piekut notes that, within such an analytical framework, it is helpful to consider music in regard to “the extent to which it requires collaborators in order to touch the world, each irreducible to the next—molecules that transfer energy and vibrate in concert; enzymes that produce feelings of anticipation, release, and pleasure; technologies of writing, print, phonography, amplification, and digitality to extend the ‘here and now’ to the ‘there and then’; instruments that are themselves tangles of labour, craft, and materials; human or machine performers that render text or code into event; archives and repertoires that extend cultural meaning historically; corporeal protocols that discipline the performing body; and finally the regimes of material-semiotic meaning that condition each sounding and make it significant” (191).


11. This relates loosely to Joanna Demers’s explanation of thought fiction in music—a notion that is untrue but nonetheless produces real effects. Demers, “Musical
Fictions: Hegelian Conditions for the Possibility of Musical Thought,” unpublished manuscript.


13. Oby, Equity in Operatic Casting. See also Shirley, “The Black Performer.”


16. The concept of voice as essence has been critiqued thoroughly, including by Bergeron, Voice Lessons; Cusick, “On Musical Performances of Gender and Sex”; Eidsheim, Sensing Sound; Ochoa Gautier, Aurality; Kreiman and Sditis, Foundations of Voice Studies; Meizel, “A Powerful Voice”; Schlichter, “Un/Voicing the Self”; Weidman, Singing the Classical.

Richard Powers’s radiant novel In the Time of Our Singing powerfully portrays the personal triumphs and tragedies of an American mixed-race family, as they intersect with those of the nation from 1955 to 1992. Whereas music and singing bind the entire family together through the upbringing of three children, the oldest son is an exceptionally gifted singer who trains at Juilliard and goes on to an international career with his brother as accompanist. The book sensitively portrays the hardships that might have been experienced by any interracial family in mid-twentieth-century America, and it also vividly conveys the particular complexities experienced by the oldest son, who is perceived as black (although he is also half German Jewish), while undertaking training and pursuing a career as a classical singer.

While eldest son Jonah’s brilliant New York debut is described by the book’s narrator, his younger brother and accompanist, Joseph, as transcendent—beyond time and race—the fictional New York Times reviewer could not but cap an otherwise congratulatory review by concluding that Jonah was “one of the finest Negro recitalists this country has ever produced.” When Jonah finally receives an offer from the Metropolitan Opera, it is in the role of a nameless “Negro” in a contemporary production. Discouraged, he leaves for Europe, where he enjoys a successful career as a tenor. But it is when Jonah enters the world of early music, a movement then in its infancy, that he is able to experience a (musical) era predating the racial discord experienced by his Jewish father before he fled Europe and endured by his African American mother and their interracial family.

Voice lessons, vocal anatomy, and musical form are described in the minutest and most accurate detail. (As a person trained in the classical vocal tradition I recognized every intrigue and technical point.)

17. While identification of race in relation to popular music genres is entangled in racial stereotypes, it is not completely arbitrary. (The music industry has worked to create links between race and genre for marketing purposes.) For a discussion of genre and race in contemporary musical life, see Brackett, “Questions of Genre in Black Popular Music.”

18. Jonathan Greenberg provides an interesting discussion of three phonemes with strong racial (black) and geographic connotations, and Ethel Waters’s manipulation of these phonemes and related racial expectations (“Singing Up Close,” 200–247).
19. Language acquisition is an integral part of voice training. In addition, singers learn the International Phonetic Alphabet in order to read, transcribe, and reproduce the phonetic realization of any language.

20. In brief, timbre refers both to the overall sound that enables us to distinguish one instrument from another, and to the different sounds within a single instrument. This composite sound is made up of different partials, or frequencies. In classical vocal production a concentration of partials around 3,000 Hz—known as the singer’s formant—is favored. This creates the characteristic “ring” in the voice (the intense “core”) and enables it to cut through and be heard over the massive sound of a symphony orchestra. Many vocal pedagogical texts feature in-depth discussions of the physics and vocal training that go into its production. Two classic texts are Sundberg, *The Science of the Singing Voice*, and Vennard, *Singing*.


23. Not only is it difficult to distinguish race physically or anatomically, but it is just as difficult to distinguish a male from a female voice based on a given vocal apparatus. This suggests that much of the difference between male and female voices is acquired. See Cusick, “On Musical Performances of Gender and Sex”; Eidsheim, “Voice as a Technology of Selfhood,” 1–27, 20–66.

24. One of the most exciting additions to the American opera scene is the National Grand Finals winner of the 2011 Metropolitan Opera National Council Audition, Ryan Speedo Green. Green later appeared at the Metropolitan Opera and New York City Opera and in Europe. To his memoirist, Green recounts the many painful moments he experienced as an African American opera singer. Central among them were the times he was asked to sing “Ol’ Man River.” Not only did performing that song force him to perform an inferior position, but the request arose within a structural situation in which people of privilege asked a less-privileged person to perform a certain position within the U.S. racial hierarchy. See Bergner, *Sing for Your Life*, 196–201.

25. Later in life, during her time in England, she was invited to study with Sir George Smart, the queen’s organist and music director. LeBrew, *The Black Swan*, 18.

26. In his discussion of recording media’s influence on the voice, Jacob Smith cites both class and technology as reasons why minstrel, folk, and traditional material were sung and recorded by operatic voices. For the former, Smith draws on Robert Toll’s *Blacking Up*, writing, “Minstrel troupes such as the Ethiopian Serenaders ‘sought the respectability of “high” culture’” (*Vocal Tracks*, 141), and William Howland Kinney’s *Recorded Music in American Life*, which argued that folk material was sung with an operatic approach because of the prominence of European classical music on the phonograph market. Black voices—because of their “sharpness or harshness that the white man’s has not” (quoted in Smith, *Vocal Tracks*, 136)—were thought to be better suited for recording. This could not, however, have been believed in earnest, as most minstrel recording artists were white. According to Smith, only George Washington Johnson and Bert Williams were substantially recorded and widely distributed during this era.


30. Greenfield also received letters from supporters with detailed advice “respecting [her] dress.” One recommendation was to dress with “great modesty and with much simplicity” and goes into details: “Wear nothing in your hair, unless it be a cluster of white flowers in the back; never wear coloured flowers, nor flowing ribbons. Let your dress be a plain black silk, high at the back of the neck, and open in the front about half way to the waist: under this, wear a square of lace, tartan [sic], or muslin, doubled and laid in folds to cross over the breast.” The letter continues another two long paragraphs and is signed “Your friend, E.S.M.” Quoted in Young, *The Black Swan at Home and Abroad*, 11.


32. Chybowski, “The ‘Black Swan’ in England.” On the topic of British audiences, Chybowski writes, “Audiences went to Greenfield’s performances looking and listening for what they expected based on Greenfield’s former slave identity—an untrained musicality that accentuated the bodily aspects of the voices as the natural human instrument. Reviews of Greenfield’s performance characterize her voice as ‘wholly natural,’ and as ‘lacking the training and exquisite cultivation that belongs to the skillful Italian singer’” (15).


34. The linguist D. L. Rubin forcefully demonstrates that nonsonic information plays a crucial role in how we perceive voices and determine racial identities in general. Asked to rate the comprehensibility and intelligence of a lecture recorded by a native speaker of American English, paired with a photo of either an Asian-looking or a Caucasian-looking lecturer, listeners gave lower ratings to the recording paired with the Asian-looking lecturer. Since the same recording accompanied both photos, researchers concluded that the listeners expected the Asian-looking lecturer to speak in accented, simplified English and therefore heard her speech that way. See Rubin, “Nonlanguage Factors Affecting Undergraduates’ Judgments of Nonnative English-Speaking Teaching Assistants.”


44. Cruz, *Culture on the Margins*, 3.
45. Cruz, *Culture on the Margins*, 1, 119.
46. Cruz, *Culture on the Margins*, 4, 7.
64. Interview in *Aida’s Brothers and Sisters*, directed by Jan Schmidt-Garre and Marieke Schroeder (West Long Branch, NJ: Kultur Video, 2000), VHS.
65. Oby, *Equity in Operatic Casting*.
67. Interview in *Aida’s Brothers and Sisters*. However, Bobby McFerrin, the singer, composer, conductor, and son of Robert McFerrin, the first African American to sing at the Metropolitan Opera, believes that Gershwin should be applauded for his attempt at creating an African American story. Interview in *Aida’s Brothers and Sisters*.
71. London seemed friendlier for blacks. Anderson’s longtime friend and informal mentor Roland Hayes had experienced great success there a few years earlier, including performing for the king and queen. Keiler, *Marian Anderson*, 68.
75. For a list of Anderson’s repertoire, see Keiler, *Marian Anderson*, 337–52.
78. Quoted in Bernheimer, “Yes, but Are We Really Colour Deaf?,” 759–60. For a discussion about the visual descriptive language of voices of singers, see Eidsheim, “Voice as a Technology of Selfhood.”
79. Quoted in Bernheimer, “Yes, but Are We Really Colour Deaf?,” 760.
82. Haggin, *Music and Ballet*, 105–6. In 2004 the Royal Opera House famously fired the American soprano Deborah Voigt from the role of Ariadne. Having lost a substantial amount of weight, she has been singing with critical acclaim for several major opera houses in the United States and was rehired by the Royal Opera House. However, some critics wondered whether her weight loss had led to her “vocal decline.” Peter Davis, “Deborah Voigt’s New Problem,” *New York*, May 1, 2006, http://nymag.com/art/classicaldance/classical/reviews/16855/.
84. As was the case with Hope Briggs, mentioned below.
85. Story, *And So I Sing*, 189.
86. Over the past several years—arguably due to practices such as the Metropolitan Opera’s *Live in HD* video simulcast, which features close-up shots of singers—some of this seems to have changed. The case of Deborah Voigt’s highly publicized firing from the Royal Opera House also suggests that there have been some changes in this regard. While the Royal Opera’s spokesman, Christopher Millard, declined during a *New York Times* interview “to say whether weight was the main reason for the decision to replace Ms. Voigt,” Voigt explained that the company had “sacked her for being too fat to fit into the little black dress” worn by Ariadne in Richard Strauss’s opera *Ariadne auf Naxos*. In her autobiography, she notes that Luciano Pavarotti was often lauded for his “huggable, teddy-bear roundness.” See Robin Pogrebin, “Soprano Says Her Weight Cost Her Role in London,” *New York Times*, March 9, 2004, http://www.nytimes.com/2004/03/09/arts/music/09VOIG.html.
87. Story, *And So I Sing*, 189.
88. The expatriate Jessye Norman seems to be an exception, with much more of her idiosyncratic repertoire independently selected, compared to any other opera star of her caliber.
89. For more on Hope Briggs’s 2007 dismissal from the San Francisco opera, see Eidsheim, “Marian Anderson and ‘Sonic Blackness’ in American Opera.”

90. Interview in Aida’s Brothers and Sisters.

91. In this period, vocal expectations in popular media such as radio were similar, William Barlow observes:

Candidates for black roles in comedy or variety series had to demonstrate that they could speak “Negro dialect” as defined, and in some cases even taught to them, by white entertainers and scriptwriters. As a result, African Americans were routinely rejected for black radio roles because, as one frustrated actress stated, “I have been told repeatedly that I don’t sound like a Negro.” The few black entertainers actually hired for roles endured a ridiculous ordeal of instruction. Lillian Randolf, for instance, spent three months working on her racial accent under the tutelage of James Jewel, the white originator of The Lone Ranger radio show, before she was finally hired for a role in his Lulu and Leander series on WXZ in Detroit, Michigan. Johnny Lee, a black comic on The Slick and Slim Show on WHN in New York City, complained: “I had to learn to talk as white people believed Negroes talked in order to get the job.” This situation persisted well into the 1940s. Actor Frederick O’Neal, who portrayed a character in the Beulah radio series during the war years, recalled: “After I appeared on the Beulah program several times, the producer insisted that I use more dialect in my speech.” And as late as 1947, Wonderful Smith, a popular African American comedian with The Red Skelton Show, was fired by the series producers because, in Smith's words, “I had difficulty sounding as Negroid as they expected.” (Barlow, Voice Over, 30–31)

92. In “The Paradox of Timbre,” Cornelia Fales has elucidated the question of timbre and listener projection of what is sounded. In her discussion of the “whispered inanga” musicians of Burundi, she concludes that listeners project the hearing of a melodic line that in fact is not sounded.

93. For a thorough discussion of vocal timbre, race, physiology, and training, see Eidsheim, “Voice as a Technology of Selfhood,” 1–27, 30–66.


95. This resonates with Eric Drott’s ideas about genre in “The End(s) of Genre.”

96. Cruz, Culture on the Margins, 1.


98. Henderson, “Minstrelsy, American.”

3. Familiarity as strangeness

1. We also use voice categories such as boy soprano and female tenor. But in this very common formal presentation of voices, males occupy the bottom pitch range and females the upper.

2. From infancy to puberty, boys’ and girls’ voices are similar due to similar thyroid cartilage angle and vocal fold length. If we compare prepubescent boys and girls, there are no statistically significant physiological differences in terms of laryngeal size or the
overall vocal tract length (Kreiman and Sidtis, *Foundations of Voice Studies*, 110–16). (There are of course individual variations between voices.) Babies’ larynxes are placed high in the neck, fibers are underdeveloped, “tissue layers are not differentiated, and there is no vocal ligament” (112). Everything from the size of the tongue relative to the vocal cavities, a lack of teeth, an immature respiratory system, and so on contributes to what we identify as an infant vocal sound. Between birth and puberty all of these areas gradually mature at a similar rate for boys and girls. However, when considering the acoustic signal, scientists (and the average listener) often observe differences. Specifically “by age seven or eight, boys have consistently lower formant frequency than girls” (113). Summarizing Vorperian, Jody Kreiman and Diana Sidtis observe that “existing physiological data do not completely explain this difference in formant frequencies, because sex-dependent differences in overall vocal tract length do not exist for these young children” (113; Vorperian et al., “Development of Vocal Tract Length during Early Childhood”). This difference, then, must at this point be attributed to the performance of gender.

For both men and women, voices undergo growth and maturation and generally do not reach a fully mature state until about twenty-one years of age. Aging also contributes to vocal change. For example, from birth to older age, the larynx gradually moves from the third or fourth vertebrae position to the fifth at adulthood but continues to lower throughout one’s lifetime. In fact physical divergence between male and female voices is set in motion between the ages of eleven and fourteen, with pubescent boys’ vocal growth. The cracking we hear during that “voice change” is the challenge of navigating a vocal instrument that changes overnight and within which different parts, for a period of time, are not optimally coordinated. The female voice also grows considerably, and vocal folds can grow up to 34 percent in length, reaching an adult size of 12 to 21 mm and a vocal tract average of 144 mm in length. The male vocal folds can grow up to 60 percent in length, reaching an adult length of 17 to 29 mm and a vocal tract average of 156 mm in length (Kreiman and Sidtis, *Foundations of Voice Studies*, 113–14). Discussion and perceptions of female and male voices focus inordinately on differences, to the detriment of understanding similarities—in the realm of both the physical and the performative.

3. Guillory, “Black Bodies Swingin’.”


6. For further biographical information, see *Jimmy Scott: If You Only Knew*, directed

7. Affecting 1 in 10,000 to 86,000 people and occurring more frequently in males than in females, Kallmann syndrome is characterized by delayed or absent puberty and an impaired sense of smell. A form of hypogonadotropic hypogonadism, the condition affects the production of hormones that control sexual development. The results in males include being born with an unusually small penis (micropenis) and undescended testes (cryptorchidism). Later symptoms include failure to develop secondary sex characteristics, including facial hair growth and deepening of the voice in males, or no menstruation and little or no breast development in females. For others affected by Kallmann syndrome, puberty is incomplete or delayed. Additional features vary, including within the same family. For further information, see Neil Smith and Richard Quinton, “A Patient’s Journey: Kallmann Syndrome,” British Medical Journal 2012;345:e6971; U.S. National Library of Medicine, “Kallmann Syndrome,” accessed March 13, 2015, http://ghr.nlm.nih.gov/condition/kallmann-syndrome; and the Kallmann Syndrome Organization homepage, accessed March 13, 2015, http://www.kallmanns.org.

8. Scott stopped growing at the height of four feet eleven. At the age of thirty-four, due to what his physician referred to as “delayed hormonal development,” Scott grew over a few months to five feet six. His voice did not seem to have been affected (Ritz, Faith in Time, 119).


11. Ritz, Faith in Time, 32.


14. Although both Scott’s challenges and successes may be attributed in part to his hormonally affected voice—arguably the closest modern equivalent to the sound of the castrato—the depth of his musical artistry is evident in his distinctive timbre, vibrato, phrasing, and pronunciation.

15. The quote in the subheading of this section, “That Boy’s Alto Voice,” is from Hooper, “The Ballad of Little Jimmy Scott.”


It was Joe Adams, Ray Charles’s manager and coproducer of the record, who came up with the cover idea.

23. In “Black Faces, White Voices,” Jeff Smith suggests that the dubbing of Dorothy Dandridge’s and Harry Belafonte’s voices was prompted by particular racial politics.
26. For further discussion regarding these issues surrounding the castrato voice, see, for example, Feldman, *The Castrato*; Freitas, *Portrait of a Castrato*.
28. If I were to analyze the music in this movie, I would carefully note the foreshadowing of the Callas aria to which Beckett listens in a much later scene, a scene that also serves to move the emotional plotline forward. In the scene, Beckett is much weaker, seated in a wheelchair, and loses himself in Callas’s voice. While the musical genre is quite different, Callas was scrutinized for her use of the so-called chest voice in the lower register; hence both her voice and Scott’s were timbrally othered.
31. Grey, “Black Masculinity and Visual Culture,” 402. There are, however, new modes of black masculinity emerging today, such as the performance work of Andre 3000.
32. Hooper, “The Ballad of Little Jimmy Scott.”
33. Halberstam, *In a Queer Time and Place*, 55, and “Queer Voices and Musical Genders,” 190. Halberstam is careful to offer a broad definition of “transgender,” explaining, “The term transgender can be used as a marker for all kinds of people who challenge, deliberately or accidentally, gender normativity” (*In a Queer Time and Place*, 55).

36. This analysis is carried out in collaboration with Jody Kreiman.
37. See appendix 1 for additional detail.
38. For comparison, in speech the mean vocal ranges for men are around 82–164 Hz; women around 160–260 Hz; and children around 250–400 Hz. This means Scott’s singing range in the three songs analyzed is comparable in the high woman or low child range, but the other examples fall comparably in the high speech range even for a child. In terms of the distributions, the performances of “Ooo Baby Baby” (Smokey Robinson) and “Big Girls Don’t Cry” (Frankie Valli) have a lot of variability, with no one frequency range dominating the distribution; Scott’s three songs have less variability and a clear mean; and “Trouble Man” (Marvin Gaye) is almost monotone. (See appendix 1 for additional detail.) While much of that is determined by the compositions, the different embellishments the singers use affect the distribution as well. For additional detail regarding the “contributions of fundamental frequency (f0) and formants in cuing the distinction between men’s and women’s voices,” see Hillenbrand and Clark, “The Role of f0 and Formant Frequencies in Distinguishing the Voices of Men and Women.”
41. “Surgeons,” Kreiman and Sidtis report, “have increased the tension in the vocal folds by surgically approximating the cricoid and thyroid cartilages; by removing part of the thyroid cartilage and the vocal folds (so that the folds are reduced in length and tension is increased); or by making a window in the thyroid cartilage and stretching the vocal folds forward, effectively moving the anterior commissure (but also accentuating the
thyroid prominence).” Moreover “attempts have also been made to alter the consistency of the fold by creating scar tissue, or to decrease the mass of the folds by stripping tissue. Finally, the front edges of the folds may be sutured together, decreasing their length and effective vibrating mass. Because $f_0$ is a primary cue to a speaker’s sex, such surgical interventions may increase the perceived femininity of a voice. However, they are invasive and long-term rates are variable.” They conclude that “simply increasing $f_0$ generally produces a voice that is more feminine, but not necessarily female”; indeed “voices with very high $f_0$s may remain unambiguously male” as long as “other cues to the speaker’s sex retain their male values” (*Foundations of Voice Studies*, 145).

42. Derived on the basis of an acoustical measurement, $f_0$ (the lowest periodic cycle component of the acoustic waveform) indicates the fundamental frequency of a sound; pitch is its perceived correlate. Because the two are perceptually understood very similarly, I have chosen to use the two intermittently in this book, using pitch as the default term but deferring to whichever specific form the literature I cite uses.


45. Breathy voice is a stereotype of female voice that is no longer as prevalent a vocal parameter in female singers’ performances. However, invoking a stereotype can of course prove effective if intending to invoke markers of vocal femininity.

46. The length of the vocal tract during vocalization depends on the one hand on the actual length of the vocal tract, but on the other hand, on the vocal manipulations carried out by the singer—to an overwhelming degree. Hence hearing the timbral result of a short vocal tract does not necessarily mean that this vocalizer’s default vocal tract is limited to that specific length.

47. “Perceptual tests showed that the utterances of the speakers who produced the greatest contrast in $f_0$ and loudness between male and female vocal production were correctly classified as male or female 99% of the time” (Kreiman and Sidtis, *Foundations of Voice Studies*, 145).

48. This summary of this literature is adapted from Kreiman and Sidtis, *Foundations of Voice Studies*, 145.

49. Kreiman and Sidtis, *Foundations of Voice Studies*, 145. They refer to Whiteside, “A Comment on Women’s Speech and Its Synthesis.” See also Hillenbrand and Clark, “The Role of $f_0$ and Formant Frequencies in Distinguishing the Voices of Men and Women.”

50. Gelfer and Schofield also note that while it was expected that transgender individuals who were perceived to be female would be considered more feminine than transgender people who were perceived to be male, this did not seem to be the case. They hypothesize that “it is possible that the listeners had a predisposition to identify voices reading neutral, nonemotional sentences as male. That is, if a voice presented with some characteristics of a female voice and some characteristics of a male voice, listeners may have had a tendency to attend to the male characteristic and identify the voice as belonging to a male (although perhaps a feminine-sounding male)” (“Comparison of Acoustic and Perceptual Measures of Voice in Male-to-Female Transsexuals Perceived as Female versus Those Perceived as Male,” 32).
51. In addition to falsetto, a particular portion of the voice could be timbrally bracketed off in a variety of ways, including by straining or breathiness. See Cusick, “On Musical Performances of Gender and Sex,” for a discussion of screaming and straining as a way of performing masculinity.

52. There is a long history of male singing in a higher than expected register, falsetto being one of the vocal techniques enabling this. A broader cultural reading of falsetto is beyond this chapter, which limits its scope to establish that Scott’s contemporaries sang in comparable higher pitch range yet were read as masculine. For insights on falsetto in relation to masculinity, see Mark Anthony Neal’s excellent discussion in Songs in the Key of Black Life (47). Neal starts out by observing, “In reality the falsetto voice is the product of hypermasculine performance, be it derived from the regular Regent Mack-Daddy infomercial circuit—inspired no doubt by the original ‘playa-revs’ like Ike, Father Devine, and ‘sweet’ Daddy Grace—or the brothers flexing for real in HBO’s Pimps Up, Hoes Down.” Neal quotes Russell Simmons saying, “High pitched falsetto, crying singers were the most ghetto. . . . For all the talk of love there was something very pimp-like, manipulative and fly about that sound.” And, reading Robin Kelley, Neal also reminds us that “falsetto voice was part of an elaborate black oral form known as toasting.” For a discussion of falsetto in relation to disco, a genre with generous use of falsetto, see Anne-Lise François, “Fakin’ It/Makin’ It.” She describes falsetto as “the voice of exception, crisis, and interruption, if not intervention. But it is also a rhetorical deployment of difference, a staging of an otherness imposed from without by oppressive economic, racial, or gender-based structures” (445).

53. Vennard, Singing, 67. See also Deguchi, “Mechanism of and Threshold Biomechanical Conditions for Falsetto Voice Onset.”

54. I do believe this particular way of timbrally bracketing off the higher portions of the vocal register is different from what Ollie Wilson has called “the heterogeneous sound ideal tendency” in black musical aesthetics (“Black Music as an Art Form,” 5).


56. Edgerton has also identified timbre as the parameter that makes Scott’s voice “closely resemble female voices” (The 21st-Century Voice, 41).


59. Jones, “Singing High.” Jones reports, “Protocol competency is signified with a salutation such as one that starts with ‘First, giving honor to God’ or ‘Praise the Lord, everybody’” (n.p.).

60. Jones, “Singing High.” Narrow ideas about vocality in regard to gender generally, and in regard to masculine vocality, are of course not limited to issues around black masculinity. See, for example, Allison McCracken’s analysis of Rudy Vallée and Bing Crosby in Real Men Don’t Sing. She demonstrates that the limits set to contain crooners also ended up dictating the limits for masculinity for male singers more generally.
63. Muñoz cites Félix Guattari’s discussion of the Mirabelles (*Disidentifications*, 85).
64. Goffman, *Presentations of Self in Everyday Life*.
65. I echo basic semiotic theory here. See, for example, Charles S. Peirce’s work on the active and defining role of “interpreting” in the triangulation of sign, object, and interpretant (*The Essential Peirce*, 478).
68. Hooper, “The Ballad of Little Jimmy Scott.”
69. My reading is not derived from a psychoanalytic framework, but some readers may recognize a resemblance to Kaja Silverman’s notion of the acoustic mirror.

4. RACE AS ZEROS AND ONES

1. However, there are very interesting dynamics in the realm of transnational transactions around this vocal synthesis technology and its packaging, user response, and audience perception. These transnational concerns are beyond the scope of this book, and I treat them in a separate article. Additionally, while I do address later developments of the software in relation to Hatsune Miku, for an in-depth discussion of this, see Francis, “Playing with the Voice.”
2. Hatsune Miku’s voice bank is based on samples recorded by the well-known voice actress Saki Fujita.
5. The first NAMM show was held on January 13 and 14, 2004. It has evolved to become one of the major international events introducing new music products. Vocaloid was first introduced through a demo at Musikmesse in Frankfurt in March 2003 and through Zero-G’s website, launched on October 23, 2003.
7. See “Vocaloid,” Roblox, accessed June 1, 2015, http://www.roblox.com/groups/group.aspx?gid=34.4516. I use this definition of Vocaloid as a synthesis software throughout. However, at this point, the term is understood by some as an umbrella term for a holographic singer and its ecology of sounds, repertoire, persona, fictional characters, and stories.
8. Because of the translation that must take place between the written representation of a language and its sounded version, the applications are language-specific. At this time, the Vocaloid synthesis method is used only with English and Japanese; *LOLA, LEON*, and *MIRIAM* were voiced in English.
9. As explained in notes 7 and 10, Vocaloid is not true vocal synthesis.
10. For additional detail on the Vocaloid synthesis system, see Kenmochi, “Singing Synthesis as a New Musical Instrument.”

11. An electronic voice synthesis apparatus was first patented in the United States by Homer Dudley of Bell Laboratories (Homer W. Dudley, Signal transmission, U.S. Patent 2,151,091, filed October 30, 1935, and issued March 21; see also Bell Laboratories, “Pedro the Voder”). In the late 1950s Bell Labs produced several speech synthesis systems that were capable of “singing.” Although too computationally intensive for commercial use as a speech synthesizer, one of these systems, created by Lochbaum and Kelly, “Speech Synthesis,” in 1962, was used in a collaboration with Max Mathews to generate early examples of singing synthesis. See also Risset, An Introductory Catalogue of Computer Synthesized Sounds, re-released in 1995 on the compact disc The Historical CD of Digital Sound Synthesis, Computer Music Currents 13, Wergo 2033–2 (Mainz, Germany: Wergo Schallplatten). From this period of early speech signal processing, the channel vocoder (Voice CODER) and linear predictive coding (LPC) were created (Atal, “Speech Analysis and Synthesis by Linear Prediction of the Speech Wave”; Makhoul, “Linear Prediction”). LPC created a revolution in speech synthesis and compositional possibilities. Some of its success was due to the similarity between the source/filter composition produced by the mathematics of linear prediction and the source/filter model of the human vocal tract. In the 1980s frequency modulation synthesis and formant wave function synthesis (FOF, for fonction d’onde formantique) were used for singing synthesis. FOF was later dubbed CHANT. In general terms, vocal synthesis may be divided into two different models, spectral and physical. The spectral model is, roughly speaking, based on perceptual mechanisms and attempts to re-create the sound of the voice, while the physical model is based on production mechanisms and attempts to re-create the function of the voice (and, as a result, the sound). For more detailed information about different vocal synthesis models see Cook, “Singing Voice Synthesis.”

12. Practically, what matters to amateur users who neither know nor care about these distinctions, and to a general public told that the voice it hears is a synthesized voice, is not the technical distinction between full and hybrid vocal synthesis. What matters is that they believe it is vocal synthesis.

13. For more information on language capabilities and challenges, see Bonada, “Voice Processing and Synthesis by Performance Sampling and Spectral Models”; Kenmochi, “VOCALOID and Hatsune Miku Phenomenon in Japan”; Bell, “The dB in the .db.”

14. According to my latest (July 2015) count, current Vocaloid companies issue voice font software in the following languages: English (created by Zero-G and PowerFX, sometimes in collaboration with the fan-run project Vocatone); Spanish (Vocetro Labs); Chinese (Vocaloid China Project, a division of bplats; VOCANESE); Japanese (Crypton Future Media, bplats/Yamaha, Ki/oon records by Sony, i-STYLE Project by Studio Deen, Internet Co. Ltd., AH Software, First Place). The Korean language issuer sbs Artech is defunct.

15. A Japanese company, Crypton Future Media, released Vocaloid Meiko, which uses the same synthesis method as the voices discussed in this paper, on October 5, 2004. Zero-G released Vocaloid PRIMA, “a brand-new plug-in VIRTUAL VOCALIST modeled
on the voice of a professional soprano opera singer, and powered by the all-new Yamaha

16. As the **vy** tagline goes, “Power of imagination accelerates Creator’s possibility.” The female voice **vy1** was called **mizki,** a name the developers derived from Hanamizuki (Dogwood). But there is no character for the voice; instead both packages feature an image of a decorative sword, in pink and gold with blue accents, respectively ("**vy1v3,** Vocaloid, accessed June 1, 2015, http://www.vocaloid.com/en/lineup/vocaloid/vy1v3.html; "**vy2v3,** Vocaloid, accessed June 1, 2015, http://www.vocaloid.com/en/lineup/vocaloid3/vy2v3.html). Vocaloid’s original announcement web pages are no longer available, but fans have preserved information and images on the two following sites: "**vy1v3,** Fandom, accessed April 5, 2018, http://vocaloid.wikia.com/wiki/VY1v3; and "**vy2v3,** Fandom, accessed April 5, 2018, http://vocaloid.wikia.com/wiki/VY2v3. **vy1** and **vy2** are referred to in gendered terms, female and male, respectively. Even though these voices were released without images of singers, the most frequent discussion among users and fans is on the topic of what these voices look like. While Cyber Diva—with the fan-given nickname Cuva—is another Vocaloid, like **vy1/**vy2 marketed without a name that could be understood as human, “Cyber Diva” does point to a general type of identity.


18. Miriam Stockley is originally from South Africa but moved to the United Kingdom in her teens to pursue a music career. In 1995 she entered the spotlight with the album *Audiemus,* in which her voice is recorded layer upon layer, producing a mix that is supposed to sound like “African voices.”


20. For a critique of the highly problematic images used, see Eidsheim, “Voice as a Technology of Selfhood,” 109–17.

21. To see a discussion of the commercial use of this piece, see Taylor, “World Music in Television Ads.”

22. Vocaloid’s depictions of each of their synthetic voices feature very strong, offen-
sive racial references. For a critique of this aspect of the software, see Eidsheim, “Voice as a Technology of Selfhood,” 110–17.


27. Unless the identity of the source singer is part of the product’s promotional material, information regarding the source voices is kept very secret; this information was given to me in conversation with developers who were unable to share their names. I have therefore not been able to verify it with the source singers themselves. However, I have no reason to doubt the general information that was shared with me. My general point stands, even if the details differ.

28. If Vocaloid’s developers were comfortable recruiting a professional musician working outside the immediate cultural, social, and political context of a given musical genre, it could arguably have been equally reasonable to have hired nonblack British or Jamaican native speakers or, perhaps aesthetically closer, to have hired native speakers of American English, independent of their racial or ethnic identification. This is, of course, tricky territory. Historically the African diaspora has been connected in many ways and has nurtured affinities despite geographical dispersal. Therefore there is an argument to be made that black populations in the United States, the United Kingdom, and Jamaica share affinities and many commonalities in their connection to the African diaspora, but I am unconvinced that they are connected by syllable pronunciation.

29. By simply listening, I cannot tell if any default phonemes were edited to improve the pronunciation of the words.

30. Graceinliife, “[vocaloid 1] Obsoletion→Retirement [miriam, lola, & leon].” “Obsoletion→Retirement” and “Disappearance of leon” are fan covers of the cosMo songs “Division→Destruction” and “Disappearance of Hatsune Miku.”

31. Pavel Vu, “(Lola) Light Comes My Way (Original).”


34. Anarobik, “anaROBIK Home.”

35. This piece of fan art is a well-known image among the Vocaloid community and is often re-created. I have not been able to locate the originator of these visual ideas and continue to pursue the question.

36. Soph, “(Leon) I’ll Quit Singing (Vocaloid).” This is another example of fan-based art that creates a chain of reference. “(Leon) I’ll Quit Singing (Vocaloid)” is based on “I’ll Quit Singing” (Yamete yaruyo utaite nanka) (with English subtitles) by NamahageP. The original “I’ll Quit Singing” song uses the character/voice font Kasane Teto, created in the utau software (Damesukekun, “Kasane Teto ‘Yamete yaruyo utaite nanka’ (I’ll
The lyrics were based on a cover created by GothicBlue07 using the voice font SOniKA (Afrostream. “[Sonika]—I’ll Quit Singing (Sonika ver).”). A number of other covers exist.

38. Agatechlo, “The Disappearance of LEON.”
41. The first name, Miku, translates as “future,” and the surname, Hatsune, translates as “first sound.”
42. For more on the topic of idol, see Aoyagi, Islands of Eight Million Smiles.
46. For more on this cultural phenomenon, see Itō et al., Fandom Unbound.
47. GoogleChromeJapan, “Google Chrome: Hatsune Miku (初音ミク).”
48. Miku spinoff products are “everywhere,” in “cacophonous electronics, comic, doll, fetish, porn, and costume stores,” James Verini writes in “How Virtual Pop Star Hatsune Miku Blew Up in Japan.” She has been written about in “touching devotional texts: a handsome edition entitled Miku-4 by a fan named Nagimiso, a volume of Miku-inspired poetry and Miku-poetry criticism by Eureka, and a collection of songs transcribed into sheet music called Selections for Piano, with a cover illustration of Miku seated at a baby grand.” Also, “not surprisingly, this crowdsourced creativity has led to a sub-genre of sexualized Mikus, including brutal sadomasochistic motifs. There is, inevitably, a market for Miku porn.” See also St. Michel, “In Japan, Anyone Can Be a Holographic Pop Star.” For more on Miku from the point of view of “open source culture,” see “Miku: The Open-Source Girl Who Conquered the World”; Lindsay Zoladz, “Hatsune Miku Is a Piece of Software. She May Also Be the Future of Music,” Slate, November 20, 2014, http://www.slate.com/blogs/browbeat/2014/11
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50. Fan-created art and projects based on Miku’s character extend beyond the voice font and music to include games such as MikuMikuDance, consideration of which is beyond the scope of this chapter. Most of the 15,500,000 Google search results for Hatsune Miku on July 15, 2015, led to fan-based projects, and not to Crypton Future Media.


54. Engloids, “Interview: Bil Bryant.”


57. Details regarding these different phases fall outside the scope of this chapter; I treat this in an article under preparation.


64. David Ng, “Pharrell Williams Teams with Takashi Murakami on Music Video,”
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65. See note 45 on the open licensing of Miku-derived noncommercial products.

66. Kisekikui, “Hatsune Miku—Thoughtful Zombie (English Subbed).”


68. Voca Vamp, “(Hatsune Miku) Mikusabbath (UtsuP) (English and Romaji Subs).”

69. daniwellP, “(Official Music Video) Nyan Cat—daniwellP (Nyanyanyanyanyanya!).”


73. For an image of the unveiling of the software art and the voice provider, see KagamoneyLen, Twitter, July 4, 2015, 12:18 p.m., https://twitter.com/KagamoneyLen/status/617412178581172224.

74. For an image of the original design, see fig. 4.22.


78. “maeblythe asked.”

79. When scrolling through the Google image search results of “Vocaloid Ruby,” only one image involving PowerFX shows up. This is a photo where PowerFX’s image is unveiled next to Misha, the source voice, who is not alluded to in the image description.


5. BIFURCATED LISTENING


2. Addressing the complex racial politics arising from cross-racial impersonation, the motivations behind appropriation (such as “love and theft,” which addresses this from a psychoanalytical point of view), and practices from overt minstrelsy to “sonic blue(s) face culture,” to quote Eric Lott and Daphne Brooks, is beyond the scope of this chapter. See Lott, Love and Theft; Brooks, “This Voice Which Is Not One.” However, I plan to address these thorny issues in a separate piece, considering them through Ronald Radano’s nuanced theory of slaves’ singing voices as the property of property, thus an inalienable property. As he explains, today’s ideas of “authentic” and “inauthentic” are due to slave era constructions in part, that cultural ownership of black music and its authenticity is connected to black visual presentation (“The Sound of Racial Feeling”), and later, in the late nineteenth century and the first half of the twentieth, when a dynamic within which “de-valuation and re-valuation of black music” “change[d] relationally, dialectically, following the self-value[ing] expansiveness of capitalism” (“The Secret Animation of Black Music”).

3. Carvalho, “Strange Fruit,” 112. The quote in the subheading for this section, “Billie Holiday’s Burned Voice,” is from Rita Dove’s “Canary” (1989), quoted in Griffin, If You Can’t Be Free, Be a Mystery, 156. For perspective on the mythmaking generated by Billie Holiday’s 1956 ghostwritten autobiography, Lady Sings the Blues, see critiques, including Griffin, If You Can’t Be Free; Szwed, Billie Holiday. On performance, sensationalistic tabloid stories, and a posthumous biographical film akin to “a type of cultural ‘identity theft,’” see Sutton, “Bitter Crop,” 294.

5. “New Life,” Time, April 12, 1948, 68, quoted in Sara Ramshaw, “‘He’s My Man!,'” 95.
15. Margolick, Strange Fruit, 12.


23. Griffin, _If You Can’t Be Free, Be a Mystery_, 31.


25. For a rich discussion of vocal art and vocal recordings as “archival and ethnographic endeavors” (as opposed to the unmediated sound of “natural” voices), read Brooks, “Sister, Can You Line It Out?”


40. Lhamon, Raising Cain; Lott, Love and Theft; Woolfork, Embodying American Slavery in Contemporary Culture.

41. Lott, Love and Theft, 3.

42. The question is discussed in Eidsheim, Sensing Sound, 1.

43. Hobson, “Everybody’s Protest Song,” 44.


45. For a thoughtful, ethnographic, and science-based study of vocal artists, I recommend Katherine Meizel and Ronald Scherer’s insightful analysis of Véronique’s fifty-voice Las Vegas show, which highlights the technique involved in carrying out imitations, a technique they dub “multivocality.” Described from an acoustic perspective, summarizing Stevens and House, “Development of a Quantitative Description of Vowel Articulation,” Meizel and Scherer note that singing impersonation “involves acoustic features that lead to the perception of timbre and are most likely related to formant frequencies and their relative intensities. The way listeners perceive vowels is most affected by the first two formants (F₁ and F₂), the frequencies and relative intensities of which are related to the location along the vocal tract of the primary constriction(s), the

46. Schneider began traveling in 1993 and has collected nearly continuously since that time. Conversation with the author, April 20, 2015, and text message on August 24, 2015.

47. Schneider voiced the *South Park* characters Wendy, Shelly, Principal Victoria, Mrs. Marsh, Mrs. Cartman, Mrs. McCormick, Ms. Crabtree, and the Mayor for five years.

48. The playwright and actress Anna Deavere Smith is respected for her ability to imitate a wide variety of characters’ voices—characters who often have very different biographies, ages, races, and genders than Smith herself. About her process Smith shares, “I get up and I start talking like another person, and start trying to occupy their words or be occupied by their words” (“Let Me Down Easy”). In a review of the play *Notes from the Field*, Edgardo Cervano-Soto summarizes Smith’s creative process as “finding individuals closest to the narrative, interviewing and filming them, studying their mannerisms, memorizing their words, and ultimately, curating a showcase of those voices.” “Anna Deavere Smith Takes on School-to-Prison Pipeline,” *Richmond (CA) Pulse*, July 30, 2015, http://richmondpulse.org/2015/07/30/anna-deavere-smith-takes-on-school-to-prison-pipeline/.

Smith describes her rationale this way: “Nobody talks alike. So I thought that one place to study identity would be in the actual speech of the voice. . . . I interview people, I take something that they said, and then I attempt to say exactly what they said, more than word for word, utterance for utterance, because I have come to see that it’s in the way the utterances themselves are manipulated that identity comes forward. . . . What I really love to do is listen to people, and listen to stories.” Big Think, “How Do You Get into Character?”

49. I am currently in the process of coauthoring a piece with Schneider on the technical breakdown of Holiday’s voice.

50. This approach follows Emily J. Lordi’s cue in *Black Resonance*. She discusses the “haunting” quality of Holiday’s voice but argues against the cultural current that reads performances as “direct expressions of lived struggle” (110) and, instead, insists on considering Holiday’s vocal work as a result of artistic choices (137–72).

51. As Holiday is the focus of this chapter, I will mention only in passing that Jordan’s performance is yet another example wherein a singer’s technical abilities exceed what would be viewed as her physical limitations, here related to age and vocal development. Yet Jordan’s acute ear and technique surpass her physical difference from Holiday, as Jordan is clearly prepubescent at the time of her performance of “Gloomy Sunday.”


54. Daubney, “Songbird or Subversive?,” 21, 22.

55. Baber, “‘Manhattan Women,’” 78.


58. Ramshaw, “‘He’s My Man!’” 93. It doesn’t take long, though, before Ramshaw launches into hyperbole: “No other voice has ever given such honest, intimate and profound expression” (93).

59. Huang and Huang, “She Sang as She Spoke,” 288, 302. Overall these authors consider certain spoken consonants and the pitches of preceding vowels.


61. For more on Holiday’s three stylistic periods, see Szwed, *Billie Holiday*, 126–29.


64. “Celebrating Billie Holiday’s Centennial with Cassandra Wilson.”

65. As Daphne Brooks notes, “bodies in dissent” are bodies that build on coexisting genres and expectations and bend them to their advantage. Bodies such as these understand the expectations placed on a black body that is understood as a slave body; in 1846 William and Ellen Craft took advantage of these expectations and escaped the South, William posing as the slave of his light-skinned wife, Ellen, who posed as the white master. Bodies in dissent do not accept any essential or naturalized traits overlaid upon them. They knew the expectations, played with them, and took advantage of their blind spots. See Brooks, *Bodies in Dissent*; Craft and Craft, *Running a Thousand Miles for Freedom*.

66. This tension is the focal point of today’s talent competitions. The dramatic arc is built around the presentation of a person about whom members of the audience have certain ideas (an uncool teenager; an aging virgin; a young girl who sounds like an old soul), combined with the assumption that this identity should fail to yield an interesting or strong vocal performance. The “wow moment” of the program is created by the bursting of these expectations. The effect would not have been the same if the audience and judges had expected spectacular vocal performances from these individuals at the start. The twist is provided by the disruption of these expectations. For examples of talent show participants who defy judges’ and audiences’ expectations, see Imryanang, “Judges Lack Confidence in This Shy 14 Year Old until She Starts Singing!,” August 18, 2013, https://www.youtube.com/watch?v=uxXcoqDyuw, source terminated; Smith, “Susan Boyle First Audition.”


71. Phillip Goff summarizes the context for his research on contextual explanation of racial inequality: “The latter part of the 20th Century saw an impressive decline in the overt expression of racial animosity towards non-Whites. This decline, however, was largely unaccompanied by a reduction in racial inequality. The seeming disconnect between racial attitudes and racial outcomes has troubled contemporary social scientists who had long assumed that individual-level racism accounted for racial disparities.”

238 *NOTES TO CHAPTER FIVE*
6. WIDENING RINGS OF BEING

1. I have long pondered this dilemma. For example, when asked to offer a contribution to the panel “Musical Aesthetics of Race and Ethnicity,” I did not believe I could responsibly use words as we know and understand them today, and instead offered a musical track featuring my nonverbal singing with an abstract video made by Sandro Del Rosario. National meeting of the American Musicological Society, Philadelphia, November 13, 2009.

2. Eric Satie rejects the label “musician.” In a 1912 essay he describes himself as a “phonometrographer.” For example, Satie confesses, “I enjoy measuring a sound much more than hearing it,” and “On my phono-scales a common or garden F-sharp registered 93 kilos. It came out of a fat tenor whom I also weighed.” See “What I Am,” in A Mammal’s Notebook, 101. See also Auner, “Weighing, Measuring, Embalming Tonality.”


4. As I mentioned in the introduction, what I derive from the critical performance practice methodology carried out in this book, which it seems most logical to call “style and technique” here, is what I have earlier called the “organology of voice.” See Eidsheim, Sensing Sound, 163.

5. For an expanded discussion of this position, see Eidsheim, “Maria Callas’s Waistline and the Organology of Voice.”


10. Eidsheim, Sensing Sound, 155.


15. One of the expert witnesses, Dr. J. P. (Peter) French, testified, “If you were simply presented with the screams in this case, with no background information, if it were simply edited out of the recording end-to-end and given to an analyst, I don’t think you could even be sure that the person was speaking in English . . . [or] be sure that the person was male or female.” That is, French affirms that the audio sample cannot even be identified to such broad markers as language and gender. Andrew Branca, “Zimmerman Case: Experts Call State’s Scream Claims ‘Absurd’ ‘Ridiculous’ and ‘Imaginary Stuff,’” *Legal Insurrection*, June 9, 2013, accessed April 1, 2015, http://legalinsurrection.com/2013/06/zimmerman-case-states-scream-claims-called-absurd-ridiculous-and-imaginary-stuff/.


17. These quotes are from an anonymous review of *Sensing Sound*.

18. For my discussion of sound in water, see Eidsheim, *Sensing Sound*, 27–57.


22. These ideas and positions are not unique. My main intellectual companion in writing this book has been Powell, *Racing to Justice*. While approaching issues about race, dignity, community, and sense of self from a scholarly legal perspective, Powell expresses similar sentiments regarding the need to “[move] beyond the isolated self” (xiv). He is weary, as I am, of the notion of “postracialism” as “targeted universalism” (3–28), and thus moves his inquiry of the racialized self into a discussion about the “multiple self” (161–96). In this discussion he touches on points of convergence with Buddhist philosophy. While I have never engaged in earnest with Buddhism, I know from Powell’s work, and from conversations with colleagues who do know the tradition, that
there are multiple points of convergence between Buddhist thought practices and where my investigation into listening has taken me.

23. On the flip side, this means that each positive power we wish to name is also not pinned down to a single expression. Shana Redmond beautifully exemplifies this in her reminder that “the underground sounds a little bit like this [plays excerpt of Nina Simone, ‘See Line Woman’], and this [plays excerpt of Miriam Makeba, ‘Ndodem-nyama Verwoerd’], and this [plays excerpt of Max Roach and Abbey Lincoln, ‘Garvey’s Ghost’], and [plays excerpt of Kendrick Lamar, ‘Alright,’ and the Pan African Space Station, and Kamasi Washington, and Cesaria Evora, and Margaret Bonds, and, and, and].” Each example is different at the level of what I think about as naming (e.g., genre), but all are examples of “the underground sound” and share in the “investment in a practice of fugitive blackness that refuses containment” (“Black Music and the Aesthetics of Protest”). I attended the talk; as of July 1, 2015, the panel discussion can be viewed here: http://hammer.ucla.edu/programs-events/2015/06/black-music-and-the-aesthetics-of-protest/.

24. For a poignant discussion of an example of this phenomenon, see these three by Radano: Lying up a Nation; “The Sound of Racial Feeling,” 126; “Black Music Labor and the Animated Properties of Slave Sound.”

25. Again, I am aware these positions are similar to those expressed within certain Buddhist worldviews. However, I do want to stress that the stances I take in this book are derived from following the logic of inquiry into the acousmatic question.
