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MUSIC'S VISUAL WAVES:
POPULAR MUSIC TECHNOLOGY AND AUDIOVISUAL AESTHETICS

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The visual experience of seeing sound produced in musical performance has been integral to how performers and audiences alike determine the meanings of sound in society and culture.

Tara Rodgers[1]

[1] Tara Rodgers, "What, for me, constitutes life in a sound?": Electronic Sounds as Lively and Differentiated Individuals," *American Quarterly* 63, no. 3 (September 2011): 509-530, 515.

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ABSTRACT

This dissertation explores how technological innovations influenced music and visual culture over four decades, from 1960s transistor radios to 1990s Auto-Tune. Portable music technologies in the postwar era inspired American and British filmmakers and pop stars to give pop songs increasingly mobile and visual meanings. In the 1960s and '70s, American avant-garde filmmakers transformed pop songs' often patriarchal and heteronormative subject matter with moving images that championed women's and sexual liberation. And when music videos became a cultural phenomenon from the 1980s on, singers and producers mobilized popular music as a tool for political action through new visual contexts that emphasize countercultures and shatter stereotypes.

Studies of pre-existing music in media have mainly focused on how pop songs shape film aesthetics—that a song of a particular era, for example, transports spectators to that time through their aural memories. This dissertation takes up an understudied aspect of media's pre-existing music: the crucial role of music technology in how media portray, and make, history and culture. Magnetic tape, digital samplers, and voice manipulation software, with their ability to fragment and recombine pop music, irrevocably altered how humans could remix and defy forms of representation in visual media with pre-existing pop songs. New waves of visualizing recorded voice, sound, and music in postwar music technology, I argue, reveal shifting depictions of what it means to be human.

Each chapter follows a two-part structure to oscillate between sonic and visual culture. First, I show how the historical and economic origins of music recording technologies shape the new sounds that pop artists make to express themselves and their societies. Second, I examine how the visual imagery paired with found pop songs in avant-garde films and contemporary

music videos reflects attitudes toward gender, sexuality, race, and more. Throughout, I reveal an audio-visual feedback loop between music and screen technologies, which mutually influence how people express aspects of identity in certain decades.

Chapter 1 explores how the avant-garde filmmakers Barbara Rubin and Kenneth Anger appropriated pop songs from transistor radios in their 1963 films. Their queer imagery subverts the typical heterosexual meanings of pop for spectators. Chapter 2 tracks how Karen Carpenter and Yoko Ono used magnetic tape overdubbing to amplify women's embodied experiences. By multiplying the emotional effects of their voices, they contest male-dominated walls of sound (e.g., the Beach Boys and the Beatles). Chapter 3 analyzes the Fairlight Computer Musical Instrument—the first digital sampler, with a computer screen—to chart an alternate history of '80s MTV. When Kate Bush, Herbie Hancock, and others drew music with the Fairlight's light pen, they transformed not only sampling in pop music but also the visual style of early music videos. Chapter 4 revises Auto-Tune from an inauthentic gimmick to a distinctly audiovisual tool for creating pop music personas. Cher and her Auto-Tune heirs expand the sound and look of female pop stars. Across these chapters, I show how music technologies shape trends and countercultures in visual culture, and how experimental and mainstream art impact one another.

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Introduction

Waves of Sound, Images, and Culture

> [J]uxtapositions of genre and generation can reveal how sound and audio technologies connect otherwise divergent experiences. Sounds are points of departure to realms of personal history, cultural memory, and political struggle.
>
> Tara Rodgers[1]

Countless histories of recorded sound begin with Thomas Edison's phonograph (1877), but few discuss the first "recorded sound technology […] marketed for home entertainment use"[2]: Edison's talking doll, patented in February 1878 and first manufactured in 1889. Hers was the first human body to be matched with recorded sound.[3] Edison's doll had a mini phonograph cylinder inside it, connected to a crank reached from the doll's back. When turned, the crank would play one verse—no more would fit on the tiny cylinder—of common nursery songs, like "Mary Had a Little Lamb" and "Twinkle Little Star," and the sound emitted from a speaker inside the doll's chest.[4] Yet this doll was a commercial failure on three levels. One, since sound recordings couldn't yet be duplicated, Edison exploited female labor: he hired multiple young women with voices he deemed suitable to record the amount of cylinders needed to ship doll orders.[5] Two, the internal mechanism was delicate and often broke upon shipping.[6] Three,

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[1] Tara Rodgers, *Pink Noises: Women on Electronic Music and Sound* (Durham: Duke University Press, 2010), 5.
[2] "The Sound of Edison's Talking Doll – Friday, April 17, 2015 at 1:00 pm." *ARSC Newsletter*, no. 137 (Spring 2015): 11.
[3] J.N. Maelzel patented a talking doll in 1824, using a bellows and resonators to make her say "mama" and "papa." But like the keyboard-operated Euphonia and other 19th-century automata, Maelzel's talking doll spoke in real time through speech synthesis; see Thomas L. Hankins and Robert J. Silverman, "Vox Mechanica: The History of Speaking Machines," in *Instruments and the Imagination* (Princeton, N.J.: Princeton University Press, 1995), 213.
[4] Listen to the recordings on the National Park Service website: https://www.nps.gov/edis/learn/photosmultimedia/hear-edison-talking-doll-sound-recordings.htm.
[5] "Early Talking Doll Recording Discovered," National Park Service, last updated February 26, 2015. https://www.nps.gov/edis/learn/photosmultimedia/early-talking-doll-recording-discovered.htm.
[6] Neil, Baldwin, "The Lesser Known Edison," *Scientific American* 276, no. 2 (1997): 62. http://www.jstor.org/stable/24993609.

consumers perceived "an uncanny mismatch between the figure and the voice it produced."[7] Modern audiences couldn't hear this voice-body mismatch until 2011, when 3D optical scanning technology allowed scientists at the Lawrence Berkeley National Laboratory to sonify the squiggly waves etched into tin and wax cylinders. Researchers rendered the cylinders as digital models and converted visual waves into recorded sound. A screeching voice—the stuff of nightmares, really—resulted.

The recent re-hearing of Edison's doll raises several questions: how do we encounter sounds from the past; is taste historically contingent? Are sonic innovations driven by anthropocentric interests? And how, as Tara Rodgers ponders in the epigraph quote, do sounds function as touchstones between personal and cultural memory?

A number of phenomena surround Edison's talking doll that have guided the subsequent creation and reception of sound technology. These include the cultural, social, and political drives to visualize sound waves; to humanize recordings by pairing them with human bodies, thereby making their lack of a visual source less uncanny; and to capitalize on the labor of women (and also people of color). Of course, experiments to visually inscribe sound arose before the phonograph, as in Ernst Chladni's sand patterns on vibrating plates, or the ear-like membranes that indexed vibrations in Margaret Watts Hughes's eidophone, Édouard-Léon Scott de Martinville's phonautograph, Alexander Graham Bell's ear phonautograph, and Etienne-Jules Marey's vocal polygraphs.[8] Humanizing sound was a major goal of 18th- and 19th-century sonic automata, which resembled humans to make mechanical feats of flute-playing and speaking

[7] Paul Christopher Johnson, *Automatic Religion: Nearhuman Agents of Brazil and France* (Chicago: University of Chicago Press, 2021), 16.

[8] For more on the historical, material, and social conditions of these technological experiments, see Thomas Y. Levin, "'Tones from out of Nowhere': Rudolph Pfenninger and the Archaeology of Synthetic Sound," *Grey Room* 12 (Summer 2003): 32–79; Mara Mills, "Deaf Jam: From Inscription to Reproduction to Information," *Social Text*, no. 102 (2010): 35–58; and Robert Michael Brain, "Visible Speech," in *The Pulse of Modernism: Physiological Aesthetics in Fin-de-Siècle Europe*, Ch. 3, Seattle, WA: University of Washington Press, 2015), 64–92.

more believable. And in telephony, Bell initially hired teenage boys as operators but, after the 1880s, predominantly employed "girls, socialized to defer on the basis of class, gender, and age."[9] Women's vocal timbres and nimble movements at the switchboard were harnessed to help consumers trust a device that newly disembodied voices. As Lisa Gitelman observes,

> mediated sound was normalized in relation to women's voices [… as] particularly potent indexes of "real" or successful representation […] Telephonic representations succeeded amid constructions of "the operator" as both gendered and effaced, available to facilitate transmission but hardly to transmit. And phonographic representations succeeded amid constructions of soprano voices as desirable commodities in themselves.[10]

Women's individual identities were neutralized as part of these communicative interfaces and, ultimately, by these devices' automation. That women continue to be used as voice assistants in navigation and operating systems—from Apple's Siri to Scarlett Johansson in *Her* (Spike Jonze, 2013)—suggests that sonic devices are often feminized to connote domestication and intimacy to consumers, thus giving unfamiliar sound technology a familiar image. So it was with Edison's doll, a spectacle that effaced women's labor to make thousands of recordings. As Gaby Wood observes somewhat morbidly, "the capturing and reproduction of speech were accompanied by a casing for it in human form."[11]

Edison's use of a doll to sell his phonograph aligns with the ways he humanized the phonograph in other uses, as in replacements for stenographers or "great men."[12] Pairing recorded sound with images, especially human ones, helped consumers more immediately envision its utility. As Tom Gunning writes, "the desire to supplement [the phonograph] with a visual counterpart quickly arose, both in the projects to embed the phonograph in an automaton-

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[9] Venus Green, *Race on the Line: Gender, Labor, and Technology in the Bell System, 1880-1980* (Durham: Duke University Press, 2001), 57.
[10] Lisa Gitelman, *Always Already New: Media, History, and the Data of Culture* (Cambridge, Mass: MIT Press, 2008), 70-1.
[11] Gaby Wood, *Living Dolls [US title, Edison's Eve]: A Magical History of the Quest for Mechanical Life* (London: Faber and Faber, 2002), 118.
[12] Thomas Edison, "The Phonograph and Its Future," *North American Review*, no. 126 (May–June 1878): 533.

like body and in the almost immediately appearing fantasies of a parallel invention that could 'do for the eye what the phonograph does for the ear'"[13]—the Kinetoscope, where viewers watched moving images through a peephole. Edison attempted to combine sound and image playback in the Kinetophone, which paired the Kinetoscope with a phonograph and ear tubes, but the phonograph did not supply synchronized sound, only asynchronous musical accompaniment.[14] Instead of recounting the long era of innovation that preceded synchronized film sound, however, this dissertation centers the desire to synchronize postwar sound technology's recordings of voice and music with human images. Even after Edison, producers and consumers continued to harbor "deep anxiety aware of the manner in which technology, while doubling the human, also seems to be splitting it up, transforming the nature of human subjectivity."[15] How music technologies shatter ideal types and express humans in new sonic and visual ways is at the core of this project.

My dissertation, *Music's Visual Waves: Popular Music Technology and Audiovisual Aesthetics*, explores how innovations in music technology influenced both music and visual culture over four decades, from 1960s transistor radios to 1990s Auto-Tune. While a history of portable sound technology could start with phonographs, gramophones, and wire recorders, the portability introduced with transistor radios and magnetic tape recorders reconfigured audiovisual experience across time and space and irrevocably altered representations of humans in visual media—and this especially mattered for popular music. The transistor radio, for example, brought Top 40 hits out of the home and into drive-ins and parking lots. By extending

[13] Tom Gunning, "Doing for the Eye What the Phonograph Does for the Ear," in *The Sounds of Early Cinema*, eds. Richard Abel and Rick Altman, 13-31 (Bloomington, IN: Indiana University Press, 2001), 19.
[14] Douglas Gomery, "The Coming of Sound: Technological Change in the American Film Industry," in *Film Sound: Theory and Practice*, eds. Elisabeth Weis and John Belton (New York: Columbia University Press, 1985), 5–24.
[15] Gunning, "Doing for the Eye What the Phonograph Does for the Ear," 19.

popular music into public space, the transistor fueled a youth culture that blasted rock and roll to create newfound independence from their parents and to woo romantic partners, as seen in *American Graffiti* (George Lucas, 1973) and contemporaneous movies. As another device that transformed post-World War II music and culture, magnetic tape recording exceeded wire recording to enable the erasing, looping, overdubbing, splicing, and remixing of sound. "Sonic memory and storage, from then on," Peter McMurray argues, "could be aggressively selective."[16] Together, transistor radios and magnetic tape, along with the digital technologies analyzed in the second half of this study, afforded a selectivity and portability that would forever change the sound—and image—of films, music videos, and digital media.

Transistor radios, magnetic tape recording, digital samplers, and Auto-Tune: what these technologies immediately have in common is their ability to store, alter, or transmit music. Yet these technologies do not only have sonic capabilities. Through their uses in popular culture and the avant-garde, they have become fundamentally audiovisual. The sounds produced by these technologies are invested with meaning through the visual material that surrounds them—imagery in films, music videos, advertising, TV, YouTube, and more. These modes of audiovisual expression are not only influenced by their users but also by fluctuations in the music and film industries and in social and political movements.

Method: Navigating Waves of Music, Images, and Culture

The guiding methodology of this project springs from one word with many meanings—wave. The OED alternately defines waves as "an undulatory movement […] of something passing over or on a surface or through the air"; "a forward movement of a large body of persons"; "a sharp

[16] Peter McMurray, "Once Upon Time: A Superficial History of Early Tape," *Twentieth-Century Music* 14, no. 1 (2017): 27.

increase in the extent or degree *of* some phenomenon" or "the coming thing," e.g., "the wave of the future"; "to make waves: to stir up trouble."[17] This study focuses on three particular materials that wave—sounds, moving images, and cultural movements. Waves simultaneously emphasize materiality, such as sound's physical matter, and malleability, or matter in constant transformation. A wave is an object in motion that touches, and is touched by, something other than itself. Conceiving of the three strands of this study as waves thus invites a methodology that oscillates between material objects and their varied uses and reception. This fluid method at once zooms in closely on the functions and contexts of media and users, and zooms out to eras, industries, and infrastructures to take stock of technological transitions and shifts in social attitudes.[18] Creators and audiences, instruments and institutions, are all wave shapers and carriers.

Waves have had a special significance to the goal of visualizing sound. For Tara Rodgers, the sound wave "is a central figure in Western sonic epistemologies" that has created many "analogies between sound, electricity, and water waves; between fluidity and female corporealities; and between maritime voyage, scientific and colonialist enterprise, and the consolidation of an archetypal white, Western, male subjectivity."[19] Rodgers deconstructs the sonic wave metaphor, asking how acousticians and music producers master soundwaves as something to be contained and analyzed from a distance, often in a visual form like a Digital

[17] "wave, n.," OED Online. December 2021. Oxford University Press. https://www-oed-com.proxy.uchicago.edu/view/Entry/226383?rskey=TMAFfb&result=1&isAdvanced=false.
[18] The method of waving between near and far views has an affinity with Laura Marks's oscillation between haptic and optical perception—sensory analysis that scales between close reading and recognizing multiple nodal points between observer, object, and environment. Marks urges analysts to "maintain a robust flow between sensuous closeness and symbolic distance," since keeping too much distance from objects is to abstract them from their environmental contexts, but "to lose all distance from the world is to […] become indistinguishable from the rest of the world." Laura Marks, "Introduction," in *Touch: Sensuous Theory and Multisensory Media* (Minneapolis: University of Minnesota Press, 2002), xiii; xvi.
[19] Tara Rodgers, "Toward A Feminist Epistemology of Sound: Refiguring Waves in Audio-Technical Discourse," in *Engaging the World: Thinking After Irigaray*, ed. Mary Rawlinson (Albany: SUNY Press, 2016), 195; 196.

Audio Workstation (DAW). Warning against an objectifying gaze that stereotypes music based on its maker's appearance, Rodgers pursues a method in which "sound waves also offer ways of imagining situated knowledges and partial perspectives that depart from merely visual senses and metaphors, in part by signaling contingent and open-ended processes of touch and movement."[20] And yet, to throw out visual metaphors because they're deemed too objectifying would be to throw the baby out with the bathwater—for analyses of visualizations of sound can reveal deep-seated cultural biases as well as the new visions artists create to defy them.

Thinking of sounds and images in waves accounts for their situatedness in social, cultural, and political movements—e.g., second-wave feminism, new wave music, or individuals or groups who make waves. Moreover, waves of sound have been irrevocably marked by their acoustical and technological imagery, since DAWs have become so central to the way music is made. As Nick Prior explains, "software permits greater speed and textual plasticity than ever because of the way the composition is visually fragmented."[21] Hearing and seeing also have become entwined in music reception, in the prominence of pop star personas and fans' consumption of videos and shows.[22] In these ways, sound and image are entangled in practice and theory, and cannot be separated.

A study of music's entanglement with visual waves is vital because scholarship still lacks productive ways of thinking these senses together. Sound scholars have long worked to correct deep-seated notions about the primacy of vision in Western society—that sound is the poorer

[20] Rodgers, "Toward A Feminist Epistemology of Sound," 207.
[21] Nick Prior, "Software Sequencers and Cyborg Singers: Popular Music in the Digital Hypermodern," *Contemporary Music Review* 37, nos. 5–6 (2018): 488–506, 503.
[22] For example, as Robin James observes, "feminist analysis of pop music skews to the visual and away from sound and music." Robin James, "Listening to Sounds in Post-Feminist Pop Music," *SoundingOut!* blog, February 15, 2016, https://soundstudiesblog.com/2016/02/15/listening-to-sounds-in-post-feminist-pop-music/.

cousin to the more "accurate" and "rational" sense of vision.[23] As a result, the practice of listening and looking equally closely has diminished in studies of audiovisual media over the past several decades.[24] My attention to artists' modes of production and audiences' modes of reception accounts for the dovetailing interactions of hearing and seeing as they occur in technology and perception. Thinking sound and image together reveals the structuring principles common to both that we might miss if we separate them into binaries and allows us to study fundamentally audiovisual ideologies and cultures. Close examinations of the interplay between sonic and visual phenomena, as well as zoomed-out views of their production and reception, create an analytical method through which scholars can contextualize moments in media through history and also detect stereotypes created and perpetuated by images and sounds. This method, I argue, can be applied to a range of media, as it helps spectators to gain a more nuanced understanding of the information communicated in news programs, art media, and social media. In our current age of fake news, edited "documentary" footage, and deepfakes, it is imperative for scholars and consumers alike to critically evaluate media through waves of close and distant analysis that are in tune with historical moments, technological and ideological construction, and cultural movements.

Crucial to this study, waves can also describe the temporal periods in which pre-existing music affects spectators. Over time, spectators' pre-existing associations with music become deeply personal (a couple's prom song), widely shared (campaign songs), and politically charged

[23] In 1980, film scholars including Mary Ann Doane and Rick Altman published essays in a special issue of *Yale French Studies* 60 (1980) entitled "Cinema/Sound" to offer correctives to visual-based studies of film. Philosophers Adriana Cavarero and Mladen Dolar also contributed to these debates; Adriana Cavarero, *For More than One Voice: Toward a Philosophy of Vocal Expression*, trans. Paul A. Kottman (Stanford: Stanford UP, 2005); Mladen Dolar, *A Voice and Nothing More* (Cambridge: MIT Press, 2006). Scholars of art and technology have also engaged this issue, including Michele Hilmes, Jonathan Sterne, Ina Blom, and Seth Kim-Cohen.

[24] Jonathan Sterne calls the separation of hearing and vision into ontological and aesthetic categories "the audiovisual litany"; Jonathan Sterne, *The Audible Past: Cultural Origins of Sound Reproduction* (Durham: Duke UP, 2003), 15.

(when filmmakers amplify historically excluded voices in mainstream media). While studies of pre-existing music tend to focus on the music or films in and of themselves, *Music's Visual Waves* contextualizes the before, during, and after of a spectator's or collective's encounter with a particular pop song in a scene.[25] I show how acting (bodily production), recording (technological reproduction), and listening (audience reception) each make and provoke bodily impressions of people at a certain time and place. To specify how and why sounds make new waves in media, I use a two-pronged approach that situates both music and technology in social contexts. First, I show how recording and broadcasting technologies are developed, what they mean to their initial cultural and historical moment, and how they foster trends in popular music. Second, I trace how filmmakers encode new visual meanings when they juxtapose songs with new, experimental images. Throughout, I use primary source documents to analyze artists' songs through their use of technology, the emotions of their music and lyrics, and the vestiges of their involvement in contemporary socio-political movements. I investigate how spectators negotiate the contrasting images that pop songs produce on screen and in their memories by observing viewers' reactions in public film screenings or comments on YouTube videos and forums. By closely reading and listening to histories of recording devices, musical genres, political movements, and artists' engagements with them, I challenge the binaries that scholars and critics commonly enact between sounds and images, including high/low, excess/control, noise/music, and nature/artifice.

To disrupt binaries around human representations and practices in sound and vision, I track audiovisual motifs in artists' techniques and viewers' reactions to them. To perceive how

[25] For example, Kathryn Kalinak emphasizes the disjuncture between "Stuck in the Middle with You" (Stealers Wheel, 1972) and its use in *Reservoir Dogs* (Quentin Tarantino, 1992) but does not account for the song's history or viewers' memories of it. Kathryn Kalinak, *Film Music: A Short Introduction* (Oxford: Oxford University Press, 2010), 1–21.

binaries ebb, flow, and dissolve, I extend Brian Kane's work on culturally mediated listening to looking:

> To *hear in* sounds likenesses (both morphological and analogical) is to participate in an auditory culture through acquiring audile techniques [ways of hearing, both cognitive and bodily]. Of course, one cannot assume that every listener in an auditory culture would hear the same likenesses; however, they could negotiate such differences. The potential sharing of practices and techniques is the very condition of the possibility of such negotiations.[26]

Like Kane, I take up a comparative model of listening—and looking—that locates audiovisual motifs common to artists and listeners in certain decades. Artists and audiences come to associate and remember sounds in the cultural settings that produce them, as happens with hit songs that transport spectators back to the times, places, and emotions of previous hearings. Audiovisual media position spectators as memory archivists who track how sounds and images index political and social contexts. This project's method of bridge-building between sound and vision, individuals and eras, aims to keep intact their structural differences while revealing waves of visualizing sound with music technology that are shared across nations and other borders of identity. Pop songs in audiovisual media become artifacts of social memory when they create shared meanings for spectators that bridge past and present, near and far.

Music's Competing Visions: Pre-Existing Music in Media and the Popular Music Industry

Yet despite the shared memories that pop songs can accrue, the use of popular music in media has a history of competing visions. During the creation of pop songs, musicians and producers often disagree on what images their songs conjure for listeners. Then, upon release, pop songs gain an array of conflicting interpretations as they are appropriated—as I am using the term,

[26] Brian Kane, "Sound Studies without Auditory Culture: A Critique of the Ontological Turn," *Sound Studies: An Interdisciplinary Journal* 1, no. 1 (2015): 2–21.

repurposed for new narratives—by corporations and consumers alike. In this way, the same song could be associated with a presidential campaign and adopted by couples as "their" song. Neither may have anything to do with original intention (in the way, for example, that Ronald Reagan famously appropriated and misread Bruce Springsteen's "Born in the U.S.A." for his presidential campaign).

Nowhere has pop music been appropriated more pervasively than in films: the storylines, settings, and characters of movies add new associations to songs that can deviate greatly from the ideas artists had when creating them. Furthermore, a spectator may have memories of a song from particular times and places that jar with its interpretation in a film scene's images and content. With each viewing of a film, a single song can gain new layers of associations—even opposing ones. Pop songs become sonic photo albums, music shared between generations that is also intensely personal, a living museum whose contents are constantly being reshuffled.

When pop music is imported into a movie and given a new context, this "found sound" not only produces emotional effects for spectators but also resonates with industries, events, and experiences beyond the span of the screen. Such audiovisual shockwaves demand sustained historical and theoretical inquiries. While film and music scholars have addressed the use of pre-existing classical and popular music in film, they haven't fully explored how pop music appropriated as "found sound" has transformed sonic and visual culture.[27] "Found sound" parallels "found footage" in film, which designates archival shots or sequences used in a new

[27] See the edited collections *Soundtrack Available: Essays on Film and Popular Music*, eds. Pamela Robertson Wojcik and Arthur Knight (Durham: Duke University Press, 2001) and *Changing Tunes: The Use of Pre-Existing Music in Film*, eds. Phil Powrie and Robynn Stilwell (Aldershot: Ashgate, 2006). The most sustained study on the idea of appropriation in pre-existing music for films is by Jonathan Godsall, *Reeled In: Pre-existing Music in Narrative Film* (Abingdon, Oxon: Routledge, 2019), which explores the legacy and legality of musical appropriation, albeit limited to narrative film. *Music's Visual Waves* not only expands the purview of pre-existing music to avant-garde film, music videos, and digital media, but also asks how appropriation has affected and been conditioned by technology and the music industry.

film. In the case of found sound, filmmakers often appropriate sounds to "speak" for characters by using songs to portray their emotions or to anchor audiences in a historical moment. Previous studies of audiovisual appropriation have examined these factors of aesthetics and identity, but they have neglected the technologies that inspire, let alone make it possible for, artists to use and remix found sounds.[28]

Music technology is crucial to the way films portray, and make, history and culture. Devices from transistor radios to Auto-Tune not only shape audiovisual media but also ways of seeing and hearing. As media scholars Jonathan Sterne, Mark Katz, and Julie Hubbert have noted, recording and playback sound technologies transform artists' creative practices and audiences' listening behaviors and judgments.[29] In Katz's words, "Recorded sound […] is sound mediated through a technology that requires its users to adapt their musical practices and habits,"[30] from musicians shortening their songs to adapt to streaming's pay-per-song model, to consumers listening to playlists on headphones when travelling.[31] *Music's Visual Waves* explores how portable devices and visual media reconfigure both individual and cultural connections to pop music.

This approach puts sonic and visual culture on equal footing, and argues, through studies of technology, music, media, and reception, for their inability to be separated. I conduct a

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[28] *Soundtrack Available* and more recent work on found sound, including *Vocal Projections: Voices in Documentary*, eds. Annabelle Honess Roe and Maria Pramaggiore (New York: Bloomsbury, 2019) tend to focus on the aesthetics of pre-existing music in film. Julie Hubbert, however, observes how the circulation of playlists on CD and mp3 influenced how compilation scores developed in contemporary cinema. Julie Hubbert, "The Compilation Soundtrack from the 1960s to the Present," *The Oxford Handbook of Film Music Studies*, ed. David Neumeyer (Oxford: Oxford University Press, 2014).

[29] Jonathan Sterne, *The Audible Past: Cultural Origins of Sound Reproduction* (Durham: Duke University Press, 2003). Mark Katz, *Capturing Sound: How Technology Has Changed Music* (Berkeley: University of California Press, 2004). Julie Hubbert, *Celluloid Symphonies: Texts and Contexts in Film Music History* (Berkeley: University of California Press, 2011).

[30] Katz, *Capturing Sound*, 2.

[31] Charlie Harding and Nate Sloan, "How Streaming Changed the Sound of Pop," *Switched on Pop* podcast, March 12 https://switchedonpop.com/episodes/how-streaming-changed-the-sound-of-pop?rq=shorter.

distinctly audiovisual media archaeology that highlights the sonic, visual, and haptic materiality of music-making objects in a social and historical trajectory.[32] As one strand, I show how American and British musicians use recent music technologies to create new sounds that express themselves and their societies. As another strand, I describe how the visual imagery paired with found pop songs—in media ranging from postwar avant-garde films to contemporary music videos—reflects attitudes toward gender, sexuality, race, and more due to the humanizing visualization of sound. Bringing these two strands together, I draw attention to an audiovisual feedback loop between music and screen technologies, which mutually influence how people express aspects of identity in certain decades. From Yoko Ono to Afrika Bambaataa, Barbara Rubin to SOPHIE, the artists in this study use sonic and visual technologies to charge images with the memories and emotions of women, queer people, and people of color. These artists emphasize the materiality of music and images—and the technology used to generate them—to highlight musical and visual histories beyond the industry status quo.

The Portable Pop Archive of Postwar Music Technology

By focusing on American and British artists between 1963, a key year for pop music in avant-garde film, and the present moment, I reveal how the growing portability of music recording and sampling after World War II has expanded the locations and concerns of postwar intellectual and

[32] An audiovisual media archaeology excavates the technical conditions of possibility for a feedback loop of trends and countercultures between sound and vision in media. I align my approach with sound and music scholars who focus on recorded sound as a historical, technological, and performative mode of social transformation—e.g., Jason Stanyek and Benjamin Piekut, "Deadness: Technologies of the Intermundane," *The Drama Review* 54, no. 1 (Spring 2010): 14–38, Neil Verma, *Theater of the Mind*: *Imagination, Aesthetics, and American Radio Drama* (Chicago: University of Chicago Press, 2012), Roger Moseley, *Keys to Play: Music as a Ludic Medium from Apollo to Nintendo* (Oakland, California: University of California Press, 2016), and Andrea F. Bohlman's work on magnetic tape—see, for example, "Tape: Or, Rewinding the Phonographic Regime," with Peter McMurray, *Twentieth-Century Music* 14, No. 1 (2017): 3–24. To scholars' emphases on the haptic and sonic materiality of technology, I add that of images as they express sounds haptically and historically.

political movements. In this, I follow Julie Hubbert's call to consider music technologies' role in visual media in this period:

> Because film is not a purely musical art, because it is conventionally considered as primarily a mode of viewing rather than listening, the impact that sound recording technologies have had on the use of recorded music in film is easily overlooked, yet changes in the ability not just to record but to rerecord and manipulate music have in fact played a significant a role in the evolution of film music since the 1960s.[33]

While Hubbert explores compilation scores of pop music in narrative film, I extend this purview to avant-garde films, music videos, and digital media—all of which have been transformed by the increasing portability of music technologies. I analyze portability as a spatial, medial, and discursive phenomenon. On the one hand, recording and broadcasting technologies are portable devices that allow filmmakers and musicians to splice and remix pop music. On the other hand, pop songs also become technologies in themselves: portable objects that these artists detach from, and re-attach to, different people and situations.

Music's Visual Waves tracks the settings and attitudes that influence how pop songs are created and distributed. I assess the cultural and political aftershocks of songs as they move from the airwaves into movies and from public spaces into private ones with digital and social media. As songs shift sites and contexts, they amplify—or, alternatively, diminish—different social concerns. Although ostensibly different in production and reception, postwar experimental cinema and popular music videos alike offer fertile ground to study how music migrates through media, as artists redirect sounds from mainstream airwaves for new political purposes. Amid postwar movements for feminist, civil, and queer rights, avant-garde and popular artists used found sounds to counter cultural conservatism by expanding forms of expression and challenging objectification. From sound bites of retro pop songs to samples of broken glass, artists amplify

[33] Hubbert, "The Compilation Soundtrack from the 1960s to the Present," 294.

refrains of economic, commercial, and social change that are experienced on both individual and communal levels.

A central aim of *Music's Visual Waves* is to revise industrial and popular histories written about music in media from the postwar period to the present. In one respect, I show how artists who repurpose found sound often refute the racial and gendered stereotypes that influenced industrial techniques of sound synchronization. In early American sound films and classical Hollywood cinema, technicians and directors wrestled with microphones to match the "right" voice to the "right" body—they replicated gendered and racialized stereotypes, such as the expectation that a woman's dulcet tones cohere with her subordinate level of power.[34] *Singin' in the Rain* (Stanley Donen and Gene Kelly, 1952) famously subjects women's voices to male, industrial, and technological control during the transition from silent to sound film. When Lina Lamont's grating tone and Bronx accent don't harmonize with the voice audiences expect to hear, three male producers dub in sweet-voiced Kathy: her found sound secures the illusion that Lina both sounds and looks beautiful. The film dramatizes how technology and social expectations, and not just an actor's "natural" performance, construct "proper" voices to uphold stereotypes. An audiovisual media archaeology of such a film reveals how, in the words of Amy Lawrence, "technology that reproduces the 'human voice' at every point seeks to recreate men and women according to the standards of the day."[35] The heteropatriarchal gaze and ear regulate human representation, and purport to establish a universal norm.

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[34] Much scholarship has examined the female voice in cinema, including Mary Ann Doane, "The Voice in Cinema: The Articulation of Body and Space," *Yale French Studies* 60 (1980): 33–50; Kaja Silverman, *The Acoustic Mirror: The Female Voice in Psychoanalysis and Cinema* (Bloomington, IN: Indiana University Press, 1988); Amy Lawrence, *Echo and Narcissus: Women's Voices in Classical Hollywood Cinema* (Berkeley: University of California Press, 1991); Britta Sjogren, *Into the Vortex: Female Voice and Paradox in Film* (Urbana and Chicago, IL: University of Illinois Press, 2006); Jennifer Fleeger, *Mismatched Women: The Siren's Song Through the Machine* (New York, NY: Oxford University Press, 2014).
[35] Lawrence, *Echo and Narcissus*, 9.

As I show in Chapter 1, however, in 1963 the queer experimental filmmakers Barbara Rubin and Kenneth Anger used found sound from transistor radios to represent forms of sexuality that had been suppressed in mainstream media. Postwar experimental artists rendered sound synchronization increasingly portable to demonstrate a wider range of social identities than the character archetypes constructed by Hollywood film industries. These artists and their mainstream and experimental heirs (studied in Chapters 2 through 4) open up the ways in which music videos and contemporary popular media express diverse identities. With found sound, they give voice to subjects who previously were silent or rendered as disembodied voices in film, and consequently restore multiple dimensions of embodied experience across history. In this respect, *Music's Visual Waves* emphasizes the crucial role that avant-garde artists' technological experiments played in the development of art forms and styles in popular music and media. The technological innovations of female and queer avant-gardists have been overshadowed by mainstream artists but have made myriad contributions to feminist and sexual liberation. By situating avant-garde achievements in larger aesthetic, technological, and cultural contexts, I uncover pivotal connections between experimental film, popular media, and everyday life.

Visual Waves of the Popular Music Industry and Pop Personas

While the first part of the dissertation focuses on experimental film, the second chapter begins a shift to popular music media—specifically, music videos, which not only sell songs but also construct personas for singers. The music video industry, from MTV to independent artists, is a key site where music transforms humans and sounds into images, producing commodities as well as boundary-pushing representations. While music videos have nearly always sought to highlight the star, early MTV videos in particular exoticized racial tropes, as in Duran Duran's "Hungry

like the Wolf" (Russell Mulcahy, 1982), and made female stars into sex objects, like Madonna in "Material Girl" (Mary Lambert, 1984). Indeed, such sexualized portrayals of Madonna became part of her pop star "persona," a term that Kai Arne Hansen adopts from Carl Jung. Jung describes the persona as "a complicated system of relations between the individual consciousness and society, fittingly enough a kind of mask, defined on the one hand to make a definite impression upon others, and, on the other, to conceal the true nature of the individual."[36] As Hansen observes, the public-facing masks of pop personas are usually decided by a team of producers, rather than the performer herself, but they can also be shaped by critics and fans who respond to stars' recordings, music videos, live performances, interviews, and social media. The transmedia portrayals of stars' personas complicate the belief that the star alone is the author of their music or imagery. Moreover, by crafting diverse personas across music videos, stars present multifaceted sides of their identity or even cast themselves into imaginary ones. The pop persona thus can be made to fit the mold of MTV, a commodity fetish, or it can be used as a creative outlet to challenge raced and gendered stereotypes, such as Missy Elliott's cyborg persona who wears inflatable suits to defy the hypersexualization of Black women performers in music videos.[37]

As illustrated by these examples and that of *Singin' in the Rain*, social conventions that a certain type of voice belongs to a particular image of a body have a long history in Western media of controlling representations and discriminating against feminized, racialized, trans, and

[36] Jung quoted in Kai Arne Hansen, "(Re)Reading Pop Personae: A Transmedial Approach to Studying the Multiple Construction of Artist Identities," *Twentieth-Century Music* 16, no. 3 (2019): 503. For more on pop personas, see Simon Frith, *Performing Rites: Evaluating Popular Music* (Oxford: Oxford University Press, 1996) and Philip Auslander, "Musical Persona: The Physical Performance of Popular Music," in *The Ashgate Research Companion to Popular Musicology*, ed. Derek B. Scott (Aldershot: Ashgate, 2009), 303–15.

[37] On Black women in music videos defying stereotypes and hypersexualization, see Steven Shaviro, "Supa Dupa Fly: Black Women as Cyborgs in Hiphop Videos," *Quarterly Review of Film and Video* 22, no. 2 (2005): 169–179, and Robin James, "'Robo-Diva R&B': Aesthetics, Politics, and Black Female Robots in Contemporary Popular Music," *Journal of Popular Music Studies* 20, no. 4 (2008): 402–423.

aging people. Such voices are particularly barred from the popular music industry across history, where cycles of normative personas are internal to the dynamics of celebrity and music production. Yet, analyzing transmedia pop personas allows us to tune into visualizations of music that transgress norms and create new modes of audiovisual expression. This goal aligns with voice and media scholars who seek to overturn the common Western belief that one's voice is "an essential and unmediated expression of interiority"; as Nina Sun Eidsheim observes about speech and musical performances, voice is "reduced to socially and culturally categorized and evaluated vocal sounds, such as pitch and voice, as essential markers" that listeners link to stereotypes of race, gender, class, etc.[38] But artists who uncouple pre-existing popular music from stereotypical visualizations and create new ones insist on alternate forms of human (and even nonhuman) audiovisual expression. They might invent multiple visual personas for one person's voice or, in the case of the global cultural phenomenon of vocaloids, untether both voice and image from human norms.

Edison's talking doll comes full circle in on-demand synthetic performers like Hatsune Miku, a vocaloid that appears in hologram form at live concerts, or VTubers, virtual YouTubers who use motion capture to stream themselves as animated avatars while they produce art or play games, thereby connecting with viewers in real time as virtual characters.[39] Edison predicted the use of sound recording to preserve the voices of family members and public figures, and that "the musical-box, or cabinet, of the present, will be superseded by that which will give the voice and the words of the human songstress."[40] While he likely referred to the home phonograph, is

[38] Nina Sun Eidsheim, *The Race of Sound Listening, Timbre, and Vocality in African American Music* (Durham: Duke University Press, 2019), 34; 9.
[39] Watch, for example, the popular VTuber Kizuna Ai stretch the possibilities for her own voice syncing up with new objects onscreen in A.I. Channel, "Playing a game using only your voice challenge," March 27, 2017, YouTube, https://www.youtube.com/watch?v=dwXOCqNWz4Q.
[40] Edison, "The Phonograph and Its Future," 534.

this statement not also true of what vocaloids and deepfakes—the endpoint of this project—do today? Once users could record and stream sound, they could create on-demand performers who could be used to record entire albums. Virtual performers like Miku even allow consumers to create their own personas for her, allowing for widespread fan participation in music and art. Synthetic personae like VTubers and deepfakes lay bare the constructed nature of pop star personas and offer forms of community that change the face of visualized and humanized sound.

Chapter Outline

Each of my chapters analyzes a sound recording or broadcast device that shapes musical and cultural change in a certain decade, including 1960s transistor radios, 1970s tape overdubbing, 1980s digital samplers, and 1990s Auto-Tune. Chapter 1, "Queer Transistors: Aural Cruising in *Scorpio Rising* and *Christmas on Earth*," explores the mystery of why a majority of avant-garde filmmakers in 1963 used the transistor radio in their soundtracks. I focus on two divergent cases—*Scorpio Rising*, where director Kenneth Anger plays the role of "DJ" to program Top 40 hits for each scene of gay motorcyclists, and *Christmas on Earth*, where Barbara Rubin instructs projectionists to play random radio stations to accompany two superimposed reels of orgiastic footage. These filmmakers' "radio reroutes" of pop music, as I call them, alter spectators' memories of pop's often heteronormative contexts and use the transistor as a tool for queer aural cruising through time, space, and social practices.

Chapter 2, "Vocal Doubles: Yoko Ono and Karen Carpenter's Magnetic Tape Magnetism," examines Yoko Ono and Karen Carpenter, who both employ extended vocal techniques and double-tracking to enlarge the emotional effects of their media performances. 1970s critics diminished their talents with variously racial and gendered epithets, but their

technological genius rivaled that of the Beatles and the Beach Boys, who at that time were famous for their densely layered walls of sound. Through their overdubs on magnetic tape, Carpenter and Ono each in her own way not only challenges the view that magnetic tape tinkering is a boy's club but also heightens her voice's textures to amplify a woman's embodied experiences on mainstream channels.

While the first half of this study compares pairs of artists in successive chapters, the second half departs from the structure of comparing two artists in a single year in order to look and listen to a technology's impact across a decade and national contexts. In Chapter 3, "Theater of the Fairlight: Sampling Sounds, Sexuality, Gender, and Race on MTV," I analyze the Fairlight Computer Musical Instrument—the first digital commercial sampler, a CPU on top of a keyboard—to chart an alternate history of early MTV. I argue that the Fairlight's ability to draw music with a light pen influenced not only sampling in pop music but also the visual style of early music videos. Fairlight samples of found sounds spread through UK avant-pop and US hip-hop, such as ORCH2, which was sampled from Stravinsky's *Firebird Suite* but used in hip-hop as a record scratch sound, which inspired Afrofuturist imagery in music videos. Listening backwards into histories of visualizing music and forwards into the Fairlight's place in science fiction films such as *Terminator 2* (1991), I argue that artists' engagements with sonic waveforms on the Fairlight's monitor shaped visual aesthetics in '80s music videos from dance to stop-motion animation to intertwine musical, visual, avant-garde, and popular culture.

Chapter 4, "Pitch-Shifted Personas: Believing in Life after Auto-Tune with Cher and Her Heirs," redefines Auto-Tune's complex discourse from an inauthentic gimmick to a fundamentally audiovisual effect. Exaggerated uses of Auto-Tune, popularized by Cher's 1998 hit "Believe," have cast pitch correction as antithetical to vocal expression—technology that

effaces one's "true" voice—and as a gimmick, an aesthetic judgment that for Sianne Ngai describes something that at once works too much and too little, is too backward but also too futuristic. But in the face of critics who say that Auto-Tune polishes voices—especially feminine ones—for easy consumption, Cher, Jennifer Lopez, Charli XCX, SOPHIE, 100 gecs, and Caroline Polachek use Auto-Tune to shape vocal personas that overturn Auto-Tune's taming effect on women's voices in Top 40. Their creative "misuse" of Auto-Tune refashions the images of commercial personas, as it inspires imagery that highlights alternative performances of femininity and human entanglements with nonhumans in these singers' album art and music videos. Visual depictions of Auto-Tune, I argue, lay bare not only essentialized beliefs about which voices index which bodies but also ways of defying pop industry goals that control and normalize an artist's voice and image.

Throughout these studies of the visual implications and uses of audio technologies, I engage debates across the disciplines of art history, science and technology studies, and sound studies, weaving these together alongside music and popular music studies. When experimental filmmakers and popular musicians pair images of embodied experience with the found sound of pop songs, they add to an audiovisual archive of social memory as they work to revise a spectator's memories of pop songs across multiple media. Crucially, the audiovisual motifs paired with found sound create political, emotional, and sensory residues that over time crystallize into both communal and individual connections. The imagery of films and pop media reveal new waves of music, technologies, and social movements to disrupt gendered and racialized discrimination against those historically excluded from pop music and visual media. Avant-garde and pop forms of visualizing sound are making waves in the technology and interpretations of pop music still today.

Chapter 1

Queer Transistors: Aural Cruising in *Scorpio Rising* and *Christmas on Earth*

> From my earliest radio experience listening to a small transistor throb beneath my pillow in the dead of night, I have been struck by radio's profoundly schizoid identity. In one ear plays the Happy Folk Band of RADIO UTOPIA, brainwaves and radiowaves mixed into a grand electromagnetic community: *I dream of a time when everybody on the planet lives, breathes and touches each other on air!* But into the other ear, a different band marches on, the Trigger Finger Crash Band of RADIO THANATOS, with its twisted carnage of countless broadcast aircraft rattling with great gusto, straight into oblivion. In fact, the two bands are as inseparable as a pair of ears stuck on a single head, with dreamland promises of radio as universal communication forever haunted by ghostland interference. *Won't you please bring back my body to me…?*
>
> Gregory Whitehead[1]

1963 was a watershed year in American experimental cinema for screening sex—and, as it turns out, for screening the radio. Jack Smith's *Flaming Creatures* was its poster child: met with numerous obscenity charges for sexual fondling and nudity, it was notorious for its celebration of queerness.[2] But the film was not just innovative in its imagery. Its drag queens and AFAB people preened to a soundtrack that emulated AM radio, with a fake lipstick ad, Latin music, and even a tango lesson.[3] Aided by his performers and his inquisitive camera, Smith hijacked the radio, a mainstream channel, for the preservation of queer forms of life and sexuality.

In 1963, Smith and several other American Underground filmmakers used mainstream radio to think about how mass culture shapes, and even transmits, sexual desires. Why did the radio pervade so many cultural spaces at that moment? The transistor had helped radio to

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[1] Gregory Whitehead, "Shake, Rattle and Roll: A Theater of Operations for the Body in Pieces," *P-Form* 33 (Fall 1994): 33. Available at: https://gregorywhitehead.files.wordpress.com/2012/07/srr.pdf.

[2] *Flaming Creatures* was met with many obscenity charges, which Jonas Mekas decried as "a few extracted images, taken out of context […] without making an attempt to understand the work as a whole […] indeed a narrow, naive and unintelligent way of looking at things." Jonas Mekas, "Statement," *Film Comment* 2, no. 1 (Winter 1964), 28.

[3] Juan A. Suárez, "Jack Smith, Hélio Oiticica, Tropicalism," *Criticism* 56, no. 2 (2014): 305. According to J. Hoberman, the lipstick ad is a "convincing mock radio advertisement" that Smith interrupts Francis Francine, his mock-announcer, to ask, "Is there a lipstick that doesn't come off when you suck cocks?" *On Jack Smith's "Flaming Creatures" (and Other Secret Flix of Cinemaroc* (New York: Granary Books/Hips Road, 2001), 12. AFAB is "assigned female at birth."

become more portable and inexpensive, with 9 million sold in the US in 1961.[4] For experimental artists with limited budgets, the transistor offered a range of expressive potential for film soundtracks. After radio's Golden Age from the late 1920s to '50s—the era when living room sets broadcast the news of the nation to families en masse[5]—1963 was the golden year of the radio in the avant-garde film, which had a decidedly different goal: filmmakers sought to deflect the unifying siren song of mass media.

As sexually explicit films saturated the Underground scene in 1963, radios functioned both as reactionary recorded soundtracks (as in *Flaming Creatures*) and as live performance objects. The latter occurs in *Blonde Cobra*, a 1963 found-footage film crafted from Hollywood parodies made by Jack Smith and Bob Fleischner. Filmmaker Ken Jacobs instructs projectionists to play a live radio from the audience, first during a blank screen and second while Smith, dressed as a baby, smashes an onscreen radio. Jacobs "tells the exhibitor precisely when to shut [the radio] on and off, how to wiggle among the channels, and when to drift into the white noise of static."[6] When the radio plays during the blank screen, sound both outstrips and becomes the world of the film. Jacobs defies Classical Hollywood models of musical accompaniment—where non-diegetic music supplies invisible commentary for onscreen objects—since his radio plays not from speakers hidden behind the film but from the audience.

Jacobs' use of the radio transforms the filmgoing experience into a place of listening to the radio as if at home or in the car, where music can inspire the thoughts or images that pop into one's head. For Ann Reynolds, "familiar ambient sounds, such as live radio, can serve to

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[4] Susan J. Douglas, *Listening In*: *Radio and the American Imagination* (Minneapolis: University of Minnesota Press, 1999), 226. The US population was measured at 179,323,175 in the 1960 United States census (www.census.gov).
[5] Jim Cox, *Radio After the Golden Age: The Evolution of American Broadcasting Since 1960* (Jefferson, North Carolina: McFarland, 2013), 9.
[6] Ara Osterweil, "Radio Daze: Why Ken Jacobs' Blonde Cobra Still Matters," *C Magazine* 130 (Summer 2016): 12.

collapse distinctions between cinematic and viewing temporalities and spaces [… or produce] the opposite effect, underscoring the distinct difference between the time and place of the film and the time and place of the radio sound."[7] Filmmakers who played the radio as a soundtrack asked audiences to question how the sounds of mass culture interacted with what they heard and saw in everyday life. As the transistor radio became ubiquitous across America in the 1950s and '60s, providing a soundtrack for both work and leisure, avant-garde filmmakers played back its sounds with the aim of transforming how audiences interacted with the world. And in 1963 in particular, filmmakers used radio to elicit and transform erotic desires, which were enmeshed in the commodity fetishes perpetuated by mass-cultural industries.

This chapter studies how avant-garde film and transistor radios collide through two 1963 Underground films that co-opt the transistor for their soundtracks—Kenneth Anger's *Scorpio Rising* and Barbara Rubin's *Christmas on Earth*. Because their use of the transistor is much less explicit than in *Blonde Cobra* and *Flaming Creatures*, scholarship on these films has focused less on the way that radio functions as a platform to reroute desire and more on pop music's role in cultivating desire. Undeniably, Anger and Rubin import pop songs to express homoerotic desire and ways of being. But little attention has been paid to the technology that inspired such importations of popular music into films. Anger and Rubin took advantage of the transistor's portability to foster new spaces and modes of listening for countercultural factions who were excluded from its programming. When Kenneth Anger spent the summer of 1962 on Coney Island, the buzz of teens' transistors on the beach gave rise to *Scorpio Rising*: he imagined new faces for bubblegum hits, using 13 pop songs to ironically portray heterosexual motorcyclists as gay cruisers. In *Christmas on Earth*, Barbara Rubin asked projectionists to tune to a random AM

[7] Ann Reynolds, "A History of Failure," *Criticism* 56, no. 2 (2014): 197.

station to cue up the euphoria of a nonmonogamous orgy. As radio's increasing portability expanded the places and situations in which people could listen, Americans formed new and distinct associations with pop hits that would come around the dial. Inspired by these mobile forms of listening, Anger and Rubin used pop songs to stir up audience associations and to hail countercultures historically excluded from mainstream imagery.

To examine the repurposing of pop songs on the radio for cinema screens, I extend Michele Hilmes's proposition that radio in the age of its digital reproducibility is a "screen medium."[8] Inspired by transistors' loosened moorings of sounds and sources, Rubin and Anger use the radio's lack of a screen in two key ways. First, they provoke listeners' imaginations: mainstream sounds solicit pre-existing associations, but the new images that unfold onscreen also elicit bodily responses in the here and now. As the filmmakers' sexually suggestive material raises new connections between films and listeners, they extend the theater of the mind to that of the body. Rubin and Anger also convert the radio to a screen medium—airing images alongside songs—to make visible homoerotic sex acts and activities that previously had been taboo among the overwhelmingly heteronormative messages of pop culture. *Christmas on Earth* and *Scorpio Rising* transform songs from hegemonic property to conduits for social change. They wield the commercial radio as an instrument to re-envision lives conspicuously absent from the air. Via projection instructions that placed radios in the audience or soundtracks that imported radio hits, filmmakers re-aired forms of oppression on the platforms that circulated it. Simultaneously, they broadcasted other ways of life and subjected commercial sounds to implicit and explicit critiques—such as *Christmas*'s ironic juxtapositions of toothpaste commercials and queer sex.

[8] Michele Hilmes, "The New Materiality of Radio: Sound on Screens," in *Radio's New Wave: Global Sound in the Digital Era*, ed. Jason Loviglio and Michele Hilmes (New York: Routledge, 2013), 49. While Hilmes refers to podcasts, we can also ask how avant-garde art and mainstream media capitalize on radio's invisibility to inspire images in consumers' minds.

These critiques largely have gone unheard: many film analysts consider radio sound—and the soundtrack altogether—a forgettable novelty. Critics have upheld film as an image-based medium since its inception; for example, Rudolf Arnheim and Walter Benjamin feared that the coming of sound to film would corrupt the art of visual montage.[9] Many American avant-garde filmmakers followed this critical charge, such as Maya Deren, who made silent films until 1947 and did not add a soundtrack for *Meshes of the Afternoon* (1943) until 1959. Deren helped to inscribe avant-garde film as a predominantly visual intervention into the ways that spectators contemplate everyday life. Stan Brakhage also pursued an image-only primordial vision. In his 1963 film *Mothlight*, he sandwiched moth wings, flowers, and leaves between two pieces of mylar.[10] The projector's light and motor enlivened these objects as a flow of images to regenerate material from everyday life. If these ephemera could revive spectators' experiences of nature, how too might found sounds on the radio be used in cinema to arouse sensory memories?

Sound and image may catch spectators' attention separately, but they are not separable. Found radio sound dials up Rubin and Anger's visual interventions to a fever pitch as they borrow from mainstream culture: their iconography both critiques heteropatriarchal American dreams and unveils paths to queerer ways of life. Their films become material artifacts of social memory in their combined images and found sounds, as pop songs in particular conjure images of deeply personal associations. For example, a spectator of these films might whisper to their partner, "that was our prom song." Or, take the songs that candidates play at campaign rallies to mobilize social movements, such as Franklin Delano Roosevelt's use of "Happy Days Are Here

[9] As Lutz Koepnick characterizes their complaints, sound "poison[ed] artistic integrity and formal rigor. It transformed film into an impure medium undermined the structural possibility of public discourse, and hence led to a precarious leveling of high and low art." Lutz Koepnick, "Benjamin's Silence," in *Sound Matters: Essays on the Acoustics of Modern German Culture*, ed. Lutz Koepnick and Nora M. Alter (New York: Berghahn Books, 2004), 127.
[10] P. Adams Sitney, *The Cinema of Poetry* (New York: Oxford University Press, 2015), 174; 158.

Again" to pave his road to election in 1932.[11] Songs that circulate on mass media direct the public eye in a variety of ways. In avant-garde films, the highly textured images that screen the radio become material artifacts of social memory as they conjure visions from the imagination.

Rubin and Anger use the radio to visualize the images or social associations that accompany spectators' everyday routines and pleasure trips. They reroute our relationships to songs and supply new images, often to produce irony and juxtaposition. Attending to these radio soundtracks alerts us to the imaginative pluralizations of sound and music. As found sounds complicate, supplement, and redirect these films' projects of re-visualization, our access to—and understandings of—the work that these films undertake will be enriched by raising the platform of their sonic politics. We need to listen better to these films. Our grasp of their stakes will be far more sophisticated once we hear how sounds revive and stimulate our imaginations—which, in an age of desensitizing media, are at risk of becoming ossified. As Rubin and Anger sample sounds from the air, they recapture strains, both literally and figuratively, of counterpublics. They seize the radio, a portable product of mass culture, to highlight how it conditions the masses to live heteronormative lives—and then they reroute it.

The Avant-Garde Plays the Radio: Invisible, Intimate, and Portable Dialogues

To draw spectators' attention to what transistor radios can signal in underground and aboveground scenes, I will chart a brief cultural history of radio listening that zeroes in on how its invisibility and portability sparked listeners' imaginations. Radio long has developed a believable range of sounds to initiate "viewers" into a "theater of the mind."[12] For Neil Verma, in

[11] Benjamin S. Schoening and Eric T. Kasper, *Don't Stop Thinking About the Music: The Politics of Songs and Musicians in Presidential Campaigns* (Lanham, Maryland: Lexington Books, 2012), 142.
[12] Neil Verma, *Theater of the Mind*: *Imagination, Aesthetics, and American Radio Drama* (Chicago: University of Chicago Press, 2012).

his study of radio plays between the 1930s and '50s, radio's technological innovations fueled imaginative connections between listeners, characters, and narratives. Orson Welles's "War of the Worlds" (1938), for example, used specific microphones in-studio to fabricate sound effects and accounts from "reporters" about Martian landings across the world. The program mimicked a live broadcast with interspersed commercials and reports, which caused some listeners to believe that the events actually took place.[13] But listeners' fears were piqued by subtle sonic techniques: Welles conveyed announcers' far-flung locations or urgent dispatches by adjusting the distance of microphones to speakers' lips and adding echoes. Such microphone techniques still achieve similar effects in crime serial podcasts today, and they long have sparked listeners' intimate connections with pop singers. For example, the "crooning" vocal style with closely-held mics and reverb enacts what Jacob Smith calls "the proximity of face-to-face interaction" from singer to listener[14]—which compelled many teens in the '60s to curl up next to their clandestine bedroom transistors or to sing into hairbrushes with heartfelt longing for the singer.

This longing to get as close as possible to the source of the voice arises because radio solicits us to wonder how sounds seem to occur in our same time and space. Radio technicians, DJs, and singers use microphones, earworm-laden programming, and vocal training respectively to craft sonic textures that arouse listener curiosity and create intimacy. And when avant-garde cinema plays the radio, the defamiliarizing images that obscure immediate visual meaning make us prick our ears to the sounds we hear: we parse their tunes and textures in order to make narrative and emotive sense of these images. We already have training in this from listening to

[13] David Goodman, *Radio's Civic Ambition: American Broadcasting and Democracy in the 1930s* (Oxford: Oxford University Press, 2011), 245-6. For Adorno, radio's "voice can dispense with the intermediary [of printed text …] which helps to clarify the difference between fiction and reality. It has a testimonial value: radio, itself, said it." Theodor W. Adorno, *Current of Music: Elements of a Radio Theory,* ed. and trans. Robert Hullot-Kentor (Frankfurt am Main: Suhrkamp, 2006), 81.
[14] Jacob Smith, *Vocal Tracks*: *Performance and Sound Media* (Berkeley: University of California Press, 2008), 85.

the radio. For, to borrow Susan Douglas's description of the acousmatic power of radio broadcasts, listeners took an active role in order "to fill in the other senses—taste, touch, and smell," senses that played "a free-ranging role in giving mass culture its public and private meanings."[15] Still, however much acousmatic listening may free up the imagination, radio artists nevertheless construct sounds that cue certain everyday experiences. For Clive Cazeaux, building on the work of Maurice Merleau-Ponty, sound is "part of the experiential fabric out of which the human being's engagement with the world is formed. As a medium to be manipulated by the writer or director of a radio drama, it is a form or a texture that is thoroughly intertwined with the physical and emotional events that make up the world of the play."[16] Sonic textures thus relay social fabrics.

Rubin's and Anger's found sounds layer textures that have visual, sonic, and kinesthetic effects on viewers. In their multisensory scenes of projection, it might be tempting to say that these avant-garde films make visible what radio listeners had to fill in—that they rein in radio's acousmatic and colliding textures by imposing images and meanings. But unexpected counterpoint resounds: for example, in *Scorpio*'s penultimate scene, Anger twists the devotional lyrics of Little Peggy March's "I Will Follow Him" to sadistic ends when he cuts between an arm-waving Scorpio, the protagonist, and shots of Nazi soldiers and swastikas. Scorpio urinates into a helmet as a communion offering, which recalls the film's earlier use of found footage of Christ and his disciples in *The Last Journey to Jerusalem* (1952). The stench of a urine-filled helmet and shock of Nazi images clash with March's bubblegum pop devotion. Similarly, perverse dictators and religious figures do not square comfortably with images of bike race fans.

[15] Douglas, *Listening In*, 4.
[16] Clive Cazeaux, "Phenomenology and Radio Drama," *British Journal of Aesthetics* 45, no. 2 (April 2005): 162.

Anger portrays dark and confounding shades of desire, where insatiability leads to violence and even death—he insists that pop has a death drive.

Figure 1.1 Still from the "Blue Velvet" sequence in *Scorpio Rising* (Kenneth Anger, 1963)

As contradictory images flood these avant-garde films, modes of radio listening inform how Anger's sexual parodies and Rubin's chance transistor play expand relations to onscreen bodies and attitudes. The sounds of pop crooners align with queer pastimes to multiply subtexts on-screen and in the mental memory reels of spectators who cruised along Route 66 or cruised in search for sex. In these films' tactile appeals to spectators' bodies through highly textured close-ups and fuzzy LP crackles, they highlight gendered and political undertones of contrapuntal, and not homogeneous, ways of life. Take *Scorpio*'s infamous "Blue Velvet" sequence with close-ups of multiple men zipping their jeans (Fig. 1.1). The intercutting codes their deliberate motions as "come hithers" to one another, and it brings out the desire in the love song's lyrics. Anger thus ushers forth illicit behaviors that fly under the radar of technology that has habituated consumers to heteronormative desires. In much of its history, radio has, as Jody Berland

writes, "accompan[ied] us through breakfast, work and travel […] to harmonise all the contradictions of domestic and working life."[17] To paraphrase Berland, the radio has long conditioned consumer capitalism. 1960s airwaves persuaded purchases of dishwashers and cars and piped in messages of the work-hard, play-hard American dream to direct both work and leisure. As Umberto Rossi elaborates, US broadcast history has "struggle[d] between freedom and control, where conflicting concepts of both terms have repeatedly clashed, and where freedom has often been turned into a prop in another fundamental component of American history and society—that is, the spectacle."[18] Rossi marvels at the sheer amount of visual spectacle that *invisible* radio listening can produce—a paradox that avant-garde film uses to re-envision what radio listening can do for society. In what follows, I restage each film's audiovisual interventions into such condition-setting: found sounds both recall and forge new affective connections between radio hits and listeners, who witness erotic and commodity desires through importations of the transistor. Using this condition-setter in 1963, avant-garde filmmakers juxtaposed currents present in everyday life: some that blared like commercials, and some that remained achingly silent—lost voices from the underground.

The Transistor Radio's Generation Shifts: Amplifying Youth Culture and Rock and Roll

The transistor emerged during a generational shift in entertainment consumption after World War II, when the scene of radio listening transformed from families gathered around communal living room sets to teens who trotted the radio out on beach trips and car rides. The source of this portability was Bell Labs, which invented the transistor in 1947 using germanium or silicon

[17] Jody Berland, "Radio Space and Industrial Time," *Popular Music,* Vol. 9, No. 2, Radio Issue (Apr., 1990): 179.
[18] Umberto Rossi, "Acousmatic Presences: From DJs to Talk-Radio Hosts in American Fiction, Cinema, and Drama," *Mosaic: A Journal for the Interdisciplinary Study of Literature* 42, no. 1 (2009): 91.

crystals that amplified radio signals. In the 1950s and '60s, American and Japanese electronics companies worked to replace portable radios' bulky vacuum tubes with the transistor. Texas Instruments marketed the Regency TR-1 at the end of 1953 (Fig. 1.2), and Sony introduced their TR-55 in 1955. Two years later, Sony made the tinier and more energy efficient TR-63, powered by a nine-volt battery and able to fit into a shirt pocket. In 1959, Japan exported 6 million transistors to the US, as Japanese firms like Toshiba imitated Sony's model.[19] The more portable transistors became, the more they caught on in American households.

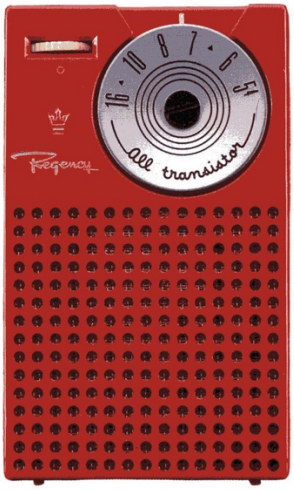

Figure 1.2 Regency TR-1 Transistor Radio. Image courtesy of the National Capital Radio & Television Museum

But portability was not the only factor in their success. While the technology was being perfected over time, radio stations and musicians were preparing an audience that would take great advantage of the transistor's portable and private listening situation. Teenagers yearned to tune in to the all-rock stations that were cropping up across the country in the latter half of the fifties. In many suburban homes, parents refused to play this unruly genre on the family table radio. But transistors equipped with ear plugs, as Michael B. Schiffer explains, "solved the rock and roll problem. By bestowing these radios as gifts, parents could wall off the offending music,

[19] Michael B. Schiffer, *The Portable Radio in American Life*, (Tucson: University of Arizona Press, 1991), 176; 207–8.

insulating themselves from its erotic drives. [… And] teenagers came to believe that they were screening off the rest of the world and creating their own."[20] For teenagers, portability was a portal to the music of their generation, rock and roll. Rock, and the ways teens listened to it, offered them badges of rebellion and independence. Empowered to choose their own music, teens used transistors to help increase the gap between themselves and their parents.

The case of rock makes evident that new generational listening modes were not precipitated by portable technology alone. DJs cultivated independent AM rock stations nationwide, such as Alan Freed, who popularized the term rock and roll on New York's WINS in 1955.[21] At first, teens tuned in to rock stations late at night in their bedrooms. But these independent beacons soon permeated more public spaces: as transistor speakers improved, teens not only could rebel against their families but also could unite as social groups who listened to rock and roll out of doors. WINS and other stations across America that played Top 40 hits became the soundtracks heard around high schools, drive-in movie theaters, and beaches. Thus, the transistor's symbiotic relationships with independent programming and rock and roll helped to make the emergence of youth culture audible and, ultimately, visible—especially through the automobile, a crucial vessel for suburban life. As radios became wired to cars, teens could broadcast their aural identities on car rides and in parking lots.

By 1963, 60% of American cars on the market were equipped with radios. As Douglas observes, "The powerful fusion of cars, young people, rock 'n' roll, and the radio meant that teenagers could—and did—use broadcast music to become squatters: they claimed territory that

[20] Schiffer, *The Portable Radio in American Life*, 181.
[21] Rock and roll, however, predates 1955: "rocking and rolling" already permeated the lyrics of rhythm-and-blues music by 1950. Lawrence N. Redd, "Rock! It's Still Rhythm and Blues," *The Black Perspective in Music* 13, no. 1 (1985): 36.

wasn't really theirs by blanketing that space with rock 'n' roll."[22] From storefronts to beaches, teens erected aural signposts of their rebellious independence through music that adults viewed as dangerous and sexually licentious. George Lucas's *American Graffiti* (1973) provides a slice of such a vision, where teenage boys blare rock from their cars while they drive around attempting to pick up teenage girls. Rock becomes a siren song of seduction, with appealing features not unlike those of souped-up custom cars. As a survey of teenage girls reported, rock, with "sexual overtones either in the lyrics, the orchestration, the style of presentation, or the rhythms […] frequently evoked romantic feelings which were sexually exciting." For this group of high school women, "this arousal sometimes gave rise to sex play and love making."[23] Both *American Graffiti* and this survey depict scenes of "aural cruising"—a term I borrow from Lucas Hilderbrand, who uses it to describe how projectionists spin the radio dial at random during *Christmas on Earth*. The transistor similarly allowed teenagers to cruise around town to pick people up who had like-minded interests: as teens broadcasted rock in cars or at the beach, these sites merged aural and sexual promiscuity.

Such aural cruising raised a potential use of transistors to form queer communities in predominantly mainstream spaces. For José E. Muñoz in *Cruising Utopia*, "queerness is essentially about the rejection of a here and now and an insistence on potentiality or concrete possibility for another world."[24] The transistor offered many ways to create worlds within worlds: as Schiffer suggested, teens' private listening could screen off the adult world and create a room of their own. As youth led the drive to use transistors to reclaim public spaces,

[22] Douglas, *Listening In*, 253.
[23] Patricia Schiller, "Effects of Mass Media on the Sexual Behavior of Adolescent Females," in *Technical Report of the Commission on Obscenity and Pornography*, Vol. 1 (Washington, D.C.: Government Printing Office, 1971), 193.
[24] José Esteban Muñoz, *Cruising Utopia: The Then and There of Queer Futurity* (New York: New York University Press, 2009), 1.

subcommunities flourished, such as queer cruisers who could broadcast their pop tastes to signal others with common interests to join their beachgoing or bike groups. For the gay community in the ’60s, the transistor amplified connections between sound and sex: ostensibly, aural cruising opened up more overt sites to cruise. At the beach, gay men could show up and show off—and more broadly, individuals and lovers alike could stop the clock on mundane vocational and domestic tasks and tune in to Top 40 stations that fueled dreams of a pop-filled, continuous present. While such dreams are temporary, soon quashed by concern-filled realities, they parallel how Muñoz imagines queer futurity, in which “we are not yet queer, but we can feel it as the warm illumination of a horizon imbued with potentiality.”[25] With its programming and portability, the transistor could transmit the sonic rays of such illuminations into spaces that might be imagined, and even redeemed, as queer.

By 1963, the transistor radio had helped to spread AM listening in cars and bedrooms across the country: it became the soundtrack to peoples’ lives, especially for emerging social groups. Its independent DJ-curated stations, psychedelic rock, and deviant scenes of listening set up technological and communal infrastructure for Anger and Rubin to pipe in new uses of public space. For the pocketable transistor offered listeners increasingly mobile channels to resist commercial programming: they could wield the radio as a social condition-setter, using forms of music to forge countercultural communities. Portability thus set the stage for Anger and Rubin to weaken radio’s conservative norms of broadcasting and to strengthen the signal of its liberatory potential. They rerouted radio platforms that had conditioned listeners to increase consumerist impulses—instead, they negotiated new channels of comeuppance. Anger and Rubin tune the

[25] Muñoz, *Cruising Utopia*, 1.

transistor from alluring commodity fetishes to elusive strains of queer desire, for illuminative screenings of another possible world.

Scorpio Rising and the Transistor: The Invisible and Portable Formation of Counterpublics

From a contemporary perspective, *Scorpio Rising* resembles many things at once: a documentary of motorcycle hobbyists, a series of music videos, and a trove of queer icons, from James Dean to memento mori. But to familiarize *Scorpio* as a music video, as many critics do, is to impose an ahistorical view that erases the transistor's radical role in the film. For like a DJ with a set list, Anger curates pop songs alongside disparate images to draw out desires closeted in mass culture. From Anger's first film *Fireworks* (1947), he began to juxtapose sex (especially homosexuality), violence, and politics. Then, at age 17, he starred as the victim of sadomasochistic Navy men. 16 years later in *Scorpio*, he stays behind the scenes as a closeted DJ who uses the transistor to shift pop from heterosexual norms to gay cruising. He pairs the antics of a Coney Island motorcycle gang of married men with hits that buzzed from nearby beachgoers' transistors in 1963.

Critics from Richard Dyer to Juan Suárez have hailed *Scorpio* as a queer film that uses love songs and cross-cutting to insinuate erotic relationships between bikers, as well as between bikers and their bikes. As Suárez remarks, Anger's "shots extend the gay spectatorial gaze [to mass-cultural products in…] a defamiliarizing reading that 'outs' the repressed homosocial and homoerotic significations of these specific popular texts."[26] Thirteen '60s pop songs cue up vignettes that in turn celebrate fashion, fetishes, and even cults. For example, "Wind-Up Doll" injects motorcycle parts with desire for their bodily stand-ins, and tension among bikers reaches

[26] Juan A. Suárez, "Pop, Queer, or Fascist? The Ambiguity of Mass Culture in Kenneth Anger's *Scorpio Rising*," in *Experimental Cinema: The Film Reader*, ed. Wheeler Winston Dixon and Audrey Foster (London: Routledge, 2002), 124. Suárez has nuanced the typical *Scorpio* music-video thesis in that the film "depicts mass culture as a site of dispute in which meanings are not fixed or imposed by media producers" (1289).

a fever pitch to the pulsing surf rock of "Wipeout" when the culminating race ends in death. The film is consumed with the mythology of death: Anger superimposes Thanatos, the Greek god of death, onto men and motorcycles. As he describes it, "The Power Machine seen as tribal totem, from toy to terror. Thanatos in chrome and black leather and bursting jeans."[27] Crucial to *Scorpio*'s homoerotic dances with death, Thanatos also denotes Freudian "ego or death instincts" that often collide with Eros's "sexual or life instincts."[28]

By juxtaposing beefcake bikers with sunny pop tunes, Anger frames them as symbols of clashing worldviews: he pits auto fetishism and nonchalant attitudes about death against society's impulses to sweep homosexuality under the rug. For Bill Osgerby, the film depicts "the edgy homoeroticism of biker culture, [with] hyperbolic symbolism invoking the macho world of chrome and leather in a sardonic commentary on American mythologies of glamour, power, and masculinity."[29] These symbols are fetishized through ironized love songs, wherein "the ambiguities of rock 'n' roll's social meaning [achieve] a sophistication and depth wholly beyond the reach of the feature narratives of the time," as David E. James proclaims.[30] *Scorpio* subverts heteronormative pop not only to express queer desire but also to expose suburban conservatism. Using love songs, Anger examines Eros in an era when queer people were often jailed and even beaten to death when they gathered in public—even if they had not engaged in erotic acts. Importantly, *Scorpio* ends with the death of one biker, to raise the case that Thanatos often claims subaltern victims. But along the way, many of the film's symbols juxtapose love and

[27] Kenneth Anger, *Magick Lantern Cycle* (New York: Film-Makers Cinematheque, 1966), 3.
[28] Sigmund Freud, *Beyond the Pleasure Principle*, trans. C. J. M. Hubback (London: The International Psycho-Analytical Press, [1920] 1922), 1955.
[29] Bill Osgerby, "Full Throttle on the Highway to Hell: Mavericks, Machismo and Mayhem in the American Biker Movie," in *Underground U.S.A.: Filmmaking Beyond the Hollywood Canon*, ed. Xavier Mendik and Steven Jay Schneider (New York: Columbia University Press, 2012), 128.
[30] David E. James, *Rock 'n' Film: Cinema's Dance with Popular Music* (New York: Oxford University Press, 2016), 66.

death. From James Dean to Hitler, and even Jesus Christ, Anger's edgy montage audiovisually entwines Eros and Thanatos at the specific intersections of queer desire and mass-cultural clichés.

Popular icons and songs supply the images, words, and sounds that form a new queer language of desire in *Scorpio*. Anger impresses this language upon spectators with literal renderings of images and lyrics, but he also encourages seeing and hearing between the lines. For example, as "My Boyfriend's Back" accompanies what looks like documentary footage of a biker in a garage, sound-image relationships seem aloof, not necessarily imbued with radical potential. At the same time, the lyrics imply the motorcycle seat the man fixes and fondles as a feasible male-stand in, an association primed by the film's repeated shots of jean-clad asses. Throughout the film, Anger oscillates back and forth between songs intentionally curated to, and those less adhered to, the images. Thus, queer subtexts drip through lingering shots of buttocks *and* gleaming motorcycle parts. To introduce the bikers' erotic sides, Anger begins *Scorpio* with Ricky Nelson's 1963 cover of "Fools Rush In (Where Angels Fear to Tread)," which plays as a man tends to his motorcycle. As the camera hugs the man's tight jeans, cuts correspond with happy beats as in a Hollywood musical to frame his devotion to his bike. Meanwhile, the lyrics suggest that the singer-narrator rushes into a relationship to satisfy physical sensation over mental judgment. Taking these lyrics literally would inflect his motorcycle as a fetish for joy riding over physical safety. But Anger takes this collision of Eros and Thanatos further when he implies a queer lover with a lengthy shot of a pair of leather boots. One is knocked down and a length of chain ominously stretches next to them. The shot betrays careful composition: the chain clings to the boots' contours, and the duration of the shot creates a knowing departure from the

motorcycle parts previously featured. These boots also provide the link that introduces the film—a Scorpio icon that cuts to a leather jacket emblazoned with the title (Fig. 1.3).

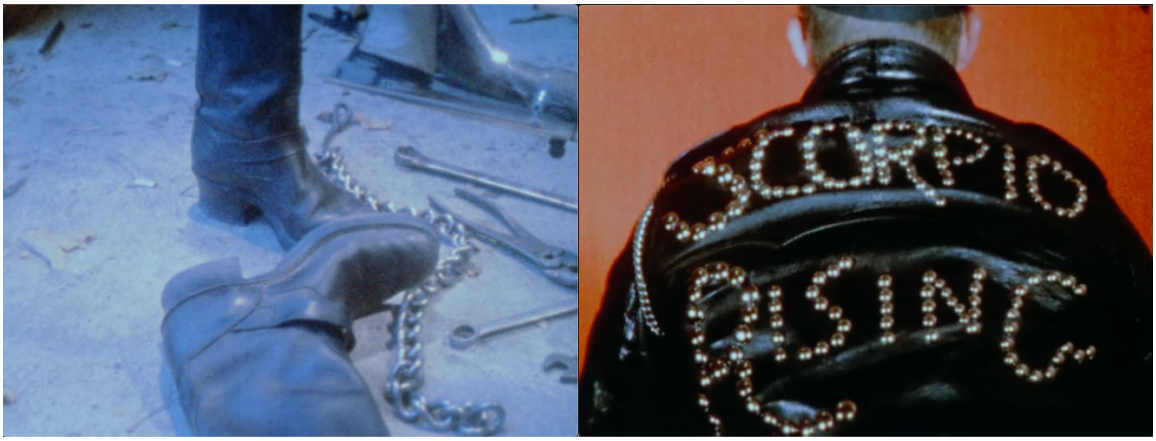

Figure 1.3 Stills from the opening of *Scorpio Rising* (Kenneth Anger, 1963)

With queer iconography from its opening, the film sparked an obscenity case in L.A. after exhibitor Michael A. Getz was arrested at The Cinema Theater in spring 1964.[31] A witness for the prosecution, Methodist church education director Mr. Day, pronounced that he "knew the film was homosexual right from the first few scenes, which were portrait shots of jazzed-up motorcycles." And yet, this self-proclaimed film buff "could not recall the spectacular motorcycle wreck that climaxed the film."[32] Instead, Day fixated on the multiple penises he thought he saw in the party-turned-orgy scene accompanied by Kris Jensen's "Torture." Day constructed an audiovisual narrative that implicated the film's anti-conservative sensibilities and religious and Nazi satires.[33]

The case was dropped when the news came out that genitals were merely simulated—unlike the breast-baring *Flaming Creatures*, which experienced more prolonged arrests and bans. The prosecution's claim that the penis-filled scene was an orgy turned out to be a joke from one

[31] Art Seidenbaum, "Movie Censorship War Flickers Up Once More," *Los Angeles Times* (April 20, 1964).
[32] Fred Haines, "Art in Court: 1. City of Angels vs. Scorpio Rising," *Nation,* September 14, 1964, 124.
[33] For more information about the reaction of the American Nazi Party, which "threatened to sue Anger for defamation of character," see R.L. Cagle, *Scorpio Rising: A Queer Film Classic* (Vancouver: Arsenal Pulp Press, 2019), 105.

of Anger's extras, who arrived "with a rubber dildoe [*sic*] from a Times Square novelty shop."[34] As the *Underground Film Journal* reported, "the only 'crime' here is that some imagery appeared to have some homosexual overtones." But it also raises the rub that "in 1964, it was a crime to even appear to be gay."[35] At this impasse, antagonists accused Anger of sexually prurient images and cheeky lyric play. Even sympathetic critics like Sheldon Renan puzzled over his queer audio-vision: "'Torture' really takes on new meaning when Anger plays it over the scene of a rough homosexual party."[36] Through the hit soundtrack's hypnotic pull on conservative and progressive viewers alike, Anger launches the audiovisual language of what quickly became a queer cinema classic.

Some critics, however, miss the historical specificity of this nascent audiovisual language. To celebrate the film's innovative musical montage, writers often perceive Anger's intervention from an anachronistic perspective—as a precursor to the music video.[37] This follows from his episodic musical structure, which has garnered high praise but cost $8,000 to secure the song rights in order to join the festival circuit. Even though this "about doubled my budget," Anger says, "the music was an integral part of what I wanted. I am a pioneer in using music this way, along with Bruce Conner, who began using pop music in a similar way around the same time."[38] Many scholars consider Conner and Anger "the progenitors of the music video" for their

[34] Fred Haines, "Art in Court," 123–24.
[35] Mike Everleth, "Scorpio Rising: The 1964 Los Angeles Obscenity Trial," *Underground Film Journal* (June 18, 2017).
[36] Sheldon Renan, "Scorpio Rising," *Daily Californian*, October 03, 1969.
[37] See, for example, Jeremy Carr, "Scorpio Rising," *Senses of Cinema: Cinémathèque Annotations on Film 74* (March 2015).
[38] Kenneth Anger quoted in Scott MacDonald, *A Critical Cinema 5: Interviews with Independent Filmmakers* (Berkeley: University of California Press, 2006), 41. Conner's 1961 short *Cosmic Ray*, for example, investigates juxtapositions of love and war such as female nudes and atomic bombs with Ray Charles' "What'd I Say." Anger and Conner first used classical music an alleged music video aesthetic in *Fireworks* (1947) and *A MOVIE* (1958), respectively. They experimented with pop again in *Kustom Kar Kommando* (Anger, 1965) and *Breakaway* (Conner, 1966).

experimental shorts that presage music video aesthetics with quick-cutting associations of images, rhythms, and lyrics.[39] Anger corroborates this story by confirming that "the songs are an ironic commentary on what's going on in the picture. They're a kind of narration."[40] Songs help construct the wind-up to the bike race, but lyrics and images also collide in witty one-offs. For J. Hoberman, this structure breaks ground for "*Easy Rider* and *L.A. Plays Itself, American Graffiti, Mean Streets*, and every MTV video ever made."[41]

Like music videos, *Scorpio* uses audiovisual citations such as costumes and current events in a similarly contrapuntal manner. But these also long have been features of avant-garde film. For Carol Vernallis, music videos tend to produce many sync points—when an image matches a word or musical beat, and leaps out of the video's visual texture to give spectators a corresponding emotional surge.[42] Instead, Anger's incorporations of whole pop songs lead to "un-empathetic [… and multiple] relations" that often occur in avant-garde film. This is not to say that his audiovisual language precludes spectators from experiencing emotions, but rather that the forces of his camera, intercut images, and overlaid pop songs often "remain disjunct." Nevertheless, as Vernallis observes, some sequences trigger "ultra-charged affect."[43] Unlike

[39] Scott MacDonald, *A Critical Cinema 5*, 41. See also Juan A. Suárez, "Pop, Queer, or Fascist?", 132, and P. Adams Sitney, *Visionary Film: The American Avant-Garde, 1943-2000* (Oxford UP, [1974] 2002), 108.
[40] Anger quoted in MacDonald, *A Critical Cinema 5*, 41.
[41] J. Hoberman, "Fear and Trembling at the Whitney Biennial" [*The Village Voice*, June 16, 1987], in *Vulgar Modernism: Writings on Movies and Other Media* (Philadelphia: Temple University Press, 1991), 175. *Scorpio* certainly has markers of what film scholars call a compilation score, which for Claudia Gorbman first appears in *The Graduate* (1967) and *Easy Rider* (1969) due to the increasing entwinement of the film and music industries (Claudia Gorbman, "Hearing *Thelma and Louise*: Active Reading of the Hybrid Pop Score," in *Thelma & Louise Live!: The Cultural Afterlife of an American Film*, ed. Bernie Cook (Austin: University of Texas Press, 2007), 65–90). Jeff Smith discerns seeds of the compilation score even earlier, in *Blackboard Jungle* (1955) and *Rock Around the Clock* (1956). These films used rock soundtracks to appeal to teens, but only by the late 1960s did films incorporate preexisting pop-music compilations as a commercial practice (Jeff Smith, *The Sounds of Commerce: Marketing Popular Film Music* (New York: Columbia University Press, 1998), 156–172).
[42] For more about the theory and examples of music video sync points, see Carol Vernallis, *Experiencing Music Video*: *Aesthetics and Cultural Context* (New York: Columbia University Press, 2004), 124.
[43] Carol Vernallis, "Avant-Gardists and the Lure of Pop Music," in *The Music and Sound of Experimental Film*, ed. Holly Rogers and Jeremy Barham (New York: Oxford University Press, 2017), 261; 264.

music videos designed to sell the song's emotional experience and singer's stardom, though, avant-garde films with contrapuntal sound provoke diverse personal reactions to each feature or symbol. *Scorpio* entreats spectators to explore their own emotional charges to recontextualized images and songs: first we notice their pre-existing meanings in pop culture, and then we witness the ways in which they might be redefined.

To take stock of how Anger gives voice to queer icons, we must turn to the platform that most readings of *Scorpio* ignore in their impulse to familiarize it as a music video—the transistor. As the platform that inspired the film and guided its aural reception, the transistor is what mediates between queer and straight, and auto fetishism and homoerotic desire. Recalling the ways that it shaped queer communities will enrich our understanding of the film's place in mass culture and the transistor's impact on American listeners' imaginations. For Anger's queer icons, ironized songs, and sadomasochism are ignited by this engine that regularly crosses Eros and Thanatos over the airwaves. The following sections will recount how Anger used the transistor to aurally cruise for queer desires in *Scorpio.* First, the transistor is the portable device that allows Anger to shift pop music from the province of car radios and heterosexuality to Coney Island cruising. Then, he subverts the role of a mass-cultural DJ: he carefully curates the film's soundtrack. In all, he maintains the invisible power of radio listening but also transforms it: he does not "out" his use of the radio but keeps it behind the screen to trigger surprising effects. Cloaked behind the cabinet of seemingly everyday acts, his cultural commentaries swim both with and against the mainstream.

From Cars to Queers: Coney Island Transistors Create a Queer Cinema Classic

To return to *Scorpio*'s roots in radio is to return to the site of its creation. In early summer of 1962, Anger cruised on Coney Island's boardwalks and beaches surrounded by teens who played rock on their transistor radios.[44] As beachgoers preened around him, he let his imagination run wild to this soundscape. Then, under the Cyclone roller coaster, he met a motorcycle gang who let him film them in Brooklyn during three months of weekends.[45] Anger reported that these men were straight "cowboys" who would eventually trade bikes for cars and settle down with their wives in the suburbs.[46] As these Coney Island scenes conflated gay and straight cruising, mass and cult culture, suburban and city life, and hobby and duty, Anger used the transistor to further cross their wires.

Cruising Coney Island, Anger took up two machines, motorcycles and transistor radios, to reroute mass cultural trends connected to youth and car culture. When Anger moved to Europe in the early 1950s, he left behind an American public that primarily gathered around home radio sets for entertainment. For Steve Wurtzler, these living-room radios mimicked the phonographs they replaced "to make the middle-class parlor a 'safe' site for consumption of the best of urban culture."[47] But when Anger settled back in the US in 1961, economic and sonic booms had fueled generational divides and an increasingly mobile suburban culture. As Anger told *Spider Magazine*, "What *Scorpio* represents is me cluing in to popular American culture after having been away."[48] To do so, he mimicked Coney Island teenagers and bikers who reveled in the radio

[44] Suárez, "Pop, Queer, or Fascist?," 124
[45] As told by Anger to Scott MacDonald, *A Critical Cinema 5*, 39.
[46] Elenore Lester, "From Underground: Kenneth Anger Rising," *The New York Times*, February 19, 1967.
[47] Steve J. Wurtzler, *Electric Sounds: Technological Change and the Rise of Corporate Mass Media* (New York: Columbia University Press, 2007), 146.
[48] Kenneth Anger, "An Interview with Kenneth Anger, Conducted by *Spider Magazine*," *Film Culture* 40 (Spring 1966): 68.

now freed from the confines of the living room. But Anger was wary of its content: as Paula Rabinowitz argues, he

> found the sugary lyrics of early 1960s pop songs menacingly strange; blue velvet was scarier than black leather. For Anger, the icons of working-class American male popular culture—cars, motorbikes, leather jackets—all of which suggested a deeply homoerotic attachment to certain objects were intimately tied to popular music's ironic send-up of heterosexual romance.[49]

This is *Scorpio*'s standard reading: Anger playfully appropriates the culture industry so as to subvert it. But Anger participates more deeply in mass communication, not least as a consumer. Via the transistor's portable and invisible sparks to the imagination, *Scorpio* re-programs mass culture from within its forms and scenes. Coney Island's motorcycles and transistor radios let Anger play with the ways that ubiquitous American pop songs affected the youth market.

To see the effects of such play, we return to *Scorpio*'s opening scene with Ricky Nelson's cover of "Fools Rush In (Where Angels Fear to Tread)."[50] Nelson "was twice as pretty as Elvis and every bit the teen idol," and his version had a familiar rockabilly style with guitarist James Burton's picking that was sure to send heads bobbing. 1960s listeners who tuned in to Nelson on Top 40 would have heard tidbits about his life from DJs such as his frequent motorcycle rides around L.A. with Burton.[51] This fact buoys the scene's joyride feel and its undoing, as a pretty boy's song is given to a tough boy whose cruising—both on a bike and for men—is bound up with danger. For the 1960s cruiser, love did not traffic in teenybopper screams: if it caught the attention of cops, it could result in death. To sound the depths of this risky collision of Eros and Thanatos, Anger wrested the radio from beaches and cars and gave this soundtrack to bikers. But

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[49] Paula Rabinowitz, *Black & White & Noir: America's Pulp Modernism* (New York: Columbia University Press, 2002), 201.
[50] R.L. Cagle reminds us that the 1963 recordings of "Fools Rush In" and "Blue Velvet" that Anger used were standards that surfaced in previous decades but were "remade for a teen audience" (*Scorpio Rising*, 146). Nelson's version, for example, was much more successful than early versions by soul singer Brook Benton (1947) and Frank Sinatra (1960).
[51] David Fricke, "Ricky Nelson: TV's Teen Dream Knew How to Rock," *Rolling Stone*, February 13, 1986.

the transistor not only served to broadcast the dangers of queer life—it also helped Anger to reveal the hidden dangers in pop tunes.

When Anger returned to the US in 1962, pop appeared to power the machine that drove young people to buy into the American dream. As Sheldon Renan reported, "Anger believes that this new generation has 'demon brothers' that are trying to communicate with the young by influencing popular media."[52] *Scorpio*'s thirteen tracks reflect how heteronormative love songs were tethered to the whims of consumer culture, dripping with what Anger called sugary lyrics. Many of these songs present love as a commodity, as in the line "bluer than velvet were her eyes." In *Scorpio*, these songs give rise to a theater of the mind that exposes a US leisure culture that is inextricably tied to commerce. These songs broadcast consumerist appeals that teen groups could interpret in a multitude of ways according to their hobbies, such as a love song taken from adoration for high school crushes all the way to, in Anger's case, motorcycle racing. He hijacked pop from the commercial circuit, replaying mass culture on the instrument of its own making to expose the demon brothers hiding in the radio. But he especially used pop to draw out queer attachments to car culture—desires hiding in plain sight that the radio could amplify.

Anger investigated ties between pop, driving culture, and gay men in multiple films: his 1965 film *Kustom Kar Kommando* uses pop on the transistor in much the same way as *Scorpio*. But *KKK* is in color—shortly after the L.A. trial in 1964, Anger won a $10,000 Ford Foundation grant to this end.[53] The short film features a man in powder blue clothes who lavishly polishes a car set against a bubblegum pink background. Anger had planned a feature-length exploration of

[52] Sheldon Renan elaborates on Anger's phrase in "Scorpio Rising," *Daily Californian* (October 03, 1969).
[53] Other grant winners included Bruce Conner, Stan VanDerBeek, and Helen Levitt. "12 Moviemakers Get Ford Grants: Creative Artists to Receive $115,500 In Pioneer Move," *The New York Times*, March 16, 1964.

the custom car as "a poetic extension of personality, an accessible means of wish fulfillment," but as he ran out of money, the film only lasts the length of the Paris Sisters' cover of Bobby Darin's 1959 "Dream Lover."[54] Nevertheless, *KKK* resumes *Scorpio*'s use of the transistor as a platform to critique and re-imagine contemporary songs: in 1964, the Paris Sisters changed Darin's lyrics to "I want a boy to call my own," and Anger's 1965 film capitalizes upon this rebranded literalization to make his double entendres pop. Like *Scorpio*, *KKK* amplifies the weight of the transistor's influence, especially as its US sales in 1965 had climbed to $12 million per year—up from $9 million in 1961.[55]

1963 was a pivot point between AM and FM radio, as it debuted the first FM car radios. Unlike monaural AM, FM's stereo sounds had more complex, layered textures. Overcrowding on AM by the late '50s meant that FM offered space for underground stations, causing many progressive rock listeners to flock to FM. FM receiver sales quintupled between 1960 and 1966.[56] While the transistor began to fade out in the '80s due to the boom of boomboxes in the '70s, in the early '60s it was at its height. Thus in 1963, seeing ties from the transistor to youth and driving culture and queer desire, Anger took on a pivotal linking role as DJ.

A Deviant Mass Cultural DJ: The Invisible Voice Behind the Images of *Scorpio Rising*

In *Scorpio*, Anger directs the course of aural cruising like a DJ, first in the way that he plays Top 40 hits back-to-back, but also more metaphorically, in the way that DJs' invisible voices orient

[54] Anger, quoted in P. Adams Sitney, *Visionary Film*, 110.
[55] After completing *KKK*, Anger abandoned cars and turned to the occult in *Invocation of My Demon Brother* (1969) and *Lucifer Rising* (1972). This change in subject matter at the turn of the decade also saw Anger abandon the transistor as a device. *Invocation* has a Moog-synthesized score by Mick Jagger that Anger pulls into the frame—unlike the invisible transistor in his early '60s films—when he inserts footage of Jagger performing at a concert. This diegetic acknowledgement of the soundtrack's performer begs the question: why did Anger abandon his project to eroticize pop culture in the late '60s and early '70s? One possibility is the transistor radio's dwindling popularity.
[56] Douglas, *Listening In*, 256–7; 267.

listeners' experiences. A DJ curates set lists from listener feedback, building communities through an invisible voice that functions as an intimate guide to regional popular hits. With their congenial patter, DJs seem to address only one listener even though they speak to everyone.[57] Radio's invisible listening situation provokes listeners to connect to their inmost emotions during even the most commercial songs: as Marc Fisher puts it, "Radio memories, because they are incomplete, lacking images fixed in time and place, reach into our hearts."[58] Listeners can believe that DJs choose songs only for them, as song lyrics and moods readily align with individual thoughts and feelings.

Anger does not speak in *Scorpio* but replaces his curatorial voice with images that build connections between bikers, parties, and queer icons. To provoke radio memories from listeners' imaginations, he cues images to suggest and divert moods, but his editing does not over-program connections between lyrics or musical affect. In so doing, he parallels a national shift in 1950s and '60s radio programming from unification to individual coalition-forming. Some Top 40 DJs spurred countercultures of multiracial and multicultural exchange because, writes Douglas, "such hybridizations could flourish" under radio's invisibility.[59] In a time when DJs interwove music and patter influenced by Black culture, youth countercultures began to reject insular suburban attitudes toward race and homosexuality. Anger's own soundtrack evidences this cultural shift, as Ray Charles' "Hit the Road Jack" and Motown singers Martha and the Vandellas' "(Love Is Like a) Heat Wave" accompany scenes of Scorpio as he primps at home. Douglas provides an in-depth account of the "racial cross-dressing" that caused tension among rock and roll AM radio

[57] Martin Block, creator of Make Believe Ballroom on WNEW, used announcers who spoke in an informal and intimate manner modeled after FDR's fireside chats to create "the illusion that this was one person speaking to one listener at a time." Marc Fisher, *Something in the Air: Radio, Rock, and the Revolution That Shaped a Generation* (New York: Random House, 2007), 12. Douglas also notes the "feel[ing] that [listeners] were mutually present" (*Listening In*, 230).
[58] Fisher, *Something in the Air*, 313.
[59] Douglas, *Listening In*, 222.

stations, but she does not detail the sexual cross-dressing that the airwaves equally enabled.[60] With the exponential growth of independent radio stations across America,[61] queer DJs certainly could have helmed them, but that history is largely unwritten as of yet.[62] That many histories of radio remain silent on the issue of queer DJs in the 1960s makes it all the more significant that, in 1963 in the adjacent world of avant-garde film, Anger takes on a curatorial role as a DJ.

To consider Anger as a DJ who gives voice to images—beyond the ahistoricizing role of music video director—is to take seriously how the transistor helps him to charge images with queer longing. It is not easy to account for this, however, because Anger hides the radio behind the screen. Anger does not "out" his use of found sound—we do not hear crackles that would evidence his placement of "needle-drop recordings of rock and roll 45s" back-to-back on the soundtrack.[63] His clean-sounding importations of the songs seem to erase all traces of his radio use. As a result, hiding the device can cause the images to appear at once as comical and commonplace. For some spectators, the soundtrack amplifies the humor, but others tune it out as pop songs that normally accompany scenes of other everyday activities, from car rides to beach vacations. Such disparate reactions result from a built-in disjunction between the soundtrack and the images. Because Anger appended the songs to silent footage, Jay Beck recounts, spectators are

> asked to question the working relationship between the music and the narrative. As Ed Lowry pointed out, the film is viewed as an open text, one in "which every signifier is cut loose from its culturally normative signified and presented as simultaneously comical and

[60] Douglas, *Listening In*, 219–255.
[61] As Douglas recounts, "In 1948 there had been 1,621 AM stations [… which in 1960] doubled, to 3,458"; in *Listening In*, 220.
[62] For example, we know little about the gay Black DJs who spun disco with "soul and Philly (Philadelphia International) records, fazing them in and out, to form uninterrupted soundtracks for nonstop dancing." Anthony Thomas, "The House the Kids Built: The Gay Black Imprint on American Dance Music," in *Out in Culture: Gay, Lesbian, and Queer Essays on Popular Culture*, ed. Alexander Doty and Cory K. Creekmur (Durham: Duke University Press, 1995), 439.
[63] Ed Halter, "A Listener's Guide to Kenneth Anger's *Scorpio Rising*," *Walker Art Center* (August 18, 2015).

> dangerous." By doing so Anger was able to create a polemical relationship between both the songs and the images as well as between the songs themselves.[64]

In some interviews, Anger has alluded that the songs inspired the film.[65] But other sources reveal that his audiovisual crafting went back and forth. As Anger relayed to P. Adams Sitney about the dress-up scene, "he had completed the selection for all the other songs and needed something to go with this episode […] Anger turned on his radio and exercised his will. Out came Bobby Vinton's 'She wore blue velvet,' which when joined to the episode created precisely the sexual ambiguity Anger wanted in this scene."[66] Anger chalked this up to the "magick" he was devoted to as a member of the Thelema sect.[67] But he mimicked the way his fellow Coney Island beachgoers spun the dial for ideal songs to set the mood. Despite his claim of magic, the song was popular on Top 40 and would come on the air often.[68] Like a DJ, then, Anger made a playlist from public tastes.

Figure 1.4 Still from the "Blue Velvet" sequence in *Scorpio Rising* (Kenneth Anger, 1963)

[64] Jay Beck, *Designing Sound: Audiovisual Aesthetics in 1970s American Cinema* (Rutgers University Press, 2016), 130 and Ed Lowry, "The Appropriation of Signs in Scorpio Rising," *Velvet Light Trap* no. 20 (Summer 1983): 42.
[65] See, for example, Anger quoted in MacDonald, *A Critical Cinema 5*, 41.
[66] Sitney, *Visionary Film*, 104-5.
[67] In his notes to the film, Anger quoted Thelema founder Aleister Crowley, who believed that a magician can engage music, a tool more powerful than words, to "*have a real effect in exalting the consciousness of the magician to the proper pitch*." Kenneth Anger, *Magick Lantern Cycle* (New York: Film-Makers Cinematheque, 1966), 3.
[68] As Douglas recounts, AM DJs often "played the same twenty songs every hour" (*Listening In*, 258).

Anger's choice of "Blue Velvet" earns perhaps the most commentary from today's critics and contemporary moviegoers alike for the episode's music video aesthetics. As it foregrounds slow and deliberate action, the song offers a space of sexual reverie and contemplation within an ostensibly linear narrative.[69] The boudoir number coordinates careful mechanical work with the zipping of jeans and buckling of belts, but also with the gender discord of "*she* wore blue velvet" (Fig. 1.4). As the bikers get dressed in front of the camera, it pans slowly over their bodies in medium close-up, focusing especially on torsos. Significant to Beck's point about audiovisual disjunction, footage of a blonde who puts on a leather jacket was not filmed in New York. After the filming was mostly done, Anger found a model from L.A.'s Athletic Model Guild, which sold physique photos that predated hardcore magazines.[70] The blonde's leather jacket and blue jeans indeed look the part.

In the way that Anger dressed up popular music as queer, men would sometimes "pass" in screenings for upper-crust audiences. In 1967 at the Gate Theater on Second Avenue,

> A matron with neatly bouffed gray hair turned to her husband in the lobby and commented on a scene in the movie, the 'dressing adagio,' in which the camera lingers on a young cyclist. Photographed in rich blue tones, while a rock 'n' roll record, "She Wore Blu-ue Velvet," provides an ironic background, he slowly dons blue work shirt, jeans and cyclist's gear with the hieratic gestures of a priest donning religious vestments or a transvestite putting on drag. Apparently oblivious to the homoerotic charm of the scene, the matron mused, 'So you see this guy putting on his shirt, and he buttons it, then he puts on his pants, then he puts on his fancy belt and he buckles it—so what's to see?' Her husband shrugged noncommittally.[71]

This woman's experience arises from Anger's hidden device, as he takes mass culture for a spin with new images that spectators in turn spin into other mythologies. Anger creates a playlist of

[69] See, for example, Cagle, who narrates slow dressing such as a man who dons "a heavy leather jacket, covering his dramatically lit muscular back" and a man who stands as the camera "traces a line up his body" (*Scorpio Rising*, 17–18).
[70] As told by Anger to MacDonald, *A Critical Cinema 5*, 38.
[71] Rosalyn Regelson, "Where are 'the Chelsea Girls' Taking Us?" *New York Times*, September 24, 1967.

songs loosely connected with characters and narratives and themes, resulting in "enigmas to be figured out." But as he asserts, "My films are based on my lifelong research […] if you can pick up on the results, fine; it's all *there* if you want to explore it—but you may have to do some research of your own."[72] While not direct imprints of his psyche or ideas, Anger's imagery arises from personal and cultural mythologies. Although *Scorpio* predates the 1970s phenomenon of mixtapes, his songs and icons accord with Matias Viegener's point that "predigested cultural artifacts combined with homespun technology and magic markers turn the mix tape to a message in a bottle. I am no mere consumer of pop culture, it says, but also a producer of it. Mix tapes mark the moment of consumer culture in which listeners attained control over what they heard, in what order and at what cost."[73] Here, Anger's filmed and found footage are his "magic markers" that help his curated playlist of pop songs to carve alternative paths through cultural phenomena. Like the queer communities that marked out homosocial spaces on Coney Island with the transistor, Anger's playlist operates with the mixtape logic that flirtation prompts people to broadcast or exchange musical tastes. Anger capitalizes on the idea that we each have a mental mixtape that cues up images and moods for certain songs. But he had to dress up the transistor with new images in order to truly tune it queer.

Dressing Up the Radio: Anger's Radical Drag

Beyond spinning popular tunes, Anger extends his role of DJ to inject new images into mass cultural circuits. He plays dress-up with songs to give them purchase in new communities—to either play up their Eros or ego-driven Thanatos. The latter occurs when the model dons his

[72] Anger quoted in MacDonald, *A Critical Cinema 5*, 35.
[73] Matias Viegener quoted in Thurston Moore, *Mix Tape: The Art of Cassette Culture* (New York: Universe Pub., 2005), 35.

leather jacket to "*She* wore blue velvet," which Anger calls "a deliberate gender switch that suggests that he's as vain as any girl would be."[74] Besides juxtaposed lyrics, however, Anger also inserts homoerotic desire into what David Curtis calls a Hollywood package.[75] Anger makes associations through the jarring juxtapositions of Soviet montage, but he smooths them out through classical Hollywood models of psychological and narrative storytelling.[76] For example, "He's a Rebel," "I Will Follow Him," and "Point of No Return" intercut and conflate Scorpio and Hitler through associational montage. For Sitney, this montage especially inflects "lyrics—ironic because they are 'found objects' from popular culture—[that] comment upon and qualify our thoughts about the visual images."[77] It is curious that Sitney insists that Anger's songs are already "ironic" because of their pop culture origins, for these found sounds become especially ironic as *Scorpio* plays audiovisual dress-up.

Scorpio, like drag, integrates aspects of mainstream iconography that often suppress queer cultures in the outside world. For Vincent Brook, "the 'radical drag' that emerged from the identity political movements of the 1960s" is a crucial touchstone for the film: "This hybrid form replaced the elegant couture of the 'queen' with a harder-edged, bisexual variant: mustached men in slingbacks, jock straps, fishnets, and bikers' jackets. 'Radical drag,' as Mark Finch observes, 'had less to do with masquerade and was more about a reckless mix of gender signs.'"[78] Many scholars note how *Scorpio* mixes gender signs, from heteronormative interpretations to

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[74] Anger quoted in MacDonald, *A Critical Cinema 5*, 41.
[75] Curtis, *Experimental Cinema* (New York: Universe, 1971), 63.
[76] But some, like Gregory Markopoulos, derided *Scorpio* as "lack[ing…] one of the great requirements of this greatest art, motion pictures: the need for immediate visionary speculation such as is found in the simplicity of Genet's *Un chant d'amour*, in the magnificence of Stan Brakhage's work" (*Film as Film: The Collected Writings of Gregory J. Markopoulous*, ed. Mark Webber (London: The Visible Press, 2014), 136 [quoted in P. Adams Sitney, *The Cinema of Poetry*, 233].
[77] Sitney, *Visionary Film*, 103–4.
[78] Vincent Brook, "Puce Modern Moment: Camp, Postmodernism, and the Films of Kenneth Anger," *Journal of Film and Video* 58, no. 4 (Winter 2006): 9. Brook quotes Mark Finch, "Rio Limpo: *Lonesome Cowboys* and Gay Cinema," in *Andy Warhol: Film Factory*, ed. Michael O'Pray (London: BFI, 1989): 112.

homoerotic subversions of mass culture icons. Meanwhile, dressing in drag and lip-syncing remain crucial to perform queer identity as a sliding scale. While no one lip syncs in *Scorpio*, there is a degree to which Anger lip-syncs new identities for heteronormative love songs: as in drag, he remixes pronouns, clothes, and desire.

Anger introduces a new way to tune the transistor beyond listeners' typical associations of pure Eros with prom songs. Dialing pop towards Thanatos, he transforms how gender and desire appear. As for the first, he "render[s] the subcultural codes of motorcycle gangs as simultaneously liberatory and threatening."[79] Matthew Tinkcom diagnoses *Scorpio*'s representation of motorcycles as both utopian and dystopian, which echoes how Gregory Whitehead describes the two sides of radio:

> There is a utopian aspiration in all communication technologies, but the utopian side is counter-balanced and all too often canceled out by the darker drive, the connection between information and war, between communication and the command or control over communities. This is the other side of Radio Utopia: *Radio Thanatos*.[80]

Whenever communicative possibilities grow, Whitehead insinuates, so does the potential for their malevolent use—a formula that plays out in Hitler's live radio broadcasts, to name one example. As Allen S. Weiss elaborates, "Whitehead recognizes radio's intimate coupling with sundry nostalgias and forms of death—radio as an electronic memento mori for a modern age and a thoughtless public."[81] Anger's radio dress-up, however, reanimates mass culture into a radical mouthpiece.

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[79] Matthew Tinkcom, "'A Physical Relation between Physical Things: The World of the Commodity according to Kenneth Anger'" in *Working Like a Homosexual: Camp, Capital, Cinema* (Durham; London: Duke University Press, 2002), 131.
[80] Gregory Whitehead, "Radio Play is No Place: A Conversation between Jérôme Noetinger and Gregory Whitehead," *TDR* 40, no. 3, Experimental Sound & Radio (Autumn 1996): 99.
[81] Allen S. Weiss, *Experimental Sound & Radio* (Cambridge, Mass: MIT Press, 2001), 5.

Figure 1.5 A motorcyclist's dealings with death in "My Boyfriend's Back," still from *Scorpio Rising*

In the "My Boyfriend's Back" scene, Anger incorporates both sonic and visual versions of memento mori (Fig. 1.5). As for the latter, a skeleton becomes a character who oversees a man's handiwork on his motorcycle seat from its perch in a garage. The skeleton gets a close-up at the start of the song when The Angels' lead singer chants a warning to a rejected suitor who will face the consequences of spreading rumors now that her boyfriend's back: "He went away and you hung around and bothered me every night / When I wouldn't go out with you, you said things that weren't very nice." Although revenge drives the song's heartbeat, it unfolds to the sunny pop that Whitehead derides. It repeats a hand-clap pattern that Theo Cateforis identifies as the double backbeat, "one of popular music's most pervasive signature rhythms of the early 1960s, from girl groups to surf bands to the Beatles (1964's "I Want to Hold Your Hand")."[82] Anger pairs the scary skeleton with the catchy beat for humor: because the talking portion of the intro corresponds with the skeleton, it appears that the skeleton "lip syncs" to the female singer, which highlights the deadpan nature of her chant. In this way, spectators could perceive the skeleton as the narrator of the sequence, with whom the man has made a deal to do his tinkering.

[82] Theo Cateforis, *Are We Not New Wave?: Modern Pop at the Turn of the 1980s* (Ann Arbor: University of Michigan Press, 2011), 141.

As the song ends, a split-second cut confirms this fantasy: he catches sight of the skeleton in a mirror and they lust after each other in another time and space (Fig. 1.6) before cutting back to the previous scene.

Figure 1.6 The motorcyclist acknowledges his skeleton muse in "My Boyfriend's Back," still from *Scorpio Rising*

Anger's skeleton lip syncs in the manner that radio listeners mouthed words to memorialize popular songs in memory and on the air. Like radio consumers tune the dial to set the mood for tasks at various points in the day, Anger festoons heteronormative pop with images of homoerotic bikers. These motorcyclists appear to exist within a utopia, in the double sense of "any" and "no" place—they also hurdle towards death, as "Wipeout," the final track, darkens the lyrical undertow and claims one victim for Thanatos. By adding images to the abiding bank of Radio Utopia, Anger captures the Thanatos that crackles within songs and souls. He insinuates that putting "on" a song allows consumers of mass culture to reflexively view and hear how they publicly present themselves: "Paradoxically, I've always felt that getting dressed up, putting *on* a costume, is more exciting, more fascinating to watch, than striptease. What people choose to put *on*—their clothes, their adornments—is more interesting than the undressing part."[83] Using the

[83] Anger quoted in MacDonald, *A Critical Cinema 5*, 37. This mode of public presentation echoes Miriam Hansen's notion of the sensory reflexive horizon, wherein spectators "negotiate the tension between reification and the aesthetic" with the goal to realize in media "a mass-mediated public sphere capable of responding to modernity and

transistor for its enticing pop, Anger attracts spectators' attention to new modes of dress-up. As radical drag largely was underground in 1963 media, Anger spoke to this scene with mainstream radio. For his behind-the-scenes radio emits gendered ambiguities that prompt spectators to look again at what it means to put on clothes. New images give new uses to the mass cultural playlist as they cross the wires of pop's contested desires for commodities and sex.

When *Scorpio* puts on costumes and songs, utopian Eros and ego-driven Thanatos vie for dominant public expression. As in radical drag, Anger melds different personas together to create the ultimate amalgam. Anger's 1949 *Puce Moment* provides an example: shimmering fabrics are shaken and then peeled away from the camera, later to be donned by the flapper-esque star Yvonne Marquis. For Tinkcom, "this series of prosceniums […] render[s] the tactile pleasures of costuming and playacting as spectacular."[84] Shot silently like *Scorpio*, *Puce Moment* plays dresses up both through its soundtrack—a rock tune by Jonathan Halper added to the film in the 1970s—and its primping star. The utopian airs of her vivacious veils clash Whitehead-style with gritty lyrics such as, "I won't stop till I've understood the dark."[85] *Scorpio*'s audiovisual prosceniums also render the sunny and seedy sides of putting on the radio—in the tunes and clothes that appear as particular personas. Ultimately, playing the radio in cinema is an act of masking, of joining scenes, and of adding one's imagination to the pop culture that surrounds us.

Radio Revelations: The "Psychic Tumult" of Rubin's Radio Play

While Kenneth Anger married his tracks to 16mm—hiding the influence of the radio behind the screen—Barbara Rubin puts the radio into the audience and plays it live in *Christmas on Earth*.

its failed promises." Miriam Hansen, "The Mass Production of the Senses: Classical Cinema as Vernacular Modernism," *Modernism/Modernity* 6, no. 2 (1999): 72.

[84] Tinkcom, *Working Like a Homosexual*, 126.

[85] Brook, "Puce Modern Moment," 3.

As she projects a reel within a reel, she also instructs projectionists to pass colored filters over the lenses.[86] This light and sound play transforms performances into unique events and emphasizes the numerous possible sex acts that can occur between a panoply of body parts. Rubin's part-performance, part-film necessitates that we visit a very different scene than Kenneth Anger's summer on Coney Island or even one of *Scorpio*'s screening rooms. For Rubin instructs exhibitors to fill the screen with Reel A, while they superimpose Reel B to fill a third of the screen's center—often with the apparatus mid-audience—and project them simultaneously at sound speed (Fig. 1.7).[87] *Christmas* screenings thus deliver three shocks: live radio play, a projector in the middle of the room that penetrates the audience, and the baring of organs and intercourse on screen. What results is a spectacle of chance and carnal proportions: Hoberman dubs it "far and away the most sexually explicit film to startle the preporn avant-garde."[88] So while *Flaming Creatures* might enjoy lasting notoriety due to Smith's greater fame and attempted screenings in the face of the police, Rubin's imagery by and large was more explicit. Exhibition only amplified its obscenity, as dual superimposition causes the film rolls to penetrate one another.

[86] Barbara Rubin, projection instructions, *The Filmmaker's Co-Op*. She preferred this set-up for first-time viewers but sometimes screen other arrangements.
[87] Barbara Rubin, *Christmas on Earth* projection instructions, c.a. 1965. *Film Culture* 80: "The Legend of Barbara Rubin" (Leipzig: Spector Books, 2018), 163. She preferred this set-up for first-time viewers but sometimes screen other arrangements. Jonas Mekas, who lent his camera to Rubin for the film, recounts that she sometimes projected the reels "side by side or superimposed with one reel inverted or cut into four frame shards and respliced at random." Anthology Film Archives print description for *Christmas on Earth*, dir. Barbara Rubin (New York: Anthology Film Archives, 1963).
[88] J. Hoberman, "Teen Angel" ["Personal Best," *The Village Voice*, May 3, 1983], in *Vulgar Modernism*, 141.

Figure 1.7 An example of Reel B inside Reel A and a colored filter, still from *Christmas on Earth* (Rubin, 1963). Courtesy of The New American Cinema Group, Inc./The Film-Makers' Cooperative

The rolls entwine in an erotic part-whole relationship, as Reel A "privileges corporeal fragments much more than Reel B, which is dominated by images of complete bodies," according to Rubin scholar Ara Osterweil.[89] In the rolls' interpenetration, figure and ground dissolve much like *Geography of the Body* (1943), where Willard Maas and Marie Menken filmed close-ups of nude body parts at out-of-focus angles to confuse spectators as to which parts of the body are explicit.[90] Added to the asynchronous voiceover of George Barker's surrealist and Baudelairian poem, which has a glut of juxtaposed allusions, *Geography* solicits both wandering eyes and ears to uproot spectators from assumptive audio-viewing positions. So, too, do the chance elements of Rubin's instructions: Osterweil's 2014 screening for a McGill University seminar, which I attended, used colored filters and an iTunes playlist with Top 40 hits

[89] Ara Osterweil, *Flesh Cinema: The Corporeal Turn in American Avant-Garde Film* (Manchester, U.K.: Manchester University Press, 2014), 32. Osterweil studied both reels on a Steenbeck flatbed editor at the Film-Maker's Cooperative.

[90] For example, Maas and Menken use prolonged durations and a dime-store magnifying glass. See R. Bruce Elder, "The Troubling Body of Sexual Difference: Williard Maas's The Geography of the Body," in *Body of Vision: Representations of the Body in Recent Film and Poetry* (Waterloo, Ont.: Wilfrid Laurier University Press, 1997), 36–64.

from 1963 that paralleled a live radio set list. These auxiliary lights and sounds transformed the typical film experience—and the ways that sex could be screened.

In *Christmas* screenings, the typical black box effect of the glass of the projection booth is shattered by projectionists who pass filters over the projector lenses. Their filter passes enact what Laura Marks calls a haptic experience, when vision approximates touch: one's eye is drawn to another person's movement in a moment of mimetic mingling.[91] In her study of films that use close-up, textured images, Marks proposes that such haptic visuality undergirds a search for new language to express what has been silenced or hidden, especially through the mimetic tendencies of viewers to react to sights with their bodies. *Christmas* is full of such sights: as Osterweil recounts, "vaginas and anuses are repeatedly spread open, as if inviting the camera (and the observer) to penetrate these tempting apertures."[92] And illuminated with colors and pop hits, the invitation to see up close, to approximate touch, becomes all the more titillating. Marks proposes an erotic haptics in which the "viewer is called on to fill in the gaps in the image [… and] relinquishes her own sense of separateness from the image."[93] Marks' claim idealizes an impulse to slip into another's skin—an impossibility, for both the film and viewer's body remain defined, concrete objects. But in form and content, *Christmas* mixes bodily entities. Witnessing actors' actions, viewers may encounter knee-jerk reactions to mimic the emotions and desires that they see, even though these are screened off from the audience's physical space.

Building on Marks, Jennifer Barker proposes that we can sense emotions from—but not master—onscreen bodies, because of the physical gap between my bodily experience *here* and

[91] Laura U. Marks, *The Skin of the Film: Intercultural Cinema, Embodiment, and the Senses* (Durham: Duke University Press, 2000), 159.
[92] Ara Osterweil, "'Absently Enchanted': The Apocryphal, Ecstatic Cinema of Barbara Rubin," in *Women's Experimental Cinema: Critical Frameworks*, ed. Robin Blaetz (Durham: Duke University Press, 2007), 133.
[93] Marks, *The Skin of the Film*, 183.

seeing a body over *there*.[94] The movement of color filters onscreen produce a very physical reminder of this gap, even as spectators' bodies thrum with desire to join these acts of penetration. In lieu of this impossibility, such auxiliary effects stir up myriad memories of sex's joys and vulnerabilities. The projectionists' decisions to cue colors for certain moments in the film signal oscillating emotions and experiences, as impromptu as a silent film accompanist's choice to switch from a wedding march to a tremolo when a villain suddenly appears.

As color filters and superimposed reels redirect viewers' attention in *Christmas*, the act of watching a movie is no longer one of passive attention to the monolithic screen. Instead, spectators witness multiple places where the acts of a movie can unfold. With such bifurcations of attention, Osterweil dubs Rubin, here a first-time filmmaker, as a pioneer of moving installations.[95] Her projections do not screen the world from viewers and restrict their focus onto one particular series that a filmmaker selects, as in Stanley Cavell's definition of the screen as "the field of a photograph" that contains and delimits images.[96] The superimposed projections often scramble and obstruct the ability to isolate any one action. Rubin's reels transmit acts to which viewers are encouraged to react—even to be irrevocably penetrated by the images and sounds in our midst.

Christmas on Earth's prurient visual effects transform screening rooms into zones of active engagement instead of passive reception. But if spectators only focus on the images, they screen out the ambient effects of the live radio soundtrack, which projectionists tune at random to unleash a vast corpus of emotional, social, and historical cues. Rubin instructs projectionists to

[94] Jennifer Barker extends Marks' study to genres like comedy and action and furthers Linda Williams' work on spectator mimicry as moral empathy; *The Tactile Eye: Touch and the Cinematic Experience* (Berkeley: U. of California Press, 2009), 73-5.
[95] J. Hoberman, "Barbara Rubin, Shameless Angel of Avant-Garde Cinema," *The New York Review of Books Daily*, May 21, 2019.
[96] Stanley Cavell, *The World Viewed* (Cambridge, MA: Harvard University Press, 1979), 24–25.

hook a radio "up to a PA system, with a nice cross-section of psychic tumult like an AM rock station, turned on and played loud."[97] The bulk of accounts on *Christmas* describe its unique dual projection or its explicit images: for example, Osterweil stresses the corporeality of the images that create fluid sexual responses both onscreen and in the audience.[98] However, most scholars have ignored the equally corporeal address of sound—with the exception of Lucas Hilderbrand's study of the queer qualities of nonsynchronous soundtracks. For Hilderbrand, "the radio brings the outside public world into contact with the interior private space of her film."[99] But on what terms does radio sound knit these spaces together? Do the transistor's invisibility or portability matter as much to Rubin as they do to Anger? Does her use of live radio swerve toward Radio Utopia or Radio Thanatos? And ultimately, how might *Christmas* make sex speak to audiences and attitudes of the '60s?

Powered by AM Rock: Portability and Spatial Reclamations by Countercultures

Like *Scorpio*, *Christmas* was shot silently, but the images do not have the final say—AM rock joins in. Hooking up a live radio hijacks the typical moviegoing experience of sound as a packaged part of a film. Usually, we hear a soundtrack as a piece of the film's world, for even when we hear classical music but do not see an orchestra, we still associate it with the emotions of the characters that we see. Rubin more than Anger complicates the idea that soundtracks inevitably determine emotional meanings. Anger's strategy of hiding the radio that inspired his soundtrack increases the chance that viewers attribute a particular musical mood to a scene or

[97] Barbara Rubin, projection instructions, *The Film-Maker's Cooperative*.
[98] See Osterweil, "'Absently Enchanted'"; "Queer Coupling, or the Stain of the Bearded Woman," *Framework* 51, no. 1 (2010): 33-60; "Saint Barbara: The Apocryphal, Ecstatic Cinema of Barbara Rubin" in *Flesh Cinema*, 23–55.
[99] Lucas Hilderbrand, "Sex Out of Sync: *Christmas on Earth*'s and *Couch*'s Queer Sound Tracks," *Camera Obscura* 28, no. 2 (83) (September 2013): 52. For Hilderbrand, "nonsynchrony describe[s] relations of live sound (including, importantly, ambient sound in the exhibition space) and silent film images" and allows viewers to trace queer relations to time and space (52).

character. In screenings of *Christmas*, the soundtrack visibly emits from a source that is separate from the film. As a result, audiences are more likely to understand image and sound as two separately produced experiences that each have their own stakes, moods, and motivations.

Christmas, then, runs less on invisibility than *Scorpio* but also thrives on portability: Rubin takes advantage of the transistor's ability to broadcast sound for different social situations. The transistor enables her to subvert the typical platform on which movie soundtracks are heard. She brings the radio into the audience to create a listening public much like a circle of teenagers at the beach. Spectators share the airwaves in the same space, which can foster and deepen communal attachments. Note how this differs from Hilderbrand's account that "the radio brings the outside public world into contact with the interior private space of her film"[100]—while indeed the silent footage and live radio pose the film and its sound as coming from two separate spaces, the experience of the screening does not bear out such a clean-cut public/private split. For Rubin's double-projection exhibition and her chance instructions evidence a desire *not* to hermetically seal her film from the audience. (The seventeen-year-old, after all, made the film as a sort of chance event: she gathered five friends to shoot the film in a mere twenty-four hours to broadcast their sexual euphoria.[101]) Rubin's decision for projectionists to play radio stations over which she has no control surely opens her film to a vast array of imported meanings. When a radio turns on in the middle of the room, it becomes an additional event to take in. The radio's importations permeate so-called "private" images, not only due to moviegoers' training to associate sounds with affective experiences but also through specific qualities of AM radio in the '60s, from the materiality of its waves to forms of communal listening.

[100] Hilderbrand, "Sex Out of Sync," 52.
[101] Daniel Belasco, "Barbara Rubin: The Vanished Prodigy," *Art in America* (December 2005): 62.

AM radio, contrary to today, was the bastion of popular music—the FM revolution was only just beginning in the early '60s. AM then had a hold on many households worldwide; in 1956 in France, André Bazin described the way that it filled space like an air conditioner, as "anyone with even the slightest bit of artistic or intellectual curiosity will find himself satisfied, indeed expanded, by what radio has to offer: thanks to it, we are steeped in culture."[102] Rubin put to the test this sense of a pervasive air conditioner: how might she, with her images, jam up the airwaves with new scenes of listening and living? While chance transistor play injected a crackle of liveness into her film, the very medium of AM radio had properties that increased the vital immediacy of this crackle.

When *Christmas* links up radio with the air in the theater, it feeds energy into a material medium that supports transmissions not just of entertainment. Radio waves are physical but empty of music as such: they depend on the atmosphere and devices to carry a tune. This is especially true of AM radio, which stands for "Amplitude Modulation." As Douglas explains,

> [S]ounds like voice or music must be imposed on [radio waves], and this was initially achieved by varying—or modulating—the amplitude, or strength, of the carrier wave. Such a wave then fluctuates in amplitude in correspondence with the fluctuations of the music or voice. The problem was, however, that naturally generated electrical disturbances like lightning are produced by similar waves that also vary in amplitude, so they break into and mix easily with AM waves.[103]

In AM broadcasts, disruptions in the atmosphere change the quality of broadcasted sounds. Technicians sought a cure in frequency modulation to reduce static and improve fidelity—FM's "lush, stereophonic sound" delivered "a more geological sense of music: it had levels, certain seams stood out, the bedrock wasn't uniform, all the layers mattered."[104] Audiophiles quested for

[102] André Bazin, "Television as Cultural Medium *and* The Sociology of Television" in *André Bazin's New Media*, ed. and trans. Dudley Andrew (Berkeley: University of California Press, 2014), 127.
[103] Douglas, *Listening In*, 260.
[104] Douglas, *Listening In*, 258; 267.

high fidelity to hear the material conditions of acoustical space and time—in the traces of a sound's source and in the static that weather and other atmospherics produced on AM broadcasts. Following this thread, Rubin's transistor play could physically change the air: using the radio as an air conditioner, she could bring the corporeal address of sounds to bear on that of the images and the interactivity of the screening situation.

As Rubin tunes to "a nice cross-section of psychic tumult like an AM rock station," she crosses the traces of mainstream songs and DJ patter with the palpable homosexuality of her dual superimpositions to get listeners to notice other previously hidden textures of everyday life. She turns the film screen into an active transmitter, rather than a passive receiver of a cultural product. Rubin wields the transistor to see how polymorphous perversions can coexist with mass media: her reels' imagery swerves with the communal wires of radio.[105] My subsequent readings take up Osterweil's "investigation of the off-screen forms of queer coupling […] to understand how truly expanded forms of cinema exist on a continuum with other forms of expanded relationality."[106] I oscillate between on- and offscreen phenomena to account for strains of 1960s youth listening: the rock and roll that for Douglas is "central to their individual and generational identity, their sense of having a different, more enhanced consciousness about society, politics, and self-awareness."[107] A teen's choice of psychedelic AM stations signaled their rebellion against mass culture. Furthermore, as they broadcast stations in social spaces, they became transmitters that jammed airwaves with the radical sounds of countercultural ideals.

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[105] In the 1980s, Tetsuo Kogawa jammed radio with new atmospherics through Mini FM. This low-power transmitter "easily made by your own hands" can create countercultural communities under the radar of governmental surveillance and mass media. Micro radio stations use global media "as a linking and networking means [… and even render them] polymorphous and diverse (not only in the contents but also in the style to let people encounter)." Tetsuo Kogawa, "A Micro Radio Manifesto," November 24, 2002/May 7, 2003/May 22, 2006, <http://anarchy.k2.tku.ac.jp/radio/micro/index.html>.
[106] Osterweil, *Flesh Cinema*, 25–26.
[107] Douglas, *Listening In*, 268.

Rubin's radio playing from the audience also became a social transmitter. As Hans Magnus Enzenberger opined, "every transistor radio is, by the nature of its construction, at the same time a potential transmitter; it can interact with other receivers by circuit reversal."[108] Rubin rewires the radio to be a live performer and raises the volume on sonic youth revolutions to defy audience passivity. Furthermore, she reifies radio's role as a condition setter in mass culture and reconnects its circuits to alternate, non-heteronormative forms of life. In so doing, she presages low-power radio artist Tetsuo Kogawa's claim that "the action of transmission itself can be considered as a collective performance art."[109] Specifically, this performance art reroutes normal paths of sound and vision in screening spaces. By situating radio in the same air as the audience, Rubin imparts spatial simultaneity between the film, the audience, and the radio. Even though spectators know that the radio operates in a space and time separate from the film, the pull of radiophonic imagination can override the alienating condition of asynchrony to bring listeners together to witness common imagery.

Simultaneous listening can form and shape communities, but the material social memories that arise from the spatial spreads of Anger's hidden DJing or Rubin's transistor among the audience also can make audiences think twice about the content that they consume. *Christmas* refracts main-streams to trigger awareness of our listening habits, to make us reflect upon where and to what we program the radio on a day-to-day basis. As Rubin's soundtrack creates a memory jukebox for today's viewers, the radio's position in the room between them

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[108] Hans Magnus Enzensberger, "Constituents of a Theory of the Media," in *The Consciousness Industry: On Literature, Politics and the Media*, ed. Michael Roloff (New York: Seabury Press, 1970/1974), 97.
[109] Tetsuo Kogawa, "A Radioart Manifesto" <http://anarchy.k2.tku.ac.jp/non-japanese/20080710AcousticSpaceIssue_7.html>. Sound and radio art has long interrogated the abilities for sensory information to permeate boundaries; see, for example, Lawrence Abu Hamdan's *Walled Unwalled* (2018), a performance-video installation that re-presents court cases based on the evidence of sounds heard through walls. Hamdan's installation is also cinematic: he includes a clip of then-actor Ronald Reagan exclaiming, "The Iron Curtain isn't soundproof!" to remind spectators that walls are conceived of as expression of sovereign power but can be punctured by radio waves, the political potentials of which many performance pieces demonstrate.

and the screen increases their intimacy with her densely textured AM radio play and superimpositions. The following section fleshes out this claim of spatial co-presence by detailing the audiovisual ways in which *Christmas* teeters on the borders of Radio Utopia and Thanatos.

Cruising Utopia and Thanatos

Comparing Anger's edgy motorcycles and Rubin's sexual panoplies, one might be quick to judge *Christmas* as Radio Utopia if Anger dials toward Thanatos. But while Anger hijacks radio to inject Thanatos into feel-good sunny pop, Rubin's live transistor play leaves the dial spinning. In the visual register, her footage often emphasizes utopia: for Osterweil, "Rubin's intimation of a precapitalist ritualistic domain of pleasure hearkens back toward an imagined sexual utopia, unpolluted by the political economy of the present."[110] Rubin links close-ups and recombines sex acts so that time stretches on and no act is forbidden: from a man's euphoric face as a woman fondles his hair, to multiple forms of genital massage and penetration, to a culminating shot of the full ensemble as the woman extends her hands up and out in ecstasy, Rubin's images renegotiate the narrow linear order of heterosexuality that ends in male ejaculation.

[110] Osterweil, "'Absently Enchanted,'" 138.

Figure 1.8 Dark body paint summons thoughts of Thanatos, still from *Christmas on Earth* (Rubin, 1963). Courtesy of The New American Cinema Group, Inc./The Film-Makers' Cooperative

On the other hand, however, Rubin's biography is tinged with Thanatos: her original plan was "to make a film about hysteria, which she had witnessed in her stay at [a mental] hospital."[111] What traces of this darker encounter remain? Why, for example, does Rubin's sole female performer don black body paint, save for the white-skinned circles of her breasts and belly (Fig. 1.8)? Her entourage of men are painted gleaming white, and while most of the film concentrates on how they bend to her sexual will, the smooth convulsions of her dark skin as she dances strike discord as appropriative instances of blackface. This imagery also has been read in mythic terms that bestow agency on the woman. Daniel Belasco notes her power over male attendants painted in "vegetative designs recalling Nijinsky's costume in *L'après-midi d'un faune*"[112] who are, for Hoberman, "guys posing as Greek statues and girls painted like archaic

[111] Belasco, "Barbara Rubin: The Vanished Prodigy," 62.
[112] Belasco, "Barbara Rubin: The Vanished Prodigy," 64. For more on the attire's archaic erotics that tap into animalism as well as Nijinsky's angular choreography, see Richard Buckle, *Nijinsky* (New York: Simon and Schuster, 1971), 238.

fertility goddesses."[113] Rubin's superimpositions solicit multiple identifications as they position the bodies onscreen and the audience themselves as objects to be penetrated.[114] Within Rubin's editing and exhibition—first selecting, then remixing, mythologies—visual utopia constantly crosses with visual Thanatos—and so, too, does the radio dial.

When Allen S. Weiss summarized Gregory Whitehead's two-sided "radio as an electronic memento mori for a modern age,"[115] he might as well have described the way that modern exhibitors struggle over Rubin's sonic instructions. Screening the film now involves a choice between playing a radio tuned to today or to the '60s. Most projectionists choose the latter: Osterweil and Hilderbrand curate iTunes soundtracks of pop hits, and the 2019 Film-Maker's Cooperative restoration attempts to simulate an AM station with brief interjections of DJ patter, ad spots, and even a PSA from Ravi Shankar, who asks listeners, "Why not get high on life itself without using any drugs?" Here, Utopian ads cross with Thanatos-driven psychedelic rock. But in Hilderbrand's detailed account of modern soundtracks' nonsynchrony, even AM simulations fail because our stereo systems cannot emulate '60s mono playback. Each screening betrays a rift between past images in a fixed form and a chance soundtrack that is impossible to replicate due to the differing modern conditions of radio playback. And playing old tunes today often results in nostalgia, which would not have occurred in '60s screenings—a point in the column of Radio Utopia. Or, such tunes would ironize sound-image relations *Scorpio-*

[113] Hoberman, "Teen Angel," 142.
[114] For Osterweil, Rubin does not position the spectator's gaze to objectify the other, but "with the apparatus itself" ("'Absently Enchanted,'" 134). Nevertheless, there are still traces of the other with which to identify: a tension remains between poses that seem deliberately constructed and the assaultive close-ups projected over them. In these latter shots, too, Rubin appears to echo Münsterberg's claim about the access that close-ups can provide to images that previously have gone unseen. Rubin's probing camera accords with Osterweil's argument to identify with the apparatus. Hugo Münsterberg, *The Film: A Psychological Study* (New York: Dover Publications, [1916] 1970.
[115] Allen S. Weiss, *Experimental Sound & Radio* (Cambridge, Mass: MIT Press, 2001), 5.

style.[116] Because both films are approximately 29 minutes, I experimented by viewing *Christmas* with Anger's soundtrack. "Heat Wave" fortuitously played during a segment of *Christmas* when a Chaplinesque figure holds a candle near his penis as he lies prone on the ground. With his top hat and goofy grimaces at the camera, it is hard to take him seriously, but especially so after the lyrics "I feel that burning flame" occurred as he holds the candle next to his penis. The musical irony is particularly strong because radio has fulfilled its desired commentative role but at the same time has ridiculed a man's dignity. Beyond the typical task of irony to undercut, here it also creates a doubling through the literalization of love as a flame. This Utopia/Thanatos superimposition is reminiscent of Whitehead's proclamation in this chapter's epigraph that "the two bands are as inseparable as a pair of ears stuck on a single head, with dreamland promises of radio as universal communication forever haunted by ghostland interference."[117]

Some modern viewers may not be able to wrap their minds around this ghostland interference. They might hope that a DJ's voice or song will explain the euphoria they feel at these images, but *Christmas* cannot contain that euphoria with a single song or voice. Instead, spectators must cruise, never able settle on the exact right channel that will sync with our desires. Utopia and Thanatos are bound to cross as voices entirely alien from the film speak from outside the textured images. They might briefly sync in moments of irony, but often they offer counter-narratives. For example, DJ announcements or ads interrupt the sexual free-for-all that seemingly occurs outside of capitalistic, heteropatriarchal society to remind us that we are still within it. And if we tune in to today's radio during a screening, we know that some things about *Christmas* have never changed: "From down and dirty drive-time jingles to spotless digital recording of

[116] I am indebted to Hilderbrand's astute remarks on temporal and technological mismatches in "Sex Out of Sync," 54-55.
[117] Whitehead, "Shake, Rattle and Roll," 33.

Handel's *Messiah*," Whitehead muses about today's radio, "Sit-com patter becomes fused in the memory with the speeches of candidates and the numbing rhythms of traffic reports and weather forecasts." But he has a solution "as the possibility of public discourse collapses, at least in the United States, into communal lip-sync extravaganzas": "to simply get wired, stick a needle in the brain and spin those tunes 'cause you're a tightly twisted rollerderby brand of wild thing."[118] Whitehead's radio art instructions quirkily echo Rubin's in their attempts to recircuit mass culture. Of course, Rubin's film insists that no such direct experience of radio is possible. She has, however, defied the lip-sync effect common to film soundtrack experiences—a melding of sound and image that Michel Chion calls synchresis, when, for example, a scene is filmed with a lip-syncing actor who dubs their voice in later.[119] Rubin untethers sound synchronization from the eye-to-lip meld of synchresis: she shows how various parts of the body can speak sex.

Speaking Sex

> Sexuality in [*Christmas*] appears to be more a matter of sex acts than of identities—not only because the sex is so explicit and so variant but also because the sex, not speech or naming, is what has been recorded. As we know from Michel Foucault and semiotics, words construct meanings and categories create identities. Without spoken words, might we be free from the confines of identity or the limits of how we understand sexual desire?
>
> Lucas Hilderbrand[120]

Due to Rubin's nonsynchronous soundtrack, Lucas Hilderbrand contends that *Christmas* is free from labels about what sex can be. In *Christmas*'s "nonverbal ambiguity," he writes, "there are sex acts but not speech acts."[121] In a literal sense, Hilderbrand is right: filmed silently, no one speaks. But what happens when words come on the air of the live radio? Do we, as trained movie

[118] Whitehead, "Shake, Rattle and Roll," 33.
[119] Michel Chion, *Audio-Vision*, trans. Claudia Gorbman (New York: Columbia University Press, 1994), 63.
[120] Hilderbrand, "Sex Out of Sync," 51.
[121] Hilderbrand, "Sex Out of Sync," 64.

listeners, try to match the dialogue to the sources we see onscreen? Given that many of these sources are genitalia—especially in Reel A, with its close-ups of fingers probing foreskin and vaginas—the notion that they could lip-sync commercials is ridiculous. But something else happens with nonverbal tracks: in the Film-Maker's Cooperative 2019 restoration, for example, throbbing guitars accompany two men, buttocks pressed together while one man strokes the other's penis. The distorted slow guitar jam emphasizes their sleek bodies and translates sensation into synthetic sound, where wordless thrums become groans of pleasure. Given that J.L. Austin has broadened how we mean what we say to insist that speech performs actions, can we really say here that sex is not a speech act?

Building on Austin's work, Cavell adds the category of passionate expression—a speaker's tone—to performative utterances: "speech as at heart a matter of action" is connected to "articulating and hence expressing desire."[122] He says that Austin's insistence on speech as action is not enough—speech is also bound up with desire as it "work[s] on the feelings, thoughts, and actions of others coevally with its design in revealing our desires to others and to ourselves."[123] Tone of voice is crucial to this kind of communication: it exposes hierarchies of power, as in the fiery speeches of presidents. Thus, Cavell demands the "systematic recognition of speech as confrontation […] each instance of which directs, and risks, if not costs, blood."[124] In this line of thinking, communication must account for how desire muddies the waters of speech acts—a phenomenon of sex acts as well.

[122] Stanley Cavell, "Performative and Passionate Utterance," in *Philosophy the Day After Tomorrow* (Cambridge, Mass.: Belknap Press of Harvard University Press, 2005), 159.
[123] Cavell, "Performative and Passionate Utterance," 186.
[124] Cavell, "Performative and Passionate Utterance," 187.

If Cavell sees speech, action, and desire as entangled, Foucault similarly views sexuality as "a discursive form of entwined power, knowledge, and pleasure."[125] Through such entwinements, Linda Williams explores how sex is audiovisually represented in cinema. She shows how the institution both mimics mass culture's repression of sex and celebrates the polymorphous sex acts that have sprouted around it: for example, classical Hollywood films quash sex that is about to unfold with a dissolve from flirtation to post-coital relaxation, or what Williams calls the "Hollywood sexual interlude," which "situate[s] the spectacle of sex as an affectively controlled interlude distanced by the effect of editing and music."[126] In her cinematic analyses, she accounts for Foucault's insistence that sex speaks even under repression in the metaphors and regulations that proliferate around it; she investigates, through cinematic devices, "who does the speaking, the positions and viewpoints from which they speak, [and] the institutions which prompt people to speak about it."[127] With sex established as a performative utterance that takes multiple forms, we return to refute Hilderbrand's claim that sex in Rubin's nonsynchronous film does not speak.

In his striving to reclaim sex from literal identity categories, Hilderbrand's pronouncement that sex lacks words in *Christmas* takes sex out of the category of discourse altogether. Such a statement also draws a line between nonverbal sound and the expressions of desire. But as I have argued, sound can paint moods like body paint, or mask them—it has registers of discourse such as instrumental timbre, like the guitar thrums that elicit sensuality from the images. Here, sex speaks—but not directly in words. Rather, like the traces of lightning we can sense in AM radio, sex speaks in the language of corporeality, whether visual or sonic.

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[125] Linda Williams, *Screening Sex* (Durham: Duke University Press, 2008), 12.
[126] Williams, *Screening Sex*, 84.
[127] Michel Foucault, *The History of Sexuality: Vol. 1, An Introduction*, trans. Robert Hurley (New York: Pantheon, 1978), 11.

Musical textures like psychedelic guitars make sonic-sexual exchanges inherently bodily—imagine Rubin's '60s screenings, when sounds hooked up listeners not only to the textures of AM but also to the room's vibrations as the radio "played loud." Then and now, we can tune Osterweil's accounts of visual corporeality to that of verbal, as in "the camera rhythmically zooms in and out as the lips of a vagina are pulled open and shut."[128] The camera's mimicry of thrusting solicits our imaginative erotic mimicry. Sonic tones, vis-à-vis Cavell, also can contribute to active mimicry and the performance of a speech act. Take, for example, the image of a tattooed man superimposed over a pubic area. As he flexes his muscles, his flesh ripples over that of the exposed yet veiled (in superimposition) organ to ventriloquize the unspeakability of female pleasure. But what if that female pleasure was ventriloquized by the 1963 hits "Ring of Fire" (Johnny Cash) or "Be My Baby" (The Ronettes)? Or, in my Anger-soundtrack experiment, the vagina noted by Osterweil appeared to lip sync to "My Boyfriend's Back"—it became the clear protagonist of this section, even more of an agent to this track than Anger's skeleton, as the labia slightly opened and closed in arousal. Given Rubin's non-fixity of bodies and sounds, and her will for free expression of one's sexuality, why wouldn't it be possible for the body to temporarily speak in the manner of lip sync or dubbing?

Rubin's chance transistor play, imagery, and double projection open up new ways to experience sexuality, film-viewing, and sound synchronization. But the latter can be pushed further—the appearance of lip sync can convince us that sex acts are speech acts. For Cavell, speech acts are exchanges not only of language but also of the human accompaniments to verbal discourse: facial expressions, hand gestures, vocal inflection, and noises such as coughs and throat clearing. Speech acts are thus inherently hybrid, both verbal and nonverbal utterances. I

[128] Osterweil, "'Absently Enchanted,'" 134.

hear in this Foucault's notion of "how apparatuses of sexuality wrap around the body and its sexual organs to produce different kinds of pleasures and relations of alliance."[129] As we know from typical film scoring, it is human impulse to synchronize what we see to what we hear and make meaning out of it, which is usually narrative. Surely film sound also can articulate discourses of sexuality, through music or radio commentary that sound emotions of the various interactions in sex.

If the body can be seen to speak pleasure—in, for example, a money shot—then the transistor acts as a conduit for spectators' imaginations of the sound that it might make. Take the performers' body play—as the woman contorts the painted mask of her breasts and belly into a smile, she performs the joy of sex with the semblance of speech. The stomach-mouth might be seen to talk or sing depending on what comes on the air, and the emotions that it conveys derive from the emotive qualities of sound. The mouth-radio combination could prompt profound or comical relations: the woman might, for example, become a conduit for Peter, Paul, and Mary's 1963 hit "Puff the Magic Dragon."[130] My crossing of both screened images and the live radio as conduits is intentional—spectators perceive sound synchronizations like a chicken-or-egg problem, as they wonder if the effect they perceive is caused first by the image or the sound. The two become inextricable in Rubin's densely superimposed film. Like *Scorpio*, audiovisual prosceniums grow so layered that sound and image interpenetrate each other, making it impossible to tell which one functions as the communicative muse. These films imitate radio, and radio in turn imitates life.

[129] Williams, *Screening Sex*, 12.
[130] "Puff" was on Hilderbrand's screening playlist, inciting laughs and thoughts of psychedelics. "Sex Out of Sync," 55-6.

The transistor is a conduit for the penetration of sound into daily life; as Whitehead puts it, "to my ears radio waves fascinate because they are so dirty, that is, the airwaves are so full of voices and bodies trying, in one form or another, to get into the ears of somebody else."[131] Whether this dirt is a capitalistic commercial or an ad for a licentious party, radio imports a range of voices into Rubin's film that body parts and performers end up lip syncing. With the transistor's aural penetrations, these onscreen bodies do not possess control of the emotions that audiences perceive them to be speaking. Their "voices" are up to Radio Utopia or Thanatos, which then collide with audiences' emotional associations to project their impressions of characters and situations. The radio does not have the last say, of course; it is one conduit of meaning among the colored filters, image superimpositions, and even Rubin's biography. The radio's function as a conduit hits close to home in the role she served to connect Andy Warhol to the Velvet Underground; for Osterweil, she "is the link between others to whom more attention is paid."[132] While Rubin's work is only just beginning to attract praise outside of narrow avant-garde cinephile circles, her film remains a crucial example for how sex could be spoken through mainstream channels.[133] In a style of chance transistor play, Rubin recovers the voices of people and activities that have been silenced from the mainstream. Her solicitation of either Radio Utopia or Thanatos includes a vast compendium of voices, identities, and sexualities that create a fluid spectrum of how bodies can behave and be conveyed onscreen.

[131] Whitehead, "Radio Play is No Place," 90.
[132] Osterweil, *Flesh Cinema*, 27.
[133] See the 2018 documentary *Barbara Rubin & the Exploding NY Underground* (Chuck Smith, USA).

Coda: Conduit Currents

Radio continues to serve as a conduit for misfit emotions and mainstream ills. For Susan Douglas, "even today, in the age of TV and the Internet, Americans have learned to turn to radio to alter or sustain particular emotional states."[134] Notably, on a techno-anatomical level, the semiconductor that enables the transistor's portability is also a conduit: a small, malleable chip that carries waves of the times. It offers a metaphor for the listening publics of radio-fueled avant-garde films: they consume music as a current that flows through them, fleetingly but powerfully charged by the images that "sync" into the air. While they both are inspired by the transistor in different ways, Anger and Rubin use it as a psychological bridge to carry emotive qualities into their films and to inspire audiences to form their own emotive connections to them. Their films live on as hybrid radio/film memory banks that accumulate with each screening. In such sonic archives, bodily discourse is ever recombinatorial, broadcasting changing forms of public life.

The platform of radio also draws attention to how our perceptions of screened lip sync have been historically, socially, and ideologically informed. As a medium that lacks a screen, the radio might provoke skepticism as to how it constructs synchronous relations between sound and sight. Yet in *Scorpio* and *Christmas*, radio presages fantasmatic spatial effects of lip sync: it inspires scenes in the imagination—virtual spaces for viewers to play out their desires—but also is felt to emanate from the physical bodies of performers. Radio activates the theater of the mind and conditions social relationships in ways that parallel the function of many lip sync videos today. From drag to TikTok, lip syncers cite and broadcast forms of listening into, and speaking to, communities.

[134] Douglas, *Listening In*, 8.

But the public penetrations of radio were not always cause for celebration. In fact, while noisy beaches inspired Anger, some avant-garde composers lamented them. During a conversation in 1966, John Cage attempted to ease Morton Feldman's longing for peaceful environmental connection by praising what transistors defamiliarize in those rays of sunlight:[135] radios

> mak[e] available to your ears what was already in the air and available to your ears but you couldn't hear it. In other words, all it is, is making audible something which you're already in. You are bathed in radio waves—TV, broadcasts, probably telepathic messages, from other minds deep in thought (both laugh). . . . And this radio simply makes audible something that you thought was inaudible.[136]

Cage picked up on the transistor's role as an air conditioner with a sense of wonder much like Bazin, Rubin, and Anger. He did, of course, use the radio to create his own sound art pieces, most famously *Imaginary Landscape No. 4* (1951). But his medium of choice for playing with sound waves was tape.

In the next chapter, tape is a crucial vehicle for vocal manipulations by another avant-garde filmmaker: Yoko Ono. Using her Nagra tape recorder to create the soundtrack for her 1970 film *Fly*, she sends her voice between and the two onscreen characters of a woman and a fly, but also out to the audience members themselves. Her achingly physical extended vocal techniques create textured sounds of sexual encounters that alternately evoke embodied associations of rapture and disgust. With tape to capture her sound waves, she makes audible relations between onscreen bodies through the ways that sounds travel through our skin, muscles, and viscera—and leaves spectators irrevocably changed by the encounter.

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[135] As Douglas Kahn sets the scene, "The *beach*, already a highly mediated stand-in environment for nature, meant being bathed not only in sunlight but also in the industrialized electromagnetic waves of the United States radio spectrum that were transduced by transistor radios"; Douglas Kahn, *Earth Sound Earth Signal: Energies and Earth Magnitude in the Arts*, Vol. 1 (Berkeley: University of California Press, 2013), 117.
[136] John Cage and Morton Feldman, *Radio Happenings: Conversations/Gespäche* (Cologne: Edition MusikTexte, 1993), 11–13 (quoted in Kahn, *Earth Sound Earth Signal*, 117).

Chapter 2

Vocal Doubles: Yoko Ono and Karen Carpenter's Magnetic Tape Magnetism

> The year is 1970, and suddenly the nation finds itself asking the question, "What if, instead of the riots and assassinations, the protests and the drugs, instead of the angry words and hard-rock sounds, we were to hear something soft and smooth, and see something of wholesomeness and easy-handed faith?" This was the year that put the song onto the charts that made the Carpenters a household word.
>
> *Superstar: The Karen Carpenter Story* (Todd Haynes, US, 1987)

> […] why is woman always known for pretty voice and pretty songs? Because that's what the world wants. They don't want a woman to sound too strong. We feel we shouldn't scream out. So I thought we have to show what women are, we're the birthgivers of the human race. Why should we be ashamed of it or treated differently?
>
> Yoko Ono[1]

In 1970, experimental art and mainstream music meet through magnetic tape, Yoko Ono, and Karen Carpenter. These singers diverge in many ways: Ono's reverberant screams clash with Carpenter's lush alto; Ono is Japanese, Carpenter was a white Californian. But their voices both project a torrent of emotions using physical and technological techniques. These opposites attract the ear as they contort their vocal mechanisms to produce compelling timbres and manipulate magnetic tape to make striking overdubs. In recordings, remnants of their vocal training and production prowess have stuck to tape. By closely listening to these artifacts, we glean how their musical and technical skills contest critics who called Carpenter a natural and Ono a fraud.

This chapter aligns Ono and Carpenter as vocal doubles because they enlarge and enrich their voices with a specific form of overdub popularized by magnetic tape: double-tracking. To create it, singers record and combine two takes of the same tune, expertly reproducing pitch and rhythm. They can do this manually on separate tape tracks but also with artificial double-tracking (ADT), developed by Abbey Road Studios engineer Ken Townsend in 1966 to help the Beatles

[1] Yoko Ono quoted in Helen Brown, "Yoko Ono: 'Who's the Best? Me,'" *The Telegraph*, June 2, 2013.

save the time and labor it took to record multiple performances.[2] ADT uses two tape recorders to capture one take and simulates slight vocal differences by varying the speed to raise or lower the pitch of the tape on the second machine. If the takes are too close in pitch, comb filters cancel out frequencies and diminish the voice's vigor. But a blend of slightly varied pitches mimics the sound of multiple voices in unison—of a similarity that holds space for difference. In the basic logic of double-tracking, tiny differences between takes can double a voice's magnetic powers.

As this study of Ono and Carpenter reveals, double-tracking does not always produce sameness. Singers double their voices for two main effects: to thicken vocal sound or to add texture and intrigue.[3] That is, they raise the voice's intensity by adding extra takes sung on pitch, or increase its intimacy with new timbres, as in a breathy take with almost no pitch. In what follows, I show how Carpenter and Ono use double-tracking to produce a vocal nonconformity that sounds like conformity: they add aural markers of gender and sexuality to the wall of sound in 1960s and '70s music. Created by producer Phil Spector, the wall of sound aesthetic multiplied voices and instruments in thickly layered blends that came to be associated with the Beach Boys. As we will see, Carpenter and Ono defy male-dominated walls of sound in different ways. Ono tends to add textures and Carpenter, a bigger sound. They create walls of affect to prioritize embodied emotion, which unsettles listeners who tend to fixate on lyrics or stardom in pop. One Carpenters fan, for example, started a thread for

> […] segments of Carpenters songs that I play over and over just because I like something about it. Maybe it's the way Karen sings a word, forms a phrase, or shapes a note; maybe something about the arrangement grabs me and won't let go [… for example, in] "Close

[2] Olivier Julien, "The Diverting of Musical Technology by Rock Musicians: The Example of Double-Tracking," *Popular Music* 18, no. 3 (October 1999): 361–62. Julien traces a history of effects from tape to digital, such as chorus (time delay to make one voice sound like many), phasing, and flanging (longer delay than phasing).
[3] These two aims often cue respective uses of manual or ADT (automatic double-tracking). ADT offers convenience in the studio to multiply a violin into two to synthesize the textures of bow strokes. But ADT can distort vocal quality if the speed of the tape varies too much. Thus, manual double-tracking suits adding subtle vocal effects.

> to You" when Karen echoes herself and sings "just like me" in the background. There's something about the timbre of that phrase that simply captivates me.[4]

This chapter examines the magnetic "something" that compels listeners to repeatedly consume a voice. Carpenter and Yoko may be opposites in kinds of vocal doubling—Carpenter's lustrous sonorities; Ono's surprising textures—but the degrees to which their voices enthrall are similar.

Affect is a contested term in scholarship, but my interest here is to study the historically specific structures—and gluts—of feeling that circulated sonically in America in 1970.[5] Then, pop music trafficked in collective affect, as a megaphone for the homogeneous ideals of white middle-class suburbia. Pleasurable unisons ruled in soft rock overdubs, as in Simon and Garfunkel's "Bridge Over Troubled Water," 1970's #1 *Billboard* single. As a result, Ono sang against the sonic surfeit of whiteness, of which Carpenter was a part. But Carpenter, as the duo's frontwoman, rose to prominence in a male-dominated industry that walled off female expression, especially for women of color. I do not mean to collapse the racial differences between these Ono and Carpenter, but to situate them in a broader moment when women either were minimized or sexualized by pop's glossification of sound. By championing the sonic ideal of the pleasurable unison, the US music industry muted articulations of difference by women and racialized people.

In 1970, Carpenter and Ono both contended with an industry that strove for unified affect and manufactured stars as package deals of looks and voices. While Ono and Carpenter gained utterly different kinds of fame achieved through radically different channels—against and within the culture industry—both fell victim to the way the music industry singularly packages pop singers as having both ideal voices and bodies. As a result, critics and fans generalize about a

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[4] Tony, "Small parts of Carpenters songs that hook you," *A Song For You: A&M Corner Forums*, July 31, 2015, https://forum.amcorner.com/threads/small-parts-of-carpenters-songs-that-hook-you.14531/.

[5] Claudia Garcia-Rojas calls the field White affect studies to mark its citation of Western thinkers, which universalizes affect and occludes the voices of queer women of color; in "(Un)Disciplined futures: Women of color feminism as a disruptive to white affect studies," *Journal of Lesbian Studies* 21, no. 3 (2017): 254–271.

singer's gender, psyche, and stardom from the sound of her voice. For example, many Beatles fans demonize Ono for her grating screams and Asian identity, lambasting her as the dragon lady.[6] Meanwhile, many critics and fans reduce Carpenter to an angelic vessel for her comforting voice.[7] Carpenter's voice and body got trapped in the industry's machinelike standards—leading to her 1983 death from anorexia nervosa—and Ono's attempts to circumvent them are censored.

To counter the stereotypical labels foisted upon Ono and Carpenter, I turn to their biographies and performances, which shape how people variously hear their voices. So, too, do their uses of double-tracking amplify their bodily efforts to produce timbres and affects. Male producers often do the double-tracking, thus lessening singers' agency, but Ono and Carpenter loop themselves as a kind of feedback that forestalls processes of homogenization in male walls of sound. These women aritsts multiply the forms in which women can emote. In their own ways, Ono's and Carpenter's walls of affect breach male walls of sound to insist on gendered difference. As Ono and Carpenter manipulate their vocal mechanisms and tape machines, they raze binaries between verbal/nonverbal, music/noise, nature/technology, and internal/external exchanges of emotions.

To reverse engineer Ono and Carpenter's vocal magnetism, I analyze their voices on two levels: first as corporeally produced within singers, then as filtered through recording techniques that have been shaped by industry and genre practices. Such internal/external distinctions often are made by voice scholars; Freya Jarman, for example, uses them to examine how techniques queer the voice:

> By "external," I mean what we might call "man-made" technologies, the technologies of recording and the recording process, decisions about the proximity of the microphone to

[6] Kristina Stiles, "Unbosoming John Lennon: The Politics of Yoko Ono's Experience," in *Concerning Consequences: Studies in Art, Destruction, and Trauma* (Chicago: University of Chicago Press, 2016), 153.
[7] Many YouTube comments on Carpenters' songs label Carpenter as angelic. Others savor "'sexiness'" of "low, rich and intimate" tones; newvillefan, "Small parts of Carpenters songs that hook you," *A Song For You*, July 31, 2015.

> the mouth; the framing of the voice within the mix; reverb, chorus effects, echo, delay, overdubbing, and so on. […] By "internal technologies," I mean the technologies of vocal production implied by Barthes's work on the grain of the voice [… the] biotechnological process central to the very production of voice.[8]

The following case studies of Ono and Carpenter illustrate how the situated body and technology create potent vocal effects in tandem. Scholars often pit technology and music as opposites, where art made by machines is manufactured but that of one's hands or voice is organic.[9] Myths of "natural" vocal or instrumental ability pervade both avant-garde and classical music. Scholars and critics tend to equate an artist's virtuosity with a direct expression of their soul, not their physical labor. But singing or playing an instrument undeniably engages bodily techniques. As Marcel Mauss pointed out in "Techniques of the Body," an activity like playing an instrument follows a prescribed set of actions that are "assembled for the individual not by himself alone but by all his education, by the whole society to which he belongs, in the place he occupies it."[10] The vocal instrument is trained through musical and social cues—opera singers, for example, are cast into the gendered categories of voice types, each of which entails physical and affective traits and certain modes of training and conditioning.[11] In this way, before any sound waves touch a

[8] Freya Jarman-Ivens, *Queer Voices: Technologies, Vocalities, and the Musical Flaw* (New York: Palgrave Macmillan, 2011), 21-22. Brian Kane also evokes techné, "the astounding variety of bodily and cultural techniques that subjects apply to themselves as well as the technologies that they employ to shape, define, and alter their experience" in "The Voice: A Diagnosis," *Polygraph* 25 (2016), 104; see also Steven Rings, "A Foreign Sound to Your Ear: Bob Dylan Performs 'It's Alright, Ma (I'm Only Bleeding),' 1964–2009," *Music Theory Online* 19, no. 4 (December 2013), https://mtosmt.org/issues/mto.13.19.4/mto.13.19.4.rings.php.

[9] See Matthew Malsky, "Stretched from Manhattan's Back Alley to MOMA: A Social History of Magnetic Tape and Recording," in *Music and Technoculture*, ed. René Lysloff and Leslie Gay Jr. (Middletown, CT: Wesleyan University Press, 2003), 254.

[10] Marcel Mauss, "Techniques of the Body," trans. Ben Brewster, in *Sociology and Psychology: Essays* (Boston: Routledge and Kegan Paul, [1934] 1979), 105. See also Pierre Bourdieu's work on habitus, and Michel Foucault and Erving Goffman respectively on conditioned bodily behavior, in Michel Foucault, *Discipline and Punish: The Birth of the Prison*, trans. Alan Sheridan (New York: Vintage Books, 1995), and Erving Goffman, *Relations in Public: Microstudies of the Public Order* (New York: Basic Books, 1971).

[11] See, for example, James Q. Davies, "'I Am an Essentialist': Against the Voice Itself," in *The Voice as Something More: Essays Toward Materiality*, eds. Martha Feldman and Judith T. Zeitlin (Chicago: University of Chicago Press, 2019), 142–168.

microphone, a voice has already been shaped by the societies from which it comes and in which its voice lessons have taken place: all of these factors groom multifaceted vocal signatures.

While the culture industry packages a star's voice as a wholesale expression of her inner and outer lives, Ono and Carpenter defy this univocal audiovisual ideal with their own fusion: vocal techniques and tape manipulations.[12] Combining so-called "natural" voices and sound editing technology was not a unique phenomenon in 1970. From the '60s, walls of sound—often simulating the psychedelic states of emotions and mind-altering drugs—arose from George Martin for the Beatles at Abbey Road to Brian Wilson for the Beach Boys in Los Angeles. They maintained a history of sonic manipulation led by white male tinkerers and acclaimed artists. In the 1960s and '70s, women and racialized artists typically were put behind microphones, not at the controls.[13] Consequently, Motown girl groups and singers like Marvin Gaye were considered musical, not technological, marvels. Take Phil Spector's mid-60s control over the Ronettes: posing as master of their vocal magnetism, he denied their bodies as the sites of production.

This binary of pure voice versus muddy technology plays out across gendered lines for the Carpenters: Richard wrote arrangements and orchestrated overdubs, and Karen was their voice. Carpenter fits the mold of a mythical Siren—a beauty whose sweet voice bewitched Ulysses' sailors until they plugged their ears. For Adriana Cavarero and many voice scholars, female singers are still saddled nowadays with this dangerous mythology of women figured "first

[12] Scholars have studied singers as hybrids of voice and technology in a range of eras and genres, from castrati [Bonnie Gordon, "The Castrato Meets the Cyborg," *The Opera Quarterly* 27, no. 1 (2011): 94–121 and Martha Feldman, *The Castrato: Reflections On Natures and Kinds* (Oakland, California: University of California Press, 2015)] to cyborgian fusions of vocalists and vocoders [Alexander G. Weheliye, "'Feenin': Posthuman Voices in Contemporary Black Popular Music," *Social Text* 20, no. 2 (2002): 21–47 and Robin James, "'Robo-Diva R&B': Aesthetics, Politics, and Black Female Robots in Contemporary Popular Music," *Journal of Popular Music Studies* 20, no. 4 (December 2008): 402–23].

[13] See Susan Schmidt Horning, *Chasing Sound: Technology, Culture, and the Art of Studio Recording from Edison to the LP* (Baltimore: Johns Hopkins University Press, 2013), 9.

of all as a body and as an inarticulate voice."[14] Ono and Carpenter carried this baggage, too. As critic Tom Smucker wrote, "For all the Carpenters' overdubbing and studio intelligence, Carpenter's voice is still a natural marvel."[15] But what he heard was mediated by microphones and speakers the duo set up to emulate the overdubs on their 1970 album. Ironically, Smucker idealizes Carpenter's voice as the pinnacle of purity, even though it never hits listeners' ears as wholly natural. Whether recorded or live, it is overdubbed or heard through technological processing. As this example illustrates, listeners fill singers' voices with their own cultural and gendered perceptions—Carpenter's voice is mediated by technology as well as listeners' biases.

This chapter's case of vocal doubles tracks how listeners expect female singers to conform to body images of sirens and perfect pop stars. But internal and external technologies of voice can defy these images. In her 1970 film *Fly*, Ono blends what Lennon infamously called her "sixteen-track voice" with ADT to ventriloquize multiple bodies onscreen. Her voice's mobile magnetism fractures the unifying logic of the culture industry that pins Carpenter's body image to her voice. Vocal techniques and double-tracking add tiny differences to walls of sound through an avant-garde logic of displacement that also can map onto nonconformity with a star image. For, if Ono opposes pop culture's suppression of women using pop and rock tape effects, might Carpenter's double-tracked voice, which emphasizes enculturated vocal techniques, also be heard as female labor in timbral defiance of '70s pop's homogenizing gloss?

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[14] Adriana Cavarero, *For More than One Voice: Toward a Philosophy of Vocal Expression*, trans. Paul A. Kottman (Stanford: Stanford UP, 2005), 107. See also Amy Lawrence, *Echo and Narcissus: Women's Voices in Classical Hollywood Cinema* (Berkeley: University of California Press, 1991), and Jennifer Fleeger, *Mismatched Women: The Siren's Song through the Machine* (New York, NY: Oxford University Press, 2014).

[15] Tom Smucker, "The Carpenters: Forbidden Fruit," reprinted in Schmidt, *Yesterday Once More*, 86. Smucker may be affected by what Michel Chion calls spatial magnetization, a "psychological phenomenon" that occurs when we perceive a sound as being in both stereo and a physical space: e.g., hearing offscreen footsteps in theaters (Michel Chion, *Audio-Vision: Sound on Screen*, trans. Claudia Gorbman (New York: Columbia University Press, 1994), 69–70.

Tape in the Age of its Magnetic Reproducibility: From Missives to Multitracking

Equipped with a technology that made voices all the more portable after the transistor radio, Ono and Carpenter used tape techniques to attach female voices to new realities and to demagnetize their bodies from social stereotypes. Through a history of magnetic tape recording, we can begin to hear how Ono's and Carpenter's constructed sounds reflect both industry ideals and their resistance to them. For tape and techniques like multitracking were shaped by institutions, artists, and even adolescents: a ten-year-old Walter Murch—who became a pioneer of film sound design and editing—tinkered for hours with his neighbor's tape recorder, "hanging the microphone out the window and capturing the back-alley reverberations of Manhattan."[16] In the 1940s and '50s, composers in Europe spliced sounds with magnetic tape to make *musique concrète*. And in the mid-60s and '70s, cars across the US were outfitted with "Highway Hi-Fi" tape cartridge systems.[17] But before sound collages and easy listening, magnetic tape stored communications and was a wartime commodity.

Magnetic tape has been handled in laboratories as diverse as telecommunications, battlefields, and recording studios. These industries desired a more mobile medium than the phonograph or wire recorders to record and play back sounds from different times and spaces. For example, the US military used wire to transmit messages up through World War II, but wire was no match for the speed, fidelity, or manipulability of magnetic tape. In 1945, the German-made magnetophon tape recorder was a prize export for the American Army Signal Corps. As Friedrich Kittler elaborates, "the booty of war […] set a new standard: for the first time, it was possible to manipulate acoustics in the space between the production of recordings and their

[16] Walter Murch, foreword to Michel Chion, *Audio-Vision*, xiii.
[17] On this history, see Richard James Burgess, *The History of Music Production* (Oxford: Oxford University Press, 2013), 69. Importantly, car cartridges allowed listeners to self-select music instead of being bound to transistor radios' set lists.

reproduction."[18] Both portable and affordable, magnetic tape spread in the US, normalizing spatiotemporal manipulation: listeners increasingly heard voices split from bodies as natural.

From 1945, tape changed how listeners perceive sound in space, time, and embodied reality. Magnetic recordings sounded more realistic than phonographs: they expanded frequency and timbral ranges and picked up vocal sibilants.[19] While the public initially balked at the "harsh and artificial" nature of tape sounds, John T. Mullin, the Signal Corps G.I. who shipped two magnetophons to the US in 1945, said he "couldn't tell whether [a tape] was live or playback. There simply was no background noise."[20] Absent the crackle of records' surface noises and needle scratches, tape recordings sounded like lived reality. In this way, tape enabled shows like Bing Crosby's *Philco Radio Time* to sound live even though they were anything but—Mullin recorded segments months ahead of time on the magnetophon, which allowed him to edit out inappropriate comments or accidental slights against commercial sponsors. To put all of the parts of a "live" show in sequence, Mullin spliced, erased, and recorded over his recordings with Scotch mending tape. Magnetic tape's temporal and spatial manipulation techniques not only helped to engineer "live" shows, however—they also assisted musicians' creative practices.

Bing Crosby played a key role in making tape available to musicians once the Ampex 200 and 200a recorders—American versions of the magnetophon—debuted in April 1948. Crosby and his producers ordered 20 in advance to improve the cost, labor, and sub-par sound quality of disc-to-disc dubbing (since the 1930s, multiple phonographs were used to overdub tracks from one disc to another[21]). The Ampex, like the magnetophon, could merge takes from

[18] Friedrich A. Kittler, "The God of Ears," in *The Truth of the Technological World: Essays on the Genealogy of Presence* (Stanford University Press, 2014), 48.
[19] For details on tape's sonic affordances, see Malsky, "Stretched from Manhattan's Back Alley to MOMA," 244.
[20] John T. Mullin, "Creating the Craft of Tape Recording," *High Fidelity* 26, no. 6 (April 1976): 63.
[21] Jason Stanyek and Ben Piekut correct the common misunderstanding that overdubbing only began in the 1950s in "Deadness: Technologies of the Intermundane," *The Drama Review* 54, no. 1 (Spring 2010): 21. Early forms of

rehearsals and shows, but its cost and optimized functions put tape in artists' hands. For example, Crosby's show often featured guitarist Les Paul, whose "sound-on-sound" process used disc-to-disc dubbing, like the eight-layer single "Lover" (1948).[22] But sound-on-sound overdubbing gradually decayed the quality of previous material and could lead to lost labor: as musicians made copies of copies, if they made a mistake on one part, they had to start over from the beginning of the mix. That changed in 1949 when Crosby gave Paul an Ampex.

Paul teamed up with the Ampex Special Products Section to design an 8-track recorder. By 1956, "Sel-Sync" (selective synchronization) made overdubbing easier and cleaner: Paul could record individual tracks and later synchronize them to other recording heads, since all were vertically stacked.[23] A range of artistic roles were now possible for one artist, from performing to mixing, whenever and in whichever order pleased her. With multitracking, producers could compose new sonic worlds and, conversely, artists could become producers and engineers.

As multitrack tape machines cropped up in studios in the late '60s, artists increasingly overdubbed voices and instruments. The Beatles recorded *Revolver* (1966) and *Sgt. Pepper's Lonely Hearts Club Band* (1967) on four-track machines, juxtaposing timbres in "exotic textures."[24] In 1970, Marvin Gaye's "What's Going On" shifted voices into different depths of field, to the extent of layering instruments over them to displace the primacy of the lead singer's voice—normally the clearest and loudest sound in the mix. For Albin Zak, multitracking aided artists in manipulating the lead voice, "deemphasizing it in some way—say, making it softer or

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overdubs are in a Victor re-release of Enrico Caruso in 1932—eleven years after the infamous phonograph singer's death—as well as in Sidney Bechet's "one-man band" recordings in 1941 and Patti Page's duet with herself in 1947.

[22] Burgess, *The History of Music Production*, 51.

[23] Ross H. Snyder, "Sel-Sync and the 'Octopus': How Came to Be the First Recorder to Minimize Successive Copying in Overdubs," *ARSC Journal* 34, no. 2 (Fall 2003): 210. See also Schmidt Horning, *Chasing Sound,* 174.

[24] John Kimsey, "The whatchamucallit in the garden: *Sgt. Pepper* and fables of interference," in *Sgt. Pepper and the Beatles: It Was Forty Years Ago Today*, ed. Olivier Julien (Aldershot, Hampshire, England: Routledge, 2008), 133.

placing it off to one side."[25] Even muted in this way, the voice still has a pull on listeners due to its primary role of communicating emotions and concepts. For voice had magnetism long before tape did; as Rudolph Lothar wrote of the phonograph in 1924, "Nothing excites memory more strongly than the human voice, maybe because nothing is forgotten as quickly as a voice. Our memory of it, however, does not die—its timbre and character sink into our subconscious where they await their revival."[26] For Lothar and for Kittler, the machine that inscribes voice—whether phonograph or tape—is sticky with its residues, communicative or otherwise.

As Lothar's phonograph anecdote attests, recording devices enhance what I call the "mnemonic magnetism" of voices—that is, the way that tape amplifies the textures and inflections of singers' voices, which subsequently stick in our aural memories.[27] Part of the power of this mnemonic magnetism comes from tape's manipulability, as multitracking and forward and reverse motion turn tape into a technology of inscription and control. From its early wartime use to sync up combat vehicles with quick data transmissions, magnetic tape dubbing continued a logic of control through the "wall of sound" pioneered by Spector in the 1960s. Dubbed his "Wagnerian approach to rock'n'roll," Spector's "wall of sound multiplied voices and instruments, uniting them across a melody or theme in order to create a single, monolithic voice." As Nikita Gale explains, "His 'wall' was meant to be the ground from which the figure of the singer emerges, but the producer ended up being the only one in view."[28] Singers like

[25] Zak Albin, *The Poetics of Rock: Cutting Tracks, Making Records* (Berkeley: University of California Press, 2001), 157–78.
[26] Rudolph Lothar, *The Talking Machine: A Technical-Aesthetic Essay* (1924), quoted in Friedrich Kittler, *Gramophone, Film, Typewriter*, trans. Geoffrey Winthrop Young and Michael Witz (Stanford: Stanford University Press, 1999), 45.
[27] See Berthold Hoeckner on music's mnemonic powers, such as musical motifs that conjure images in viewers' minds to function as mnemonic devices; in *Film, Music, Memory* (Chicago: University of Chicago Press, 2019).
[28] Nikita Gale, "Little Girls," *Triple Canopy* 26, September 24, 2020, https://www.canopycanopycanopy.com/contents/little-girls.

Ronnie Spector and Tina Turner were relegated to the background while Phil Spector was celebrated. Tape's walls of sound were magnetized to male control and fame.

However, apart from tape's external manipulability through overdubbing, mnemonic magnetism also emerged from a singer's vocal techniques. Ronnie Spector and Tina Turner tear through the unifying control and sameness of Spector's wall of sound with throaty rasps and cries. They erect what I call walls of affect—sounds with contingent bursts of feeling that make space for those historically excluded from walls of sound. I turn now to two key creators of walls of affect, Ono and Carpenter, who use tape to amplify extra-musical sounds that are alternately political, personal, and for both, emotional. As a technology of mnemonic magnetism, analog tape transmits traces of internal and external technologies, feeding back the sounds of bodily labor spent to reproduce affective loops. Tapes contain traces of these singers' battles to make their embodied expression heard—Carpenter, against industry pressure which shrank her body beyond repair, and Ono, against Beatles fans and critics who dismissed her singing as noise. As I show, these women's voices emit magnetic shock waves that still resonate today.

Yoko Ono's Vocal Migrations: From Music of the Mind to 16-Track Screams

The musician and multimedia artist Yoko Ono uses a broad range of vocal technologies, from her body's internal recesses to the tape recorder's external operations. Her 1961 *Voice Piece for Soprano* exemplifies this range: it first took the form of an instruction piece or event score—short written lines that could generate music, paintings, and films. Ono's event scores function as a sort of music of the mind: they conjure up multiple senses in readers' imaginations to activate emotional responses that might shake up the preexisting political order. In *Voice Piece*, Ono asks readers to imagine the sound and form of three different screams: "Scream. 1. against the wind 2.

against the wall 3. against the sky." As she allows readers to protest without the pressure to scream out loud or the risk of being silenced, Ono expands vocal expression on a scale from silence to loud dissent. From her childhood memories of fleeing the Tokyo bombings in World War II, Ono has long believed that art forms should "make 'change' into a positive move: [to] let the work grow—by asking people to participate and add their efforts."[29] Following this, Ono has turned *Voice Piece* into a public demonstration and a political forum. She performed it on vocal concerts in the 1960s, mounted a MoMA exhibition with a microphone for museumgoers to scream out their own frustrations in 2010, and protested Donald Trump's election with it on social media in 2016.[30] With each new site of performance, Ono's score amasses varied voices of resistance into a sharable repository of screams.

In the late '60s, Ono increasingly circulated her event scores across aural and visual lines and on mass media. After meeting George Maciunas, the ringleader of the loose association of artists known as Fluxus, Ono borrowed Peter Moore's high-speed camera in 1966. Many Fluxus artists, from Maciunas to Paul Sharits, used the medium of film to emphasize the visual consequences of chance events. In early films, Ono shot event scores with Moore's camera to preserve their images on celluloid, albeit without sound. 1966's *Eyeblink*, for example, depicts the title gesture in slow motion at 2,000 frames per second.[31] But later in 1966, her sound film *No. 4 (Bottoms)* pits shots of Londoners' bare bottoms against an asynchronous soundtrack of their reactions to her instructions. Her sonic experiments continued her event scores' work of layering emotions and concepts to direct attention to infinitesimal and unfamiliar textures. Like

[29] Ono quoted in Hans-Ulrich Obrist, *Hans Ulrich Obrist: Interviews*. Florence: Fondazione Pitti Immagine Discovery; Milan: Charta, 2003.
[30] See Yoko Ono (@yokoono), "Dear Friends, I would like to share this message with you as my response to @realDonaldTrump love, yoko," Twitter video, November 11, 2016, 3:21 p.m., https://twitter.com/yokoono/status/797187458505080834.
[31] Scott MacDonald, "Yoko Ono: Ideas on Film: Interview/Scripts," *Film Quarterly* 43, no. 1 (Autumn 1989): 7; 4.

John Cage's infamous 1952 "silent" composition *4'33* reorients the audience's attention to sounds in their environment and away from the silent performer onstage, Ono opens listeners' ears to the possibility that ordinary sounds like coughs and rustles can be music. But she does so outside of a Western context where musical composition is high art. Ono gathers an archive of voices with the aim of making multiple strains of people's lives audible—especially screams.

Even with her ties to the Beatles and Fluxus, Ono's signature screams put her on the fringes of art and pop music. Screaming has long been a part of Ono's repertoire to communicate her feminist beliefs, but critics often scorn her vocal style. At Ono's 1961 solo concert at Carnegie Hall, *Village Voice* reporter Jill Johnston disparaged her "amplified sighs, breathing, gasping, retching, screaming" as "many tones of pain and pleasure mixed with a jibberish of foreign-sounding language that was no language at all."[32] Ono rejects classical musical ideals of pure, exact tones and reframes radical sounds as music. But these sounds do not lack cultivation: she studied opera and kabuki as a child in Japan, and later learned extended vocal techniques used by modernist vocalists such as Cathy Berberian and in *musique concrète* tape experiments.

Ono's walls of affect first used written instructions to prompt spectators to reckon with artistic and social orders; after 1961, she especially utilized internal vocal technologies to express anguish and rage. Ono frames her pieces as vehicles to transform negative emotions; after making her film *Rape* (1969), she wrote, "Violence is a sad wind that, if channeled carefully, could bring […] all things pleasant to us."[33] Singing offers her such a channel, in that it facilitates "using your body and your mind as opposed to a translator, which is an instrument

[32] Jill Johnston, "Life and Art," *Village Voice*, December 7, 1961, 10.
[33] Yoko Ono, "On *Rape*," self-published in London, 1969; reprinted in *Grapefruit* (New York: Simon and Schuster, Touchstone Book, [1964] 1971).

[…] it's something of you that you're giving on a direct level."[34] In this way, screams become an instrument of social awareness. Once Ono "had become so lonely doing mind music that [she] was ready to begin screaming again," she screamed with John Lennon in their 1968 *Unfinished Music No. 1: Two Virgins*.[35] While Ono's vocals repelled Beatles fans, Lennon praised them as exemplary of Arthur Janov's primal scream therapy, which they practiced in 1969-70 and which led him to scream in his first solo LP, 1970's *John Lennon/Plastic Ono Band* (which was co-produced by Spector). The goal of scream therapy, to "act out madness in order to become sane," was not new to Ono, who had done so in event scores in her 1964 book *Grapefruit*.[36] Earlier still, her 1961 solo concert had launched her screams as a new voice in 1960s musical modernism. In New York, amid John Cage and La Monte Young, she lamented that "the avant-garde guys didn't *use* the voice" and rejected the "very asexual kind of atmosphere" of music that seemed "mainly for the head." She turned to screaming to "throw blood" with her voice, which to her was the most direct way to channel her inner rage—to highlight it as a bodily act.[37]

Ono screams to normalize a spectrum of female expression—to open people's ears to sounds that should be legible as emotive responses to situations. She recodes screaming from a sign of weak femininity or otherness to a channel that sparks physiological changes in both vocalizers and listeners. As a 2015 study reports, the brain filters screams in channels that are distinct from those for speech.[38] Instead of first being translated into language, screams hit the

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[34] Yoko Ono, quoted in Daniel Rothbart, "The Dragon Lady Speaks: An Interview with Yoko Ono," *New York Arts Magazine* 7, no. 6 (June 2002): 82, https://danielrothbart.org/wp-content/uploads/2020/02/Yoko-Optimized.pdf.
[35] Ono quoted in Henry Edwards, "Yoko." *Crawdaddy!: The Magazine of Rock N' Roll*, August 29, 1971, 34–35.
[36]Jeff Burger, *Lennon on Lennon: Conversations with John Lennon* (Chicago: Chicago Review Press, 2016), 277–78.
[37] Ono quoted in Mark Kemp, "She Who Laughs Last: Yoko Ono Reconsidered," *Option* 45 (July/August 1992): 78. For Ono's remark on avant-garde music as cerebral, see Joy Press, "Yoko Ono: A Life in Flux," *Wire* 146 (April 1996): 18–24.
[38] Luc H. Arnal, et al, "Human Screams Occupy a Privileged Niche in the Communication Soundscape," *Current Biology* 25, no. 15 (August 3, 2015): 2051–2056, http://dx.doi.org/10.1016/j.cub.2015.06.043.

amygdala to "convey danger but also to induce fear in the listener and heighten awareness for both screamer and listener to respond to their environment."[39] Ono's screams create emotional shocks that highlight injustices in situations. In her 1971 *New York Times* article "The Feminization of Society," she urged women to inject feminine energy into a patriarchal culture.[40] Screams throw fear, rage, even pleasure, against sanctioned behavior that quiets women's voices.

On the eve of 1970, Ono was not the only singer to wield female vocality as an instrument of embodied expression. In 1966, the soprano Cathy Berberian premiered Luciano Berio's *Sequenza no. 3*, which she called "an X-ray of the inner life of a woman."[41] From nervous laughter and coughing to a relieved sigh, the piece's rapid sonic montage archives a range of day-to-day utterances. Berberian brought feminine physicality and emotion to the male-dominated realm of modernist music. Ono similarly builds a repository of feminine experience from a battery of found vocal sounds. By comparing these artists' uses of extended vocal techniques—how they texturize their voices to grind dirt into classical music's ideals of purity—we can better grasp the logics of internal technologies of the voice.

Extended vocal techniques are used in a variety of twentieth-century music. They encompass speech effects (such as blending speaking with singing); yodeling, rapping, and vocal percussion; and quickly throttling the voice with one's uvula (ululation), glottis (as in vocal fry or growls), or lungs (whether varied pulses of air to produce tremolo or varied pitches of vibrato). Ono especially used multiphonic vibrato, which as Shelina Brown explains is

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[39] David Poeppel quoted in Tanya Basu, "Scientists Now Know Why People Scream," *Time*, July 16, 2015, http://time.com/3956127/scream-screaming/.
[40] "The ultimate goal of female liberation is not just to escape from male oppression," Ono writes, but to inject into society "feminine wisdom and awareness which is based on reality, intuition, and empirical thinking, rather than logistics and ideologies." Yoko Ono, "The Feminization of Society" (1971), reprinted in Alexandra Munroe, *Yes Yoko Ono*, eds. Munroe and Jon Hendricks (New York: Japan Society and Harry N. Abrams, Inc., 2000), 299; 300.
[41] István Anhalt, *Alternative Voices: Essays on Contemporary Vocal and Choral Composition* (Toronto: University of Toronto Press, 1984), 40.

"produced by separating the function of the two primary vocal folds, so that the vocalist is rapidly alternating between vocal folds. A vocal practice uncommon to Western vocal traditions, the use of multiphonic vibrato gives rise to a trans-subjective vocal aesthetics whereby two contactual vocal subjective grains emerge in tandem."[42] Berberian enacts a similar, if linear, polyvocality when she rapidly switches between trills, continuous pitched phonation, and grunts—multiple singers seem to pour forth from her body that are simultaneously hyper- and anti-feminine. When a singer fractures her voice into several personas, Brown maintains, she shatters the myth that her voice is a unique, unchanging signature of herself. For Brown, screams

> challenge the listener's ability to construe Ono's own performative persona as a unified subjectivity, and indeed, whether her bodily interiority is in fact a singular material reality, or a performed amalgam of *bodily interiorities*. […] [R]ather than a unified bodily interiority, Ono's vocal contortions point to a bodily interiority-in-process, that is, a body consisting of multiple, fragmented, often opposing material 'interiorities' vying for sonic existence.[43]

Ono's screams physically project the residues of many existing bodily sounds. Enormous effort is required from the whole body, from throat to pelvis, to produce these sonic slices of feminine reality. These internal technologies of voice gain further affective force once magnified on tape.

The mid-century musical avant-garde used tape to explore new sonic vocabularies, but often disembodied ones, especially in *musique concrète* compositions based on field recordings. In his 1970 work *Presque rien ou Le lever du jour au bord de la mer*, Luc Ferrari compiled recordings of a fishing village taken from one fixed aural perspective to fabricate a sonic postcard from a real place and time. For Ferrari, such a use of tape recorders could "pave the way

[42] Shelina Brown, "Yoko Ono's Experimental Vocality as Matrixial Borderspace: Theorizing Yoko Ono's Extended Vocal Technique and her Contributions to the Development of Underground and Popular Vocal Repertoires, 1968 – Present" (PhD diss., University of California, Los Angeles, 2018), 17.
[43] Shelina Brown, "Scream from the Heart: Yoko Ono's Rock and Roll Revolution," in *Countercultures and Popular Music*, eds. Jedediah Sklower and Sheila Whiteley (Burlington, VT: Routledge, 2014), 176.

for amateur concrete music much as people take snapshots during vacations."[44] Recall how Walter Murch tinkered with tape outside his Manhattan window to explore sonic realities. Both of these examples fall into the narrow box of representing landscapes, with fixed sonic perspectives that disembody the artists' hands. In Berberian's and Ono's hands, tape brushed up against women's lived realities as they recorded, spliced, and disseminated their voices.

Ono, in an interview with Joy Press, says "that she's always been involved in twiddling knobs in the studio," which Press describes as "overly modest, considering that she has produced or co-produced every one of her albums."[45] Women's work with technology is often effaced, even by the artists themselves. But their tinkering has much to tell about inserting difference into walls of sound. Berberian recognized the potential for tape to amplify traces of her body that might otherwise go unheard in classical music: "with a tape-recorder you can record one or more sounds [… and then] modify and combine them with other acoustic elements from different contexts; all this has given the musician (and the singer) the possibility of a different listening of reality and of all those acoustic facts that normally would escape us."[46] Berberian did not let tape disembody her, though: in lieu of it turning her voice into abstract sound, she jammed her voice into its circuitry. As Jennifer Iverson observes, Berberian's pieces have been read as a way to humanize machines—in that her body and voice become "domestic substitutes for an otherwise unfamiliar and vaguely threatening technology."[47] But Berberian's experiments with voice and

[44] Luc Ferrari quoted in Eric Drott, *Music and the Elusive Revolution: Cultural Politics and Political Culture in France, 1968–1981* (Berkeley: University of California Press, 2011), 226.
[45] Joy Press, "Yoko Ono: A Life in Flux," 23–24.
[46] Berberian quoted in Nicola Scaldaferri, "Bronze by Gold, by Berio by Eco: A Journey through the Sirensong," in *Musica nel laboratorio elettroacustico: Lo Studio di Fonologia di Milano e la ricercar musicale negli anni Cinquanta* (Lucca: Libereria Musicale Italiana, 1997), 124, quoted in Jennifer Iverson, *Electronic Inspirations: Technologies of the Cold War Musical Avant-Garde* (New York, NY: Oxford University Press, 2019), 185.
[47] Iverson, *Electronic Inspirations*, 191.

tape refuse to comply with the role of a quiet housewife.[48] Berberian does not domesticate the tape deck but, like Ono, uses it to vocalize various hardships.

Sonic Flypaper: The Nagra Tape Recorder and Vocal Embodiment in Yoko Ono's *Fly*

The same year that *Presque rien* took an aural snapshot of a fishing village, Ono's film *Fly* exposes the transient textures of women's suffering. Akin to Berberian's "X-ray of the inner life of a woman," Ono calls *Fly* "the statement of a woman, what women go through […] from a male point of view, it's a totally different film—it's about curvature."[49] It enacts her 1968 event score: "Let a fly walk on a woman's body from toe to head and fly out of the window." Filmed over 40 hours in a freezing New York loft, close-ups emphasize body parts of the bare-skinned actor Virginia Lust. But after editing to a 25-minute cut, Ono adds an improvised soundtrack to voice another perspective of the encounter—a fly near-omnipresent in the frame. Ono uses extended vocal techniques and a Nagra recorder to mimic the fly's buzzes and the woman's wails, which alternately sound like violation and pleasure. Like Berberian, Ono inserts herself into the machinery of tape to atomize herself into three different figures: narrator, woman, and fly. Her vocals dredge up varied emotions for spectators depending on the body with which they identify as the camera follows the fly's movements but also excavates nearly every crevice of Lust's skin. As a result, some viewers may feel the urge to swat away a common housefly, while some may recoil from it as it occupies the woman's breasts and vulva and revives memories of sexual violations. Ono's voice-as-fly elicits mnemonic magnetism that recalls Franz Anton Mesmer's "animal magnetism," his 1779 term for a substance that flowed inside and between

[48] Berberian and Berio were married from 1950-1964; as Rebecca Y. Kim writes, though their marriage "ended in 1964, their professional relationship flourished during the 1960s." "Biography" on *Cathy Berberian* (website), http://cathyberberian.com/biography/.
[49] Yoko Ono quoted in Carolyn Boriss-Krimsky, "Yoko Ono: Art of the Mind," *Art New England*, no. 22 (2001), 83.

human bodies. Her voice floats as Mesmer's hands would over (usually female) patients' bodies to "'make passes' […] with magnetized objects." Mesmer cured blockages in the imagination only, but mesmerism resonates with telegraphs and 20th-century communication media, sharing "a common cultural project: electric connection between distant individuals."[50] In *Fly*, Ono makes passes over bodies with double-tracking to voice Lust as both electrical agent and victim.

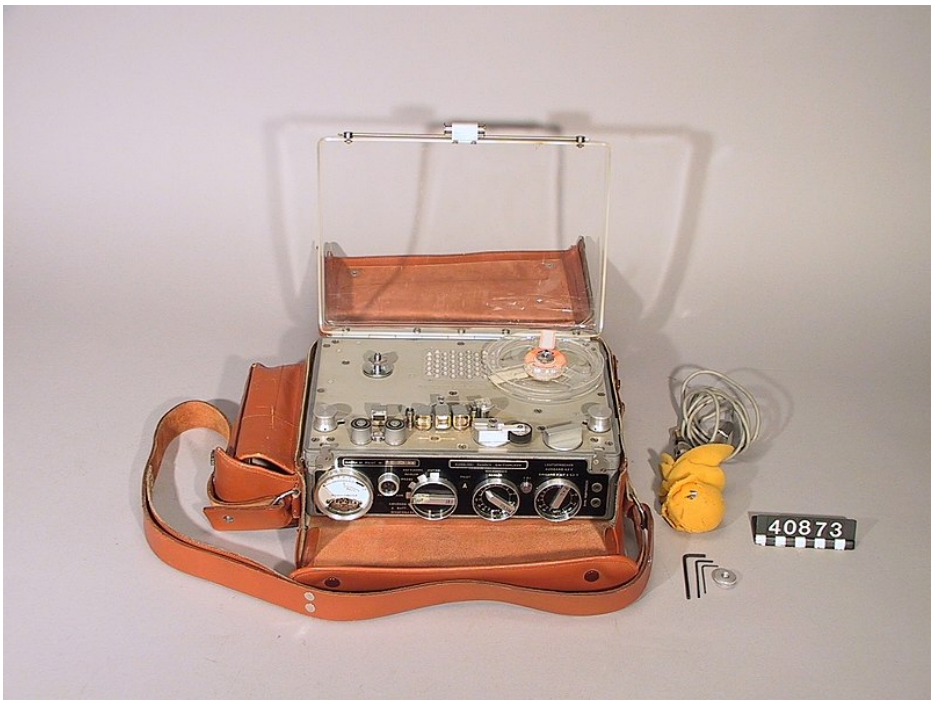

Figure 2.1 Similar to Lennon's Nagra is "Reportagebandspelare Kudelski Nagra III Pilot," unknown author, CC BY 4.0, 1962. https://commons.wikimedia.org/wiki/File:Reportagebandspelare_Kudelski_Nagra_III_Pilot.jpg.

Between edited footage and an improvised and manipulated vocal piece, tape acts as flypaper for an archive of vocalized memories. As external technology, tape both magnifies and distorts Ono's multiphonic vibrato. After *Fly* was filmed, Ono recorded her soundtrack with Lennon's Nagra in their Regency Hotel suite over the weekend of Christmas 1970 (Fig. 2.1). "John had suggested that they 'knock it off before the ten o'clock news,'" biographer Jonathan Cott recounts, "and he recorded Yoko's solo vocal performance in one take, to which he later

[50] John Durham Peters, *Speaking into the Air: A History of the Idea of Communication* (Chicago: University of Chicago Press, 1999), 91; 94. As Peters speculates, the sexual nature of "make a pass" may stem from mesmerism.

overlaid a forward and reverse guitar track."[51] The Nagra made these quick manipulations possible. Invented in 1951 by Stefan Kudelski, this highly portable audio recorder was the result of his goal to use magnetic tape to build robotic memory.[52] With quarter-inch tape and eventually silicon transistors, Kudelski's models became increasingly lightweight and affordable by the end of the '60s, and subsequently revolutionized artistic practices. In documentary filmmaking, for example, Nagras recorded interviews on location with high fidelity, to be matched to footage later with crystal sync.[53] Beyond direct sound uses in *cinema verité*, filmmakers also experimented in Hollywood; as William Whittington observes, "[p]ortability and mobility were essential to developing a new lexicon of film sound, allowing a recordist to roam freely, hunting and gathering all types of effects."[54] (It is worth noting that, even in 1977, *Star Wars, Episode IV: A New Hope* incorporated found sounds with a Nagra: sound designer Ben Burtt traversed Los Angeles to record "highway noises through corrugated tubing as well as jets and heavy machinery for the futuristic vehicles in the film […] Burtt understood that sound could do more than capture a cinematic reality. It could create one.")[55] The Nagra, then, not only recorded sounds in real time to approximate fidelity to our world: it also pilfered sounds from different times and spaces in order to simulate new worlds. With the Nagra's ability to remix found sounds, Ono cracks open tiny differences in the voice to archive far-flung forms of expression.

Ono's purposely gritty voice and tape manipulations oppose the coherent sonic worlds of commercial films. As Melissa Ragona explains, while Hollywood "was cleaning up and

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[51] Jonathan Cott, *Days That I'll Remember: Spending Time with John Lennon and Yoko Ono* (New York: Doubleday, 2013), 152.
[52] John Rice, "Conversation with Stefan Kudelski," *Videography* (September 1985): 1, http://www.polisheng.ca/docs/Kudelski.pdf.
[53] In *Chronique d'un Été* (Jean Rouch and Edgar Morin, 1961), a Nagra tape recorder can be seen in an early scene when Marceline Loridan and Nadine Ballot ask passers-by if they are happy; see Jeffrey Geiger, *American Documentary Film: Projecting the Nation* (Edinburgh: Edinburgh University Press, 2011), 159.
[54] William Whittington, *Sound Design and Science Fiction* (Austin: University of Texas Press, 2007), 31.
[55] Whittington, *Sound Design and Science Fiction*, 32.

engineering a highly controlled soundscape," Ono joined the likes of avant-garde filmmakers Hollis Frampton and Paul Sharits in "utilizing noise to pollute and energize film and video space […] to dirty the voice's narrative context: grinding its phonemic elements, challenging its purity as a signature of the body, and wresting it away from any kind of philosophical or psychological interiority."[56] For Ragona, these filmmakers use noise as an avant-garde tactic of displacement—especially when they wrench the voice from the classical ideal of a pure, unmediated expression of self. Anger and Rubin followed a similar logic of displacement, albeit transposing pop radio to avant-garde and minoritarian contexts. Ono's *Fly* throws her voice between different human and animal bodies. As Ono uses the Nagra to "amplify atonal and asynchronous moments" of her internal vocal technologies,[57] she transforms Hollywood's cookie-cutter personas to excavate lived realities, from women who are violated to voices that are racialized.

Defying stereotypes of both technology and classical music as sterile, Ono sullies her voice with the Nagra and disciplined techniques. She subverts these norms to call attention to the weighty social expectations put on women and minoritized subjects. The metaphor of dirt is an important form of signal interference for many sound artists; as Seth Kim-Cohen explains,

> The anthropologist Mary Douglas has defined dirt as "matter out of place." […] it seems equally plausible to say that noise is sound matter out of place. The implication is that an order, natural or otherwise, pervades human conceptions of material (visual, sonic, physical, etc.). When a bit of matter falls outside that order or in the wrong state or place within that order, it is regarded as alien, incorrect: dirt or noise.[58]

Sound artists like Ono protest norms of purity by magnifying embodied material for listeners, inviting us to uncover layers of dust on tape and film—to hear throat catches within screams.

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[56] Melissa Ragona, "Doping the Voice," in *The Oxford Handook of Sound and Image in Digital Media*, eds. Carol Vernallis, Amy Herzog, and John Richardson (New York: Oxford University Press, 2013), 154–169, 155.
[57] Ragona, "Doping the Voice," 159; 161.
[58] Seth Kim-Cohen, *In the Blink of an Ear: Toward a Non-Cochlear Sonic Art* (New York: Continuum, 2009), 111–12. Kim-Cohen quotes from Mary Douglas, *Purity and Danger* (London: Routledge, 1966).

Figure 2.2 Still from *Fly* (1970) as Ono produces tactile sounds when the fly lands on Lust's eyelashes

In *Fly*, Ono uses both internal and external vocal technologies to portray a woman violated by a fly. Ono's internally produced vocals allow her to ventriloquize both bodies onscreen. At first, her extended technique of buzzing against images of the crawling fly seems to musically narrate its movements. When a flash of blue toenails and other female features appear (Fig. 2.2), breathy gasps in a higher timbre imply that the voice could originate from the actor's body, but shots reveal it to be remarkably still, with closed lips. Ono's vocal ventriloquism thrives through unrelenting close-ups that attract sensations of touch. This is what Laura Marks calls haptic visuality: we watch these flies and our bodies react according to our own associations with flies, which might vary from skin-crawling disgust to curiosity. In this way, haptic sensations also extend to muscular and visceral levels, as Jennifer Barker, building on Marks, studies the kinetic and gut-wrenching effects of camera movement, editing, and sound. The skin-crawling and visceral impacts of Ono's vocals elicit haptic *audio*visuality, where her many sounds map onto corporeal registers that summon spectators' memories. I adapt Barker's categories of skin, muscles, and viscera to classify Ono's mnemonic magnetism from surface to depth: glottal stops elicit pinpricks on the skin, throaty growls display muscular virtuosity, and

pitch-bending indeterminate wails induce visceral frenzy. As her voice ventriloquizes onscreen bodies, it makes us itch or squirm: listeners might imagine that we graze, or even briefly feel from another's skin.

Ono's vocal projections of a woman's suffering and a fly's curiosity become haptic in the physicality of her extended vocal techniques: her hums and growls audibly convey contorted expressions of arousal or violation. On the level of skin, Ono's voice produces immediately tactile sensations like the fly's chatterings or weighty aspirations that recall a lover's soft breath on the neck. Soon, though, breathy tones become unpitched hisses, like sharp pinpricks on flesh. And pitched squeals of nails on a chalkboard transform the alluring fly into a gruesome one.

On the level of muscular sounds, Ono rapidly alternates between pitches and large intervals. For example, when the fly lands on Lust's lips, Ono emits a high cackle that crackles with multiphonic vibrato; the stinger seems to burst from the fly, but its frail echoes suggest a startled victim. Ono dips to a lower register to produce short bursts of anticipation as the fly lingers on the lower lip. She then swoops her voice up and down in pitch, creating a call-and-response pattern akin to two birds engaged in a mating ritual. Elsewhere, repeated growls evoke the practice of throat singing, which for the Inuit was initially a female social activity during male fishing trips. Two women face each other, lock arms, and throat sing a certain pattern until one runs out of breath; Tanya Tagaq's performances evoke such women's defiance.[59] This air of competition infuses Ono's growls to sound like a fly conquering flesh or the woman's protest.

[59] Charles Annenberg Weingarten, "Throat Singing," *National Geographic*, Explore Annenberg LLC, 2008, https://video.nationalgeographic.com/video/exploreorg/00000144-0a36-d3cb-a96c-7b3f7c850000.

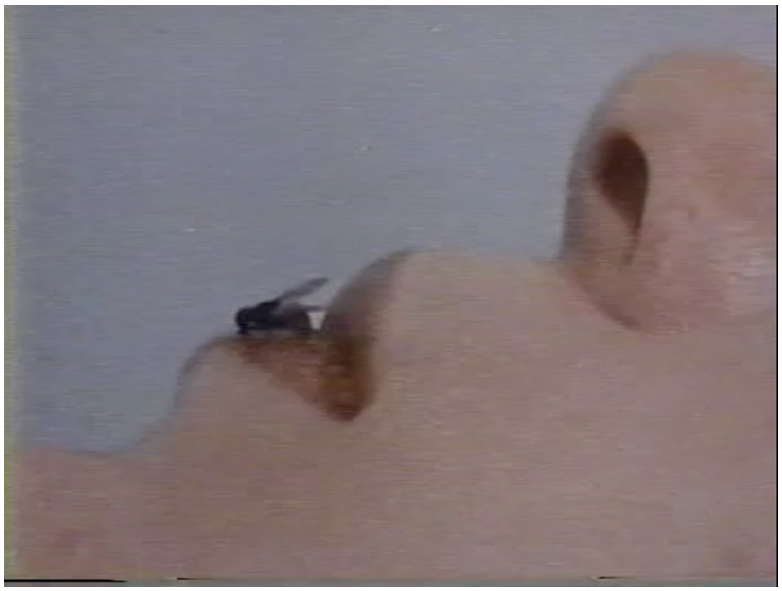

Figure 2.3 Still from *Fly* (1970) as Ono uses multiphonic vibrato to sound the fly's arrival on Lust's lips

On a visceral level, Ono's recurrent wails slide loosely up and down scales to accompany images of Lust's lips, nipples, and vulva (Fig. 2.3). Ono moves toward and away from pure pitches and emits unruly noises, like yelps that emerge in the throes of ecstasy. These sounds' unusual sonic dialects tend to unnerve listeners. Ragona explains how Ono evades Western tonality:

> Deliberately casting herself between Western rock and roll and Eastern-influenced experimental paradigms, Ono skates between two models of tuning, one that finds its roots in the "bland, equal spacing of the 12 pitches of the octave," or equal temperament; the other based in a constant evolving system that strives for "*just*" intonation, or to find the purest relationship possible between sound frequencies.[60]

As one example, Ono slips between scalar systems when she repeats the syllable "ooh" while the fly rests on a nipple. Ono opens and closes her lips as she sustains the pitches; like a jazz musician who creates a wa-wa effect with vibrato on a saxophone, Ono's lips also distort the pitch so that it never quite settles on one note.[61] Considering this extended technique's use in jazz, a genre shaped to a considerable extent by African American expression, it may draw ears

[60] Ragona, "Doping the Voice," 162.
[61] Barry Kernfeld, "Wa-wa (jazz)," *Grove Music Online*, 2003.

and eyes to Ono's own racialized identity.[62] An Asian woman in a white-male dominated avant-garde scene, Ono "did not shy away from depicting her voice as Othered," as Ragona observes.[63] But critics dismissed her purposeful evasion of Western scales as noise. To explain such disdain, Jennifer Lynn Stoever writes, "noise is invoked in direct connection to (or as a metonymic stand-in for) people of color. Sometimes tolerated, but more often fetishized as exotic or demonized as unassimilable, noise and loudness frequently function as aural substitutes for and markers of race."[64] Yet, Ono deploys noise as the rightful retort of people othered by society.

Ono's screams double what Steven Connor calls the "voice of rage": "a huge, boiling, bottomless reservoir of feeling, which comes both from within and, as it were, below the self […to project] the desire for and hallucinated accomplishment of a new kind of body, a fiercer, hotter, more dissociated, but also more living, urgent, and vital kind of body."[65] Connor dubs this a *vocalic body*, which is not only produced by internal vocal technologies but also by the external technology of tape. In *Fly*, Nagra manipulations dissociate Ono's voice into separate, "more living, urgent, and vital" entities to oppose a society that freezes women into inert forms. The act of recording a voice would seem to authorize a similar frozen disembodiment onto tape. But combined with internal vocal techniques, tape revives the ghosts of multiple avatars: its mnemonic magnetism sways listeners to hear screams that sound alternately human or animal, arousing or adversary. Double-tracked on tape, they double back on viewers to consider the roots of the violator and violated in *Fly*.

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[62] Farah Jasmine Griffin, "'When Malindy Sings': A Mediation on Black's Women Vocality," in *Uptown Conversation: The New Jazz Studies*, eds. Robert O'Meally, Brent Hayes Edwards, and Farah Jasmine Griffin (New York: Columbia University Press, 2004), 108.
[63] Ragona, "Doping the Voice," 162.
[64] Jennifer Stoever-Ackerman, "Splicing the Sonic Color-Line: Tony Schwartz Remixes Postwar Nueva York," *Social Text* 28, no. 1 (2010): 59–85, p. 67.
[65] Steven Connor, *Dumbstruck: A Cultural History of Ventriloquism* (New York: Oxford University Press, 2000), 37.

Tape's external technology aligns Ono's vocalic bodies with her event scores' aims to migrate messages across live and recorded platforms. Ono and Lennon's experimental soundtrack on the Nagra mimics Barker's surface-to-depth categories in three parts, which Ono describes in terms of monologues and dialogues. The first part consists of her improvised vocals in monologue, bare of technological manipulations. In the second part, Ono's voice plays back on one track while John records his guitar on another. His guitar is then reversed against Ono's vocals. Ono calls this section "monologue in a dialogue form," as the two tracks remain separate, playing in opposite directions. The third part is a "monologue in a trialogue form," when Lennon's guitar plays on another track and part two's tracks are played back in reverse. At the end, Lennon's reversed guitar accompanies another live take of Ono's voice, which ends as John plays a live radio. This mix of live and recorded echoes the participatory and self-reflexive nature of Ono's event scores; although she improvised her vocals, she told *Crawdaddy* she had "wanted to do [this] for ten years."[66]

The Nagra helped Ono scatter vocal doubles via pairs of screams and guitar strums, and human and nonhuman sounds. Doubled tracks put listeners in dialogue with a haptic audiovisual archive of experiences that were not yet heard in terms that the world would comprehend. As Kristine Stiles notes, "Ono's multisensual works and her acute attention to touch anticipated […] aspects of essentialist feminism of the early 1970s and cultural feminism of a decade later."[67] For example, Ono's jarring vocals elicit both arousal and alarm as she depicts the woman "lying down and taking it." The mnemonic magnetism of her overdubs reframes how "sexual sounds

[66] Yoko Ono, "*Fly—A Double Album*, 1971," in Munroe, *Yes Yoko Ono*, 282-84. Reprinted from "Yoko Ono on *Fly*," *Crawdaddy* (December 5, 1971). See also Ragona, "Doping the Voice," 161–62, for an account of how experiments by the Beatles like Artificial Double Tracking impacted the soundtrack for *Fly*.
[67] Stiles, "Unbosoming John Lennon," 140.

could also be someone who is being tortured" as she constructs this wall of affect.[68] Whether listeners hear Ono voicing sexual assault or sexual desire, her screams sound the gaps between emotions and unspeakable plights. Through internal and external vocal technologies, she captures fragments of day-to-day sounds, ultimately producing a vocal nonconformity that makes sonic slices from women's lived realities legible.

Interlude: Yoko Ono's Art Rock and Avant-Pop

Ono's screams became political utterances to rail against injustice and inhibitions, but she also screamed to critique art music and the popular music industry. While the former has been discussed above in relation to Fluxus and musical modernism, the latter occurred post-*Fly*, from the 1980s to 2010s. Many critics disdained Ono's crossover attempts as amateur and unpalatable, as she continued her signature screams and multiphonic vibrato. In 1973, a *New York Times* reviewer wondered why "she deliberately emphasizes the abrasive aspects of her singing" and chalked it up to two causes: dealing "out her neuroses in public [… and creating] tension between herself and her audiences."[69] Could Ono deliver entertainment that pop fans understood, whetting their emotional appetites instead of challenging them? Ono's background was a source of friction: "As John Lennon's collaborator, she was very much at the centre of the world of rock music; as an Asian woman whose musical practice was strongly influenced by the avant-garde, however, she remained a troublesome anomaly that could not be easily integrated into the androcentric, 'low-art' world of rock and roll," Brown explains.[70] But rock extended Ono's goal

[68] Ono quoted in Lisa Carver, *Reaching Out With No Hands: Reconsidering Yoko Ono* (Milwaukee, WI: Backbeat Books, 2012), 90.
[69] John Rockwell, "Pop Music: Yoko Ono's Contradictions," *The New York Times*, October 26, 1973.
[70] Brown, "Scream from the Heart," 182.

of collaboration in all art forms. As she told *Playboy*, "If I want to communicate with people, I should use their language" of "simple, good human feeling."[71]

Ono's musical idiom shifted from art rock to avant-pop in the '70s: "When John and I got together I was not thinking pop music so much as rock […] which I equated with the heartbeat."[72] By 1973, Ono turned to pop to critique so-called good human feeling: from within its trappings she flagged its failure to make room for racial, sexual, and gendered minorities. In 4/4 time, she screams against those injustices, combining two sonic worlds. As Jon Wiener describes them, pop is superficial, devoid of revolutionary potential and for wide audiences, while the avant-garde asserts elite, often masculine creativity that is only viewed as protest within a non-relevant art world.[73] Wiener's binary opposition omits women's participation in the avant-garde and the fact that, as with Ono's event scores, avant-garde protests can happen in everyday settings with anyone who wants to join. Moreover, plenty of artists have brought politics to pop, not least Ono and Lennon. With billboards and bed-ins for peace, they "work[ed] within the mass media to undermine their basis, to use them, if only briefly and sporadically, against the system in which they functioned."[74] They hoped to reach and empower a wider audience with everyday tools of protest, like screams in their twin 1970 *Plastic Ono Band* LPs.

Blending protest rock and pop, Ono piped women's daily utterances into walls of sound. Meanwhile, the rebel music of the transistor radio generation also shifted to pop. After rock ruled Top 40 in the 1950s and '60s, the 1970s recording industry saw "fragmentation of the seemingly cohesive audience of the 1960s into niche markets and […] an explosion of genres and

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[71] Ono quoted in David Sheff, *All We Are Saying: The Last Major Interview with John Lennon and Yoko Ono* (New York: St. Martin's Griffin, 2000), 36–37.
[72] Press, "Yoko Ono: A Life in Flux," 22. Ono met Lennon in 1966 and by 1973 embraced pop in *Feeling the Space*.
[73] Jon Wiener, "Pop and Avant-Garde: The Case of John and Yoko," *Popular Music & Society* 22, no. 1 (1998): 3.
[74] Wiener, "Pop and Avant-Garde," 9. John and Yoko held two bed-ins for peace in Amsterdam and Montreal in 1969. They invited the press into their hotel rooms to conduct interviews, and also made "*WAR IS OVER! If You Want It*" billboards to advertise peace.

subgenres."[75] Listeners now had more choices on car radios and in homes, aided not only by portable technologies but also by subtle differences in internal vocal technology that spawned crossover genres like Ono's. In 1970, art rock and avant-pop were more likely to be heard on the radio—with precedents like the Beatles' "I Am the Walrus" from 1967. Even adult contemporary, as the next section explores, could be heard to contain traces of rebellion. For, as Wiener stresses, "Politics is not defined by the traditional forms in which it has been practiced—the protest march—but rather by the intentions of the participants."[76] Ono's music can prime listeners to find eccentric expressivities beyond the smooth surface of the Carpenters' songs.

"Close to You": Karen Carpenter's Intimacy Effect

> Meet the Carpenters—A&M Records' young brother-sister hit-makers whose gentle harmony, wholesome image and natural, unpretentious personalities have virtually crashed through to make them the nation's No. 1 recording team. Their sonorous magic has endeared them to music fans of every age and taste, and may be marking the beginning of a new musical mood for the '70s; bringing back the three H's—hope, happiness, harmony. With soft-pedaled persistence and talent galore, these melodic siblings have revolutionized the music industry.
>
> A&M Records Publicity Sheet[77]

The new 1970s pop, the above quote suggests, comes in wholesome packages. While Ono floods mainstream media with cries of protest, producers jam Karen Carpenter into the homogenizing hit machine, marketing her as the ideal wall of sound to restore peaceful, easy feeling. Yet Carpenter exerted great efforts to enlarge her voice through training and double-tracking. In spite of this, her identity as an artist was severed from a production role, as critics thought only her

[75] Mitchell Morris, *The Persistence of Sentiment: Display and Feeling in Popular Music of the 1970s* (Berkeley: University of California Press, 2013), 14.
[76] Wiener, "Pop and Avant-Garde," 8.
[77] A&M Records Publicity Sheet, circa 1971, quoted in Randy L. Schmidt, ed., *Yesterday Once More: The Carpenters Reader*, 2nd ed. (Chicago: Chicago Review Press, 2012), 41.

brother Richard made overdub decisions. Moreover, listeners tied her voice to her body image, driving her to death by dieting: this Siren sang until her own ship was dashed on the rocks.

Whereas Ono's film creates lines of affinity between a fly, woman, and onlookers, Carpenter was constrained by impossible standards of physical beauty and vocal perfection, and Americans' desire for comfort amid the uncertainty of the Vietnam War. Media, critics, and fans expected sweetness and thinness to accompany her rich, resonant voice, which some compared to Ella Fitzgerald's. As Karen Tongson, a scholar of pop culture and sexuality, sets the scene,

> In the wake of the summer of love, Woodstock, and the escalation of the war in Vietnam, Carpenter's voice — described by detractors as "saccharine" and championed by others as distinctly "smooth" or "velvety" — began to dominate the airwaves with both nostalgic reflections and optimistic projections about better times crafted from "only yesterdays."[78]

In 1970—the year after Woodstock, an ode to American rock and rebellious youth—the Carpenters rode in on a new wave of radio hits christened "Adult Contemporary." The industry "validated music's restructuring of American mores" from protest rock to soothing pop that championed family values and coupled love over rebellion and free love.[79] Yet the Carpenters' peace-fueled conformity was not completely at odds with rock's sounds and messaging.

The song about bittersweet love that skyrocketed them to fame, "Close to You," was a crossover hit that "went across the boards, from rock radio stations to easy listening and back."[80] For the *Saturday Evening Post*, "In contrast to the angry anti-establishment lyrics of so many rock songs, the Carpenters lean toward songs that talk about love in the rain or sitting atop the world."[81] But the duo also had something that made these saccharine lyrics go down more

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[78] Karen Tongson, *Why Karen Carpenter Matters* (Austin: University of Texas Press, 2019), 5–6.
[79] Eric Weisbard, *Top 40 Democracy: The Rival Mainstreams of American Music* (Chicago: University of Chicago Press, 2014), 14. As Weisbard notes, the term "Adult Contemporary" appears in *Broadcasting* by 1970.
[80] Morgan Ames, "Carpenters: Close to You," *High Fidelity*, December 1970, 139.
[81] Frank H. Lieberman, "The Carpenters: Soft Rock and 14 Gold Records," *Saturday Evening Post*, October 1974, reprinted in Schmidt, *Yesterday Once More*, 71–78, 73.

smoothly for those of a younger rock generation: Carpenter's voice, which mixed wistful words with timbres of unrequited love and bittersweet emotions. In "Close to You," the hit of summer 1970, Carpenter's voice was praised for being "warmly innocent, full and dark and deep."[82] But how does one reconcile these seemingly contradictory vocal effects? The answer lies in how double-tracking magnetized haptic aspects of her voice to stick in listeners' embodied memory.

Carpenter's mnemonic magnetism created a sense of intimacy for her fans that blossomed from the start of her career. As Herb Alpert described the Carpenters' demo tape, "It felt like her voice was on the couch, like she was sitting next to me. It was full and round, and it was […] buzzing into my body."[83] His fantasy of Carpenter gracing his couch is laden with a gendered desire to possess—or be possessed by—her voice. As he imagines her beside him, he tucks her into the culture industry's tight packaging of pop stars to make listeners believe she sings for them alone (in 2018, a fan "wondered how she knew I felt the same way"[84]). Alpert describes her intimacy effect in heteropatriarchal terms, like the fans who called her sexpot and angel: such comments reveal the more-than-skin-deep structures of beauty that governed her voice and body.

In what follows, I use multiple recordings of "Close to You" as well as anecdotes and reviews to diagnose how Karen's voice is both confined to and escapes its box. I break down this control/excess binary onto two different tracks. Track 1 examines technologies of external and internal control—of the band's image, Carpenter's body image as the star, and pop's effects of intimate presence. Track 2 analyzes how her bodily vocal techniques evade culture industry trappings of the wall of sound's often singular affect. Carpenter recharges cover songs with aching timbres that mine the bitter side of sentimental lyrics, and double-tracking further

[82] Ames, "Carpenters: Close to You," 139.
[83] Herb Alpert quoted in Ray Coleman, *The Carpenters: The Untold Story* (New York: Harper Collins, 1994), 75.
[84] Rick-An Ordinary Fool, "The Voice of Karen Carpenter," A Song For You: A&M Corner Forums, November 25, 2018, https://forum.amcorner.com/threads/the-voice-of-Carpenter-carpenter.16608/.

dissociates her voice from pop conformity into a host of identifications and disidentifications—José Esteban Muñoz's term for minoritarian subjects' repossession of existing performances for their own political ends.[85] And yet, Carpenter needs her culture industry packaging, which entails radio play and fame, to reach widespread publics like Filipinx and queer communities. As tape's mnemonic magnetism links internal and external vocal technologies, it enlarges the memory of a voice that does not fit the status quo.

Track 1, Control: The Image of the Culture Industry and the Sound of Success

The tight visual and sonic packaging of the Carpenters arises from a number of calculated moves by the culture industry: it mined all things pure about them, from Carpenter's voice to their clean sibling image. They honed their sound in earlier musical groups, such as the jazz-oriented Richard Carpenter Trio (Richard on piano and Carpenter on drums) and Spectrum (formed with fellow musicians from California State University, Long Beach), which experimented with the overdub techniques that made the Carpenters famous. As their jazz trio evinces, the siblings had instrumental chops before their vocal ones. But the determination that later fueled exacting overdubs was already at work. Wes Jacobs, the double bass and tuba player who rounded out the Richard Carpenter Trio, recalls that "when it came to music [Richard] was absolutely uncompromising. He had a vision of how a particular song or arrangement should be, and he wouldn't bend until he got exactly what he wanted. They both had tremendous driving force, and their mother especially gave them a lot of push."[86] Carpenter's drive, however, was often ignored by the press, which instead praised her natural talent.

[85] José Esteban Muñoz, *Disidentifications: Queers of Color and the Performance of Politics* (Minneapolis: University of Minnesota Press, 1999).
[86] Wes Jacobs quoted in Ray Coleman, *The Carpenters*, 53–54.

Critics have perpetuated a discourse about Carpenter's effortless drumming and singing, but her talent did not go unnurtured. While one reviewer quips that "the 120-pounder became a heavyweight drummer without taking a lesson," Carpenter took plenty as she played along to countless recordings of jazz greats to improve her style and technique.[87] Furthermore, the moniker "120-pounder" genders a discourse of talent that says a girl this small could not produce that drum sound. Reviewers said the same about her voice. As she tells it, when she was 16, "one day, out popped this voice and it was natural."[88] Even Carpenter naturalized her vocal talent, but she had to work at her image. As critics tell tales of her drumming and singing, they note fundamental mismatches between her appearance and her sound. For her low, round voice guaranteed the duo's success—as Carpenter put it, "the money's in the basement."[89] But when the duo rose to fame, Carpenter was driven to shrink. She struggled to maintain the industry's compulsory mismatch of a tiny frame and an impossibly full voice.

In the duo's first performances, Carpenter's voice initially lacked its intimacy effect, for fans didn't lust after her as the focal point until she left the shelter of her drum kit. After the album *Close to You* was released in 1970, listeners and concert reviewers decried the duo's missing frontwoman. As Lester Bangs complained after a June 13th concert, "it's difficult to watch an attractive young lady sing a romantic number and believe the words she's singing as she pounds on the drums."[90] A band frontwoman endures particularly gendered optics: her body is ogled as eye candy, demanded by the crowd as much or even more so than her voice.

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[87] Dean Gautschy, "The Carpenters: They've Only Just Begun," *TV Radio Mirror* (August 1971), reprinted in Schmidt, *Yesterday Once More*, 5; as Richard says "there was very little […] that Karen hadn't learned naturally," 7.
[88] Ray Coleman, "Carpenters—Good, Clean, All-American Aggro!," reprinted in Schmidt, *Yesterday Once More*, 150.
[89] Karen Carpenter quoted in Ray Coleman, *The Carpenters*, 237.
[90] Lester Bangs, "The Burt Bacharach Orchestra: The Carpenters," *Cashbox*, June 13, 1970, 24, https://worldradiohistory.com/Archive-All-Music/Cash-Box/70s/1970/CB-1970-06-13.pdf.

Figure 2.4 A flower-laden scene softens Karen's presence behind the drum kit at The Ed Sullivan Show as the Carpenters perform "(They Long To Be) Close To You" on October 18, 1970 (screenshot by author)

To groom Carpenter for the spotlight, producers had the duo lip-sync to recordings so that Carpenter wouldn't grimace if she strained to reach a note. Live shows used props and camera angles to soften her appearance: on October 18, 1970, *The Ed Sullivan Show* decked out the stage in psychedelic flowers and edited shots to mask a halo of flowers around Carpenter's face (Fig. 2.4). Carpenter's flower crown heightened the angelic effect of her shining eyes, pink lips, and straight-cut bangs. But as she sang "Close to You," the lyrics about lovers clashed with the goody-two shoes optics of the siblings sitting side-by-side on drums and piano. Carpenter had to rectify this image by filling new shoes as frontwoman.

At Richard's persuasion in 1971, Carpenter left her drums, but the frontwoman's optics brought her insecurities to the surface. First, she was used to hiding behind her drums: "all you could see were my bangs. You couldn't see my mouth, you couldn't see the hands, you couldn't see anything."[91] Second, she was forced to abandon the instrument on which she felt comfortable

[91] Karen Carpenter quoted in Charlie Tuna, "Karen Carpenter: Nothing to Hide Behind," radio interview with DJ Charlie Tuna on KIIS FM, October 8, 1976, reprinted in Schmidt, *Yesterday Once More*, 179–194, 185.

expressing herself. She had to take up the mic to fulfill listeners' reveries that she was crooning just to them, that her mic tapped a direct line from her soul to theirs.

This expectation held by listeners aligns with Theodor W. Adorno's essay "On the Fetish Character of Music and the Regression of Listening," about the culture industry's musical conformity. Although published in 1938 during radio's golden age, his study of the consumption of high art versus popular music offers insight into the fundamental mismatches between Carpenter's body and voice. Reading Adorno also helps to clarify Carpenter's portable relationship to a culture industry caught between the radical '60s and neoliberal '80s. For him, artists are squeezed into copies of pop melodies that all begin to sound the same: "The liquidation of the individual is the real signature of the new musical situation." But pop music also has an "immediate bodily presence" effect on listeners that engages them to "overcome the feeling of impotence that creeps over them in the face of monopolistic production by identifying themselves with the inescapable product."[92] Pop music mirrored listeners' desires to possess a singer's spirit, to escape their own realities through a voice that surrounded them. For "[v]oices are holy properties like a national trademark:" their intimacy effect ensures a "close relation between success and the person endowed with 'material.' […] it is synonymous to have a voice and to be a singer."[93] A singer's identity is conflated with her body, much as Roland Barthes fetishizes vocal grain as "the body in the voice as it sings."[94] Scholars like Connor extend Barthes' claim to show how voices become external entities for listeners, as grains retain and project sounds of bodily production—of lips, tongue, and breath.[95] Listeners pine for the bodily

[92] Theodor W. Adorno, "On the Fetish-Character in Music and the Regression of Listening" in *The Essential Frankfurt School Reader*, eds. Andrew Arato and Eike Gebhardt (New York: Continuum, 1982), 276; 274; 288.
[93] Adorno, "On the Fetish-Character in Music," 277.
[94] Roland Barthes, "The Grain of the Voice," in *Image, Music, Text*, trans. Stephen Heath (New York: Hill and Wang, [1972] 1977), 188.
[95] See especially Jarman-Ivens's *Queer Voices*, Connor's *Dumbstruck*, and Nina Sun Eidsheim's *Sensing Sound*.

remnants of singers. In an "eight-beat symmetrical treble melody," Adorno warns, these physical projections of voice become too portable, at the expense of a singer "which one thinks he can put in his pocket and take home."[96] Through pop music's intimacy effect, Carpenter's voice could be projected into any listener's desired packaging and assimilated with pop ideals of the day.

Under the control of the culture industry, Carpenter's voice conformed to an ideal female body. She fed a cult of regressive listening that craved bite-sized pieces of her. Critics and listeners fetishized her control of voice and body, which evinces the culture industry's "total social grasp […] the stamp which is impressed on anything that falls into its machinery."[97] Carpenter's internal and external vocal technologies had to conform with an industry of total precision. In the *Ed Sullivan* "Close to You" segment, for example, Carpenter's mouth stretches into the vowel shapes she learned from Long Beach choir director Frank Pooler. Her "Disneyland smile," "knife-edged 'ē'," warm "ah's," and "melismatic ooh's" exemplify a "vocal control that can move an absolutely unified sound through all registers of the voice and from a soft to loud dynamic level with unyielding equality of color."[98] Here, Pooler identifies a vocal aesthetic that aspires to global perfection and uniformity. As Carpenter said in 1971, "Richard and I try to do our best to pull people together—not apart."[99] But unity came at a physical cost: "We spend 24 hours a day worrying about whether our product is good enough. We spend an awful lot of time trying to achieve perfection, as close as we can come, and that's not easy."[100]

Carpenter's 24/7 pursuit of vocal perfection also conquered her body. She died of anorexia nervosa in 1983, when public recognition of the disorder was minimal. In 1996, Rob

[96] Adorno, "On the Fetish-Character in Music," 277.
[97] Adorno, "On the Fetish-Character in Music," 283.
[98] Frank Pooler, "The Choral Sound of the Carpenters," *The Choral Journal* (1973), reprinted in Schmidt, *Yesterday Once More*, 58.
[99] Gautschy, "The Carpenters," 5.
[100] Tuna, "Karen Carpenter," reprinted in Schmidt, *Yesterday Once More*, 190.

Hoerburger reflected, "If anorexia has classically been defined as a young woman's struggle for control, then Carpenter was a prime candidate, for the two things she valued most in the world—her voice and her mother's love—were exclusively the property of Richard. At least she would control the size of her own body."[101] Thus, as she enlarged her voice to gain the public's ear and her family's love, she made her body as tiny as possible. But the culture industry took hold of her body, too. As Susan Bordo explains, the anorexic "destroys her health and imprisons her imagination. She is surely the most startling and stark illustration of how cavalier power relations are with respect to the motivations and goals of individuals, yet how deeply they are etched on our bodies, and how well our bodies serve them."[102] Nowadays we see this stamp of the culture industry on Carpenter's body—that "she strove to eliminate imperfection until there was no life left."[103] But we can also hear it in the enlarging technology of double-tracking.

Culture industry ideals of perfection rewarded a size-driven approach not only to Carpenter's body but also to her vocals. At a 1971 A&M recording session, reporter Dan Armstrong observed the duo re-recording relentlessly late at night. As they tweaked their overdubs, Armstrong narrates,

> Karen: I want to make the "We ares" huge.
> Richard: They are huge.
> Karen: I want to make them huger.
> Karen won.

[101] Rob Hoerburger, "Karen Carpenter's Second Life," *New York Times Magazine*, October 6, 1996, second page.
[102] Susan Bordo, *Unbearable Weight: Feminism, Western Culture, and the Body* (Berkeley, Los Angeles, London: University of California, 1995), 164. Recent research on anorexia and other eating disorders suggests that, as opposed to many explanations that are culturally-based, nature can also influence the development of anorexia alongside nurture. See, for example, the multiple explanations in "Why do eating disorders occur?," Suzanne Abraham, *Eating Disorders: The Facts*, 7th Edition (Oxford: OUP Oxford, 2016), 39-52.
[103] Eric Lott, "Perfect is Dead: Karen Carpenter, Theodor Adorno, and the Radio; Or, If Hooks Could Kill," *Criticism* 50, no. 2 (2008): 230.

Armstrong states that the resulting 16-track tape "will sound like 12 to 15 voices on the radio Friday, and all of them are Richard's and Carpenter's."[104] This anecdote attests to the technological prowess of both siblings, and therefore dismantles the typical dichotomy that critics make between Richard's role as male tinkerer and Carpenter's as female siren. Much as Ono collaborated with Lennon on their Nagra, Carpenter and Richard jointly authored the sound of their overdubs. But Carpenter's work behind the scenes was largely obscured by her public-facing popstar identity. "Electronic technology is considered to be the domain of men," Louise Meintjes writes, "abstracting the artist and cultural owner from the sonic product and image that circulates globally, accruing cultural and economic capital for the owners of production as it circulates."[105] It's as if Carpenter's producers did not want her work with technology to taint her pure reputation as a singer—the industry's packaging of her as a singular voice.

To the culture industry, Carpenter possessed a unifying magnetism of cleanly rendered love songs and nationalist statements. Her voice was the standard for purity and literalism; as Daniel J. Levitin remarks, "like Perry Como, Carpenter sings with a clarity so free from artifice or affectation that no one can imitate it. […] With just a few words, she can eloquently capture the contradictions of human emotional life."[106] Listeners believe her tricks of diction, like the Disneyland smile that uplifts a touch of sadness. Moreover, overdubs double down to convince listeners of her voice's singularity. For double-tracking's sonic richness does not come from a black box but from a singer's "high level of vocal control [to…] match an earlier recording in all aspects of vocality, including articulation, dynamics, and diction." As Jarman explains,

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[104] Dan Armstrong, "Why They're on Top?" *Southeast News*, December 9, 1971, reprinted in Schmidt, *Yesterday Once More*, 49.
[105] Louise Meintjes, "The Recording Studio as Fetish," in *Sound of Africa!: Making Music Zulu in a South African Studio* (Durham: Duke University Press, 2003), 103–104.
[106] Daniel J. Levitin, "Foreword," in Schmidt, *Yesterday Once More,* xiv. Como's "Killing Me Softly with Her Song" is exemplary.

Carpenter's doubled voice highlights "the constructed purity of her voice, by reinforcing that crucial voice and underlining the control necessary for this type of recording."[107] In this way, multiple tracks can be used to prop up the cult of the singular in walls of sound. Overdubbing enables Carpenter's repeat conformance to the duo's signature sound, which Tongson deems "a seemingly insular one, with a sweet layering that owes its richness to what is in essence an infinite redoubling of sameness."[108] Doubled layers fortify an intimacy effect, but as Jarman and Tongson note, building this wall of sound constrains the voice in the machine.

Between Tracks: Excavating Found Sound

> It is not for nothing that Mahler is the scandal of all bourgeois musical aesthetics […] his themes are expropriated ones. Nevertheless, nothing sounds as it was wont to; all things are diverted *as if by a magnet*. What is worn out yields pliantly to the improvising hand; the used parts win a second life as variants. Just as the chauffeur's knowledge of his old second-hand car can enable him to drive it punctually and unrecognized to its intended destination, so can the expression of a beat-up melody, straining under the pressure of clarinets and oboes in the upper register, arrive at places which the approved musical language could never safely reach. Such music really crystallizes the whole, into which it has incorporated the vulgarized fragments, into something new, yet it takes its material from regressive listening.
>
> Theodor Adorno[109]

Overdubbing was not the only external vocal technology that created the duo's intimacy effect: their cover songs also cashed in on nostalgia. As 1970 pop analogues of the late Romantic composer Gustav Mahler, the siblings upcycle vernacular material from bands like the Beatles and songwriters such as Bacharach with "Close to You." A sad song becomes a magnet for new associations. At first listen, the duo's covers conjure a simpler past, as did A&M's advertising for the *Close To You* album: "Remember how good, how warm, love-rock used to sound? Well,

[107] Jarman-Ivens, *Queer Voices*, 76; 78.
[108] Tongson, *Why Karen Carpenter Matters*, 53.
[109] Adorno, "On the Fetish-Character in Music and the Regression of Listening," 298. Emphasis mine.

chum, it still does."[110] But double-tracking made the enveloping sound baths of '50s love songs huger, as Carpenter would say—and tape's mnemonic magnetism made them more complex.

For example, "Close to You" mixes ease and effort, a bittersweet longing for a bygone past. The Bacharach tune sounds like those he made in his late '50s heyday, a nostalgic frame for listeners to come home to sounds of peace and serenity on the Carpenters' doubled tracks. Their cover also helped Carpenter to discover the low end of her vocal range, which she had not yet tested when singing the music of her day. "Carpenter stumbled upon the 'low voice' by happenstance," Tongson notes, "through Richard's rearrangement of other people's music, once sung by other women's voices, like 'Close to You,' the Burt Bacharach tune originally performed by Dionne Warwick in 1963."[111] Carpenter tapped into low tones to tone down the cover's saccharine simplicity, adding levels of intensity as in Mahler's orchestrations of folk songs. Melodies and lyrics that seem straightforward in the original song produce nostalgia for those who remember prior versions, but Carpenter's low voice also seems to stir those that do not. As Morris infers, "the distance between the Carpenters and their cover versions was just enough to allow them to serve up the oldies in a luscious flavor of bittersweet."[112] Their packaged mood music was eagerly consumed, especially when mixed emotions of pleasure and sadness, like bittersweetness and nostalgia, entangled listeners in their own web of affect. For example, Carpenter's mnemonic magnetism on tape leads many fans to identify with her sense of "melancholy": "it's not just the lyrics but the way she expresses them, her delivery...soft yet so in control, sometimes sad but it brings warmth to my ears and heart."[113] Freud contrasted

[110] Jack Daugherty, ad for A&M Records, *Billboard Magazine* (September 5, 1970), 11. For Morris, "The early 1970s saw the first blooming of a mainstream pop culture preoccupation with an imaginary 1950s" (*The Persistence of Sentiment*, 5).
[111] Tongson, *Why Karen Carpenter Matters*, 110.
[112] Morris, *The Persistence of Sentiment*, 124.
[113] Rick-An Ordinary Fool, "The Voice of Karen Carpenter," Nov 25, 2018.

melancholia with mourning, deeming the former a poor way to grieve: when someone cannot let a lost person or thing go, they try to bring it back by devouring memories of it. They feed on, even valorize, mixed emotions like the sad wistfulness of bittersweet—its layers seem to make it more appropriate to consume.

The mixed pain and pleasure of nostalgia in a cover song thus boosted a sense of collective affect for the Carpenters' listeners—a sense of coming home to singers who looked and sounded, even emoted, like them. As Sara Ahmed describes the comfort of returning to familiar feelings, a "nostalgic vision of a world of 'staying put' involves nostalgia for whiteness, for a community of white people happily living with other white people. The nostalgic vision of whiteness is at once an image of racial likeness or sameness."[114] Ahmed's words illuminate the racial underbelly of a white-dominated recording industry's cover practices: white singers often aped and covered over nonwhite voices. Thus pilfered, a found song became magnetized to a white canon, especially with the magic unison of overdubs. Tongson brands Carpenter's Disneyland-smile doubling as decidedly segregated "from vernacular styles like gospel and black church music."[115] So while the duo might create nostalgia, it is for a Wonder Bread past. One such example occurs in the Carpenters' 1974 cover of "Please, Mr. Postman," originally recorded by The Marvelettes, a Motown girl group. These two *Billboard* hits topped the charts for vastly different audiences, one that hearkened to soul and the other to '50s white pop. In this track as well their 1970 album, the Carpenters' nostalgic cover songs detach emotional effects from the memories of the people who produced songs to reimagine hits without their skin.

[114] Sara Ahmed, *The Promise of Happiness* (Durham: Duke University Press, 2010), 121. Regarding fans' consumption of Carpenter's melancholy: hearing the opening of "California Dreaming," a fan says, "The melancholy of it is delicious." Another Son, "Small parts of Carpenters songs that hook you," Jun 22, 2017, 11.
[115] Tongson, *Why Karen Carpenter Matters*, 52.

To amplify what pop's intimacy effect has covered over, Tongson recalls a misheard lyric from a Filipino karaoke machine where "white lace and promises" was written as "whiteness and promises" in "We've Only Just Begun" (1970). Carpenter became immensely popular in Tongson's native country, with rampant radio play and imitators such as businesswoman Claire de la Fuente and blind busker Anna Gusmo. The latter's imitation is not just a party trick, but a livelihood. As Tongson remarks, "achieving precision through an intimate interpretation is a point of pride after a long colonial history in which 'mimicry' has been heralded as our greatest skill."[116] Much as Ono threw her voice in *Fly* as feminist praxis, mimicry erects walls of affect that showcase bodily labor sonically and physically. Across the globe and up to today, Carpenter's music is re-covered by differently raced, sex, and abled bodies. Do these covers of covers, new homes for her voice, "let the 'trace of past suffering' speak" in the vernacular, as Mahler does in his repackaged folk music? "If commerce and ideology merely exploit the dialects of vernacular longing," Michael Gallope parses Adorno, "Mahler sets it free in order to reveal its falsehood."[117] The diaspora of Carpenter's voice into far-flung people relays the nonconformity that shatters pop's infinite doubling of sameness. These figures strip away the saccharine for us to hear the full dose of bittersweet—even bitterness—that Carpenter delivers.

Track 2, Diasporic Dissociations: Carpenter's Imitative Magnetism

> The dark side, the melancholia, was as real as [contemporary audiences] feel it was. They're responding to the emotional truth, not the image, which is what I always wanted.
>
> John Bettis, lyricist for the Carpenters and Spectrum member[118]

[116] Tongson, *Why Karen Carpenter Matters*, 106.
[117] Michael Gallope, *Deep Refrains: Music, Philosophy, and the Ineffable* (University of Chicago Press, 2017), 149.
[118] Paul Grein, "Trust Us, This Is Real: Fourteen alternative-rock groups have recorded versions of their favorite Carpenters songs. Is this a joke? Not to them. The dark side of the Carpenters' American Dream isn't joke material," *Los Angeles Times*, September 11, 1994, https://www.latimes.com/archives/la-xpm-1994-09-11-ca-37457-story.html.

What happens when we pare down the packaging of suburbanized, innocent pop to hear Carpenter's poignant and palpable vocal grains? Is it possible for the poster children of America's "whiteness and promises" to amplify subaltern voices muffled by the status quo? Via Carpenter's internal and external vocal efforts, tape becomes sticky with voice's visceral and communicative residues. Moreover, multi-tracking migrates the mnemonic magnetism produced by the voice to new contexts. As a visual analogue, recall a science experiment you may have done as a child: put black sand in a jar with a magnet on the bottom, seal the lid, shake it, and pour it out. A black powder remains stuck to the magnet due to the iron oxide in the sand.[119] These powder remnants resemble traces of Carpenter's magnetism—dissociated until it almost disappears, but present to those who sense its alluring glimmer.

How do Carpenter's vocal "grains" remain resonant to her listeners? Internally, vocal features like her low tones, deliberate vowels, and shimmering pitch bends attract mimetic reactions from listeners on emotional and physical levels. As Ted Naron ruminated in 2010, "With her dark, melancholy alto, the way she subtly scoops up to her notes, the texture in her voice as it ever-so-softly cracks, and her empathic understanding of lyrics, she fashions a style that feels less like a style than the sound of a human heart breaking."[120] This description parallels Ono's tactile aspirations, muscular scoops, and visceral empathy to describe how Carpenter injects bitterness into sweet songs. Her lyrical covers invite emotional mimicry: listeners feel in their bodies the remnants of her pain, but also her joy, depending on their haptic aural memories. Thus, listeners' internal associations fluctuate with the singer's internal productions—emotional mimicry spurs physical, and even musical, harmonizing. As Tongson puts it, Carpenter's singing

[119] Fred Jeffers, *Mondo Magnets: 40 Attractive (and Repulsive) Devices & Demonstrations* (Chicago: Independent Publishers Group, 2007), 3–5.
[120] Ted Naron, "The Voice of Christmas: Karen Carpenter," *A Blog of My Own* (blog), December 18, 2010, https://tnaron.wordpress.com/2010/12/18/the-voice-of-christmas-Carpenter-carpenter/.

reveals "the thrill of forging harmonies with just your body—your breath, your upper palate, your uvula, your 'mask.'"[121] As I listen to Carpenter, I itch to sing along, to contort my mask to match her magic. Compelled by her magnetism, I try on my own Disneyland smile.

While mimicking pop might seem like paying into the culture industry, those who lip sync or sing along to Carpenter's voice graze momentarily with her vocalic bodies in ways the industry can't predict. For Mitchell Morris, "Chief among the pleasures of singing along"—and, by extension, lip syncing—"is the choreography of muscles, our internal sense of how the disposition of gestures great and small bonds itself to the sounds we hear."[122] Mimickers key into a haptic harmonizing with Carpenter and create new conduits for her wide vocal range and emotional palette. Recall from Chapter 1 how Kenneth Anger hijacks transistor pop to lip sync images and heteronormative lyrics in radical drag. With Carpenter, lip-syncers of various sexualities and nationalities dress up in her voice—e.g., the above Filipino singers, Japanese singer Keiko Toge, and Canadian lesbian pop icon k.d. lang. Listeners extol these particular singers due to their display of an "irresistible impulse to match the vocal habits of the original singer as closely as possible." For Morris, "this turns out to be a way of becoming that singer," a fetishism that the culture industry encourages.[123] No singer or fan can inhabit Carpenter's body—but one can try on her internal and external vocal techniques, and thus come close to her.

Akin to the corporeal mimicry and self-extension of lip sync and karaoke, external vocal technologies of amplification enliven Carpenter's voice from near and far. Closest to her lips, "the intimate mediation of microphones captur[ed] the tiniest of inflections, rasps, fries, and

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[121] Tongson, *Why Karen Carpenter Matters*, 56.
[122] Morris, *The Persistence of Sentiment*, 129.
[123] Morris, *The Persistence of Sentiment*, 131. Recording or imitation has long been a way to fetishize women's voices. For example, in Jacques Beineix's *Diva* (1981), Jules uses a Nagra to illegally record his favorite soprano, Cynthia Hawkins. This fetish object captures her essence for his private enjoyment, when Hawkins had forbidden recordings of her voice to thwart "fetishistic imagification" from fans and media. See Royal S. Brown, *Overtones and Undertones: Reading Film Music* (Berkeley: University of California Press, 1994), 254.

hitches of the throat; a conduit for that tumult of spirit kept so tightly within but breathed to us in the warmest of whispers."[124] Microphones amplify the incidental internal vocal inflections that leak from what Tongson calls Carpenter's tight suppression of spirit. But double-tracking can reverse the impression of such constraint by multiplying voices. As double-tracking increased the reach of Carpenter's voice, it resonated with listeners who yearned for sounds to soothe their loneliness and discomfort in their own skin. Tongson, a Filipino growing up in Carpenter's own southern California, cherished how overdubbing's "principles, its manufactured warmth, and the mere fact of its multiplying possibility nurtured a young, isolated soul in search of connection."[125] The magnetism of Carpenter's juxtaposed emotions is also technological for fan Chris May, but to the contrary of an "ever-so-familiar chill factor I get from listening to Carpenter double her vocals."[126] First with Richard's Sony TC-200 Stereo Tapecorder and then on fancier studio equipment, the Carpenters advanced World War II's tape missive to a double-tracking salve that pacified souls during the Vietnam War.[127] They rerouted what Kittler dubbed a technology of control to make emotive sound baths. But control was still present: the success of overdubs depended partly on Carpenter's internal vocal control, as Jarman discerned.

Overdubs, when made by an expert singer who can reproduce tone and texture, can demonstrate technical perfection. But they also can show cracks of artifice amid smooth choral polish and consistency. In the quest to sound huge, Carpenter took the risk that her overdubbed voices would not blend or would produce slight sonic misalignments. Listeners might hear two or three Carpenters overlap—an excess created when her takes were not exactly the same. This

[124] Tongson, *Why Karen Carpenter Matters*, 92.
[125] Tongson, *Why Karen Carpenter Matters*, 57.
[126] In tune with Carpenter's juxtaposed emotions, fan Chris May cites the "ever-so-familiar chill factor I get from listening to Carpenter double her vocals." "Small parts of Carpenters songs that hook you," August 13, 2016, 7.
[127] Randy L. Schmidt, *Little Girl Blue: The Life of Karen Carpenter* (Chicago: Chicago Review Press, 2010), 29.

not-quite-perfect copying created a compelling nonconformity within conformity. Ono stayed on the side of nonconformity, throwing her voice into unexpected bodies, while Carpenter captured listeners' hearts as a singularly-voiced star. Yet sometimes, not-quite-overlapping overdubs reveal a Carpenter in multiples. These can produce ear candy that have bitter and sour flavors in addition to sweet. Furthermore, while overdubs ostensibly "discipline[e] the grain of Karen Carpenter's 'natural' voice," as Jarman observes, they also emphasize "the fiction of the 'natural voice' as an idea."[128] The duo's overdubs rewrite the fictions of critics who naturalized Carpenter's vocal talent: virtuosic layers of 24 tracks evince the extensive labor required to coordinate vocal and technical mechanisms—and mixed feelings.

For Jarman, the double-tracking of Carpenter's voice contaminates the image of a pure, natural singer and generates forms of both queer and cyborgian resistance. First, for Jarman the "queer potential of the voice is felt most intensely at those points where technologies become audible":[129] it is purposefully othered through overdubs, which amplify a singer's social training as well as her aim to upend it by injecting new vocal bodies into the world. Overdubs combine the sounds of past habituations and future desires, rejecting the here and now and resembling Muñoz's notion of queer futurity. This mingling of temporalities is also cyborgian, fusing humans with forward-looking technology. But cyborgian voices also can be made with the machinery of internal technology, extended vocal techniques. Shelina Brown terms Ono's voice in *Fly* a "high-pitched, cyborgian multiphonic that sounds in time with the movement of the fly — the rapid undulations of the voice synchronizing with the beating of the insect's wings."[130] Whether with Ono's multiphonic vibrato, or Carpenter's scoops and vocal fry that at once sound

[128] Jarman-Ivens, *Queer Voices*, 23.
[129] Jarman-Ivens, *Queer Voices*, 21.
[130] Brown, "Yoko Ono's Experimental Vocality as Matrixial Borderspace," 74.

bitter and sweet, these vocalists defy—Ono overtly, Carpenter covertly—the cult of the singular as they signal to the multiple voices possible in one body. They add nonconformity to conformity by blending internal and external technology, vocals and tape takes. In playback, their mnemonic magnetism paves divergent tracks for listeners to harmonize with their own desires.

Coda: The Union of a Splice

The mere act of playing a tape reminds us that a singer's voice is often split from her body. Ono's and Carpenter's recorded and technologically manipulated voices become vocalic bodies, Connor's "more living, urgent, and vital" dissociations, and these matter differently to each listener through their haptic associations. As Tongson puts it, "I don't know that I ever truly heard the Carpenters, or heard Karen […] until I heard her voice multiply across and through other bodies that weren't anything like hers. Maybe this is what haunts me, and haunts all of us: that a voice so 'inimitable,' so one of a kind, can always find another life, another way to resound."[131] Despite culture industry efforts to keep Carpenter's voice singular, or critics' ridicule of Ono's voice as singularly demonic, their sounds are magnets for those who strain to express themselves vocally and bodily.

Yoko Ono invites readers and listeners alike to scream against the status quo, to jump into machine- and animal-like skins and fly away. And Karen Carpenter, in the music she left behind, encourages listeners to ask how "very queerly their aberrant normalcy might resonate with others who might also feel fearful of making mistakes in such a master-planned scenario."[132] These singers redistribute the sensible, aurally foreshadowing queer futures in Rancièrian bursts of spontaneous political utterances within popular music. Their tape tracks

[131] Tongson, *Why Karen Carpenter Matters*, 122.
[132] Tongson, *Why Karen Carpenter Matters*, 15–16.

layer new horizons of mnemonic magnetism that expand with each internal vocal expression and manipulated track, attracting new voices of nonconformity to the status quo. Dissociated on tape, their voices summon itinerant imitators. Thus, mnemonic magnetism pivots the culture industry's technology of control and disembodiment to one of redistribution and re-embodiment, expanding voices into multiple forms, new interpretations, and layered resistances.

In mnemonic magnetism, tape is the tangible material by which these voices are recirculated, and where the dead meet the living. Like the phonograph, tape first was prized for its capability to preserve the voices of the dead. But tape does not oppose qualities of liveness. It has what Jason Stanyek and Benjamin Piekut deem a productive deadness: an "arrangement of technologies and bodies that is less about preservation than it is about complex forms of rearticulation."[133] Tape amplifies Ono's and Carpenter's amalgams of body, voice, and genre that meld nonconformity with conformity. Such an ethos guides the pop-meets-avant-garde *Superstar: The Karen Carpenter Story*, the 1987 underground film by Todd Haynes—only available on bootleg copies or YouTube due to copyright issues, but nevertheless achieving cult status.[134] Haynes' film probes the possibilities for rearticulating Carpenter's life and death through complex forms of remembering. He parodically uses Barbie dolls to distance viewers from the duo while their actions are inflected with nostalgic Carpenters songs—an aptly alienating commentary. The songs that animate the dolls raise a chief issue in documentary reenactment—the muddled lines between reality and representation—especially when Haynes overlaps Carpenter's greatest hits in a dissonant jangle in the film's final scene. This bittersweet bricolage does not just preserve each song's affect in recorded form. Rather, the simultaneously

[133] Jason Stanyek and Benjamin Piekut, "Deadness: Technologies of the Intermundane," *The Drama Review* 54, no. 1 (Spring 2010): 16. On the phonograph's association with deadness, see Sterne, *The Audible Past*, 292.
[134] Lucas Hilderbrand details violations of the Carpenters' logo, images and photographs, and music in Grainy Days and Mondays: Superstar and Bootleg Aesthetics," *Camera Obscura* 19, no. 3 (2004): 67.

"live" songs also rearticulate disparate aspects of Carpenter's life and career, effectively magnetizing unexpected emotional reactions to her doll form. Haynes's juxtaposed songs and jarring images challenge audiences with a range of affects that surround a person in the throes of stardom. Haynes takes a figure of singularity from the culture industry and audiovisually fractures her along its fault lines.

In such tributes Carpenter's body gets cut up, but surprisingly nowhere so much as on tape. She is subject to the splice, an operation of two seemingly opposite functions: a cut and a union. She suffers the physical splice of her struggle with anorexia and a metaphorical struggle with perfection. The Oxford Dictionary of English defines a splice as an action to "join (pieces of timber, film, or tape) at the ends."[135] But splicing has more than just technical connotations; as Judith A. Peraino has observed, it also was slang, in the 18th and 19th centuries, for getting married.[136] This meaning maps onto Carpenter's ultimate ambition: her close friend divulged that "She just wanted to get married. Have children. Be cooking Thanksgiving dinners. And that was her real goal in life."[137] Yet her life of constant splicing in the studio cut her goals short.[138] She has an analogue in the castrato singer, whose sex organs were cut to extend his soprano voice into adulthood. For Martha Feldman, the castrato must use the "vocal skill, magnetism, and star quality [he acquires when castrated…] to transform himself in an attempt to surpass his very blood."[139] Carpenter's overdubs capture her strain to become a maternal provider, but the culture

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[135] *Oxford Dictionary of English*, s.v. "splice (*v.*)," ed. A. Stevenson.
[136] The slang connotes a casual marriage like "getting hitched," as Charlotte Brontë insinuates in her 1853 novel *Villette*: "Alfred and I intended to be married in this way almost from the first; we never meant to be spliced in the humdrum way of other people." Entry 3a., *Villette*, III. xlii. 307, in *OED Online*, s.v. "splice (*v.*)," last modified December 2019.
[137] Carol Curb quoted in *Only Yesterday: The Carpenters' Story*, Samantha Peters (2007; United Kingdom: BBC).
[138] In contrast, Gusmo, Carpenter's Filipino imitator, balances a toddler and a mic in her viral video. Angel Siawingco, "Karen Carpenter You Sung by Blind Woman," 3:13, April 23, 2013, www.youtube.com/watch?v=we3I5uPXpXE.
[139] Feldman, *The Castrato*, 149.

industry continued to subject her to splicing in single-minded pursuit of unifying her image. The 1970 industry standard of wall-of-sound compliance aimed to stamp out nonconformity.

Magnetic tape offers such metaphors for the ways that women's bodies have been oppressed aurally and visually. Its material collects dust and is subject to decay with each cut and splice. It becomes a double-sided coin of oppression, one which Carpenter gets fed into and Ono circumvents. But with tape, a singer can choose to rewrite history—through Carpenter's covers of songs—or to write it anew, as Ono splits her voice into different bodies, times, and spaces. Carpenter and Ono multiply the voice via internal vocal technologies, overdubs, and cover songs. In their walls of affect, we can hear the schisms in Carpenter's not-quite-perfect overdubs and the cracks in Ono's screams. Mnemonic magnetism draws out imperfections in a medium of perfection, as these vocal strains of the '70s nurtured ways to be alone together.

A listening habit of "alone togetherness" materialized in 1980 with the Sony Walkman, where private listening choreographs public space and public forums. While Philips introduced magnetic cassette technology for reporting uses in 1963, vinyl was still the gold standard for music listening, and tape only slowly gained popularity in the '60s and '70s. But Sony, the manufacturer of the first transistor radio in 1955, achieved portable hi-fi with the Walkman TPS-L2, first sold in the US in June 1980. For Thomas Elsaesser, its "unprecedented combination of portability (it ran on two AA batteries) and privacy (it featured a headphone jack but no external speaker) made it the ideal product for thousands of consumers looking for a compact portable stereo."[140] In addition, the Walkman's "maximally portable hi-fidelity […] radically reindividuated [listeners] while they collectively recontextualize 'masterpieces' as (among other

[140] Thomas Elsaesser, "Digital Cinema: Convergence or Contradiction?" in *The Oxford Handbook of Sound and Image in Digital Media*, 27.

things) the sound-tracks for health routines."[141] For John Mowitt, the Walkman revives Adorno's fear that listeners may fetishize music as background noise as they remap meanings of pop songs for their personal uses, as on city walks.

But as the mnemonic magnetism of voices on tape has revealed, portable pop is not doomed to repetitions of the status quo. The Walkman generated new embodiments that built on Ono and Carpenter's vocal nonconformity within conformity, where vocal bodies migrate through resistant times and places. As demonstrated through Carpenter's lip-syncers and imitators, and Ono's screams tweeted against Trump's election, the voice's internal and external technologies splice the voice and body to create new possibilities for harmony—musical, metaphorical, corporeal, and otherwise. Their voices rise, sometimes nearly imperceptibly (like the Walkman's traces of city walks) from magnetic dust.

[141] John Mowitt, "The Sound of Music in the Era of its Electronic Reproducibility," in *The Sound Studies Reader*, ed. Jonathan Sterne, 213–224 (New York: Routledge, 2012), 218.

Chapter 3

Theater of the Fairlight: Sampling Sounds, Sexuality, Gender, and Race on MTV

> [With the Fairlight CMI's] monitor, we can see what the sound looks like—not just hear it but see what it looks like.
>
> Herbie Hancock on *Sesame Street*, 1983[1]

> [It was] a time when the Fairlight and sampling were still seen and used as an odd effect. Little did people know how deeply it was going to change the face of music in the Eighties.
>
> Paul Tingen on J.J. Jeczalik, Art of Noise Fairlight operator[2]

It's hard to imagine what MTV would have sounded like in the 1980s without synthesizers or samplers. But what would it have *looked* like without them? In '80s music videos, bright, buzzy synths often gave rise to day-glo clothes and sets, and synth-pop grooves inspired jerky dance moves. However, despite the array of discursive signs produced by synthesized sounds, music video scholars have tended to focus on a song's lyrics or star power as the inspiration for its video's images. Critics from the '80s to today have defined early videos through their lyric-based visual spectacles, from the exotic locales of Duran Duran's "Hungry like the Wolf" (Russell Mulcahy, 1982) to the wild parties of "Raspberry Beret" (Prince feat. The Revolution, 1985).[3] In this chapter, I take an alternate path through early MTV: instead of well-trodden analyses based on song lyrics or postmodernist theories,[4] I chart a logic of audiovisual relations wherein music technology helps to shape music video imagery. That logic is most clearly seen in the first

[1] Herbie Hancock, "Herbie Demonstrates the Fairlight CMI Synthesizer on Sesame Street, 1983," 8:23, June 19, 2017, https://www.youtube.com/watch?v=daLceM3qZmI.
[2] Paul Tingen, "Initial Success," *EQ Magazine* (March 1988): 34. Available at: http://tingen.org/archive-jeczalik/.
[3] See, for example, E. Ann Kaplan, *Rocking Around the Clock: MTV Postmodernism and Consumer Culture* (New York: Methuen, 1987), Carol Vernallis, *Experiencing Music Video: Aesthetics and Cultural Context* (New York: Columbia University Press, 2004), Diane Railton and Paul Watson, *Music Video and the Politics of Representation* (Edinburgh: Edinburgh University Press, 2011), and Steven Shaviro, *Digital Music Videos* (New Brunswick: Rutgers University Press, 2017).
[4] MTV's 24-hour rapid montage provoked postmodern analyses. See Simon Frith, "Making Sense of Video: Pop into the Nineties," *Music for Pleasure: Essays in the Sociology of Pop* (New York: Routledge, 1988), 205.

polyphonic digital sampler, the Fairlight Computer Musical Instrument, which created a symbiotic relationship between music, images, and technology.

Figure 3.1 "Fairlight CMI series II, early digital sampler / music workstation, at NAMM Show 2011 in Anaheim, California," starpause kid, CC-BY-2.0, https://commons.wikimedia.org/wiki/File:Fairlight_green_screen.jpg

An enormous wave of samplers impacted '80s music and music videos, but the Fairlight CMI in particular had a groundbreaking influence on notions of visualizing sound (Fig. 3.1). The Fairlight—which is also a synthesizer—is largely forgotten today, but its novel capability of sampling allowed musicians to capture sounds from everyday life or pre-existing songs and then recontextualize them with other sounds, or music video imagery. It also offered artists the ability to manipulate sound visually: on top of a musical keyboard sat a computer screen where artists could draw and edit sound waves with a light pen. The ability to sample and draw any sound quickly prompted a more complex set of signs to arise in music videos than the day-glo parties and fashion inspired by synths: the pre-existing referents of samples brought in associations that were at once aural and visual. Much as magnetic tape attracts listeners to timbral qualities of singers' voices (see Chapter 2), the familiar timbres of samples compelled artists to represent sounds in the visual register with mimetic dance moves, props, and costumes. The Fairlight's

found sounds triggered the production of four main aesthetic categories in ’80s music videos—theatricality, sexuality, science fiction, and mass culture, as shown in this chapter’s case studies.

Through the diverse resonances artists created for Fairlight samples—across various musical genres and narrative contexts—the Fairlight initiates an alternate history of audiovisual aesthetics in MTV. It also produces a transnational microcosm of early music videos: it was invented in Australia in 1979 and used in the UK and US up to the early ’90s. Played by popular British artists Trevor Horn, Kate Bush, and Peter Gabriel, Fairlight synth-pop dominated many early British music videos. But the Fairlight also ran through MTV’s 24-hour programming, especially in 1981–83, when British and Australian videos filled gaps in nascent American video production.[5] The Fairlight also ended up in hip-hop and even made up the entire score of *Terminator 2* (1991), which was perhaps its swan song. Across these disparate uses, Fairlight samples prompted artists to create new visual expressions of gender, sexuality, and race using experimental techniques such as stop-motion animation and superimpositions. The Fairlight thus acted as a fulcrum between avant-garde and mainstream aesthetics.

In this chapter, I revise the story of the Fairlight to consider how this technology yokes together a history of visualizing music with a set of mechanisms for creating new music and videos. On the one hand, the Fairlight’s interface for drawing sound reaches back to a tradition of visual music that runs from 1920s abstract animation films to Nam June Paik’s 1960s TV art. In these works, artists made vision musical by depicting sound waves with light and color frequencies. On the other hand, the Fairlight’s computer screen turned a musical instrument into an audiovisual medium. Its interface, which graphically represented sounds, inspired artists to visualize sonic expressions of themselves and the societies around them in music video imagery.

[5] Saul Austerlitz, *Money for Nothing: A History of the Music Video from the Beatles to the White Stripes* (New York: Continuum, 2007), 31.

When they used the same samples as other artists, their videos' synchronized images were often thematically similar but stylistically diverse. As a result, Fairlight samples acquired loose sets of visual codes and social resonances. Through its many capacities for sound synthesis—from citing another artist's use of a sample to pairing a found sound with unexpected images—the Fairlight yielded a particular form of visualized sampling that had a causal relation to the style of videos that emerged on early MTV.

In order to analyze the graphic, musical, and mnemonic contours that the Fairlight prompts in music videos, I emphasize how the Fairlight functions as a sonic conduit between human and machine, and as such creates a conduit between analog and digital. The Fairlight relies on an analog recording device—the microphone—to create digital samples, as well as on the human hand to import sounds from the real world, redraw their waveforms with the light pen, and replay them through the keyboard. Many '80s music critics grumbled that digital samplers devalued music by replacing instrumentalists with machines and by allowing amateurs to sample from artists and call the result their own.[6] But the Fairlight is as much an analogue of embodied expression as it is a harbinger of future technology. As artists draw and play sounds, human hands merge with a computer interface: their digits enact digitality.[7] Analog and digital often coexisted, Samantha Bennett argues, in studios throughout the '80s—debunking the binary that many scholars have made arbitrarily.[8] The Fairlight bridged analog recording methods and

[6] See Andrew Goodwin's "Sample and Hold: Pop Music in the Digital Age of Reproduction," *Critical Quarterly* 30, no. 3 (1988): 34–49. Mark Katz also summarizes these debates before redeeming sampling as an art of aesthetic and sociopolitical transformation in *Capturing Sound: How Technology Has Changed Music* (Berkeley: University of California Press, 2004).

[7] For a thorough study of keyboard digitality, see Roger Moseley, *Keys to Play: Music as a Ludic Medium from Apollo to Nintendo* (Oakland, California: University of California Press, 2016).

[8] Bennett historicizes the slow transition between analog and digital and the frequent mixtures of the two, explaining, for one, how the digital often works to remediate the analog by emulating its functions. Samantha Bennett, *Modern Records, Maverick Methods: Technology and Process in Popular Music Record Production 1978–2000* (New York: Bloomsbury Academic, 2019), 7–11.

digital hard disk storage and manipulability; microphones and digital effects both fueled users' creativity. With this blend of artist and machine, Fairlight presets shaped an individual singer's sonic signature as well as music genre trends, from feminist expressions in Kate Bush to sounds that emulated record scratches through the use of the Fairlight's orchestra hit in 1980s hip-hop. Depictions of human/machine hybrids also recurred in music videos, where Fairlight uses ran from heightening sexual or feminine power to beaming Black music into new futures via Afrofuturist imagery. In the following analyses of '80s music and music videos, I situate the Fairlight in a larger aesthetic and technological history and track its uses as an audiovisual conduit between humans and machines, analog and digital, and avant-garde and mainstream media.

Drawing Sound: A History of Visual Music in Early Cinematic Avant-Gardes

"The earliest years of filmmaking before World War I," writes William Moritz, citing George Méliès' colorfully painted films and Émile Cohl's animated/live-action blends, "already produced the full range of cinematic expression that would make up the Visual Music vocabulary of MTV."[9] Several early avant-garde filmmakers sought to emulate the non-representational art of music by visualizing rhythms and forms that unfold in time. Many 1920s and 1930s avant-garde filmmakers practiced "musical analogies"—David Bordwell's term for the ways in which musical rhythms and melodies shaped film editing and form.[10] French impressionist and German expressionist filmmakers presented musical analogies to prompt audiences to reconsider what

[9] William Moritz, "Visuelle Musik: Höhlenmalereien für MTV? (Visual Music: Cave Painting to MTV?)" in *Sound & Vision* (exhibition catalog). Frankfurt: Deutsches Filmmuseum, 1993, 132–145.
[10] David Bordwell, "The Musical Analogy," *Yale French Studies* 60 (1980): 141–156.

they saw and sensed in everyday life. In this section, I unpack early filmmakers' sensory experiments with materials and technology to trace the lineage of visual music up to MTV.

A history of visual music could easily begin with early philosophers who built instruments to measure vibrations; Pythagoras, for example, used a monochord—a string stretched between two wooden planks—as a sounding board to test the connection between musical intervals and the cosmos.[11] In the last few centuries, inventors created devices to inscribe sound and speech, such as Ernst Chladni's sand-covered plates that produced pictorial patterns when vibrated, or Margaret Watts Hughes's eidophone, where powder waves formed on a membrane-covered receiver when she sang into it. Édouard-Léon Scott de Martinville's phonautograph and Alexander Graham Bell's ear phonautograph registered sonic vibrations tactilely and visually, and soon after aurally in Thomas Edison's phonograph.[12] Contemporaneously, Etienne-Jules Marey made vocal polygraphs in linguistic experiments toward deaf education, and in the early twentieth century, Oskar Fischinger and László Moholy-Nagy drew graphic symbols directly onto film to create synthetic sounds during projection.

While these philosophical and scientific quests to produce visible evidence of sound form an important backdrop for the Fairlight, more pertinent to this account is the history of drawing sound on screens. The Fairlight's keyboard interface has an antecedent in color organs, where playing notes triggered the projection of colored lights onto a screen above the console. Stemming from an eighteenth-century model by Jesuit thinker Louis-Bertrand Castel,[13] color

[11] Alexander Rehding, "Instruments of Music Theory," *Music Theory Online* 22, no. 4 (December 2016), https://mtosmt.org/issues/mto.16.22.4/mto.16.22.4.rehding.html.
[12] These machines registered sonic vibrations tactilely and visually but not yet aurally. But some 1860 phonautograms— written squiggles of seconds of "Au clair de la lune"—were finally heard by scientists at the Lawrence Berkeley National Laboratory in 2008. Jody Rosen, "Researchers Find Song Recorded before Edison's Phonograph," *New York Times*, March 27, 2008.
[13] Castel announced an ocular harpsichord in 1725, but philosophers before him studied the link between sound and color frequencies—a "color-tone analogy"—like Sir Isaac Newton, Athanasius Kircher, and Nicolas Malebranche;

organs proliferated alongside turn-of-the-twentieth-century experiments in synesthesia in painting, poetry, and musical composition, such as Alexander Scriabin's color music.[14] By 1919, New York's Strand Theatre and other cinemas had installed a color organ called "Sarabet," invented by Syrian-born pianist Mary Hallock Greenewalt, a practitioner of her art of "Nourathar" (Arabic for "the essence of light").[15] More widely known today is Thomas Wilfred's clavilux, a 1921 New York color organ that displayed "Lumia," Wilfred's term for the art of light. Also in 1921, but in Germany and France, several artists debuted "visual music" films, using light and color to emulate music's emotional, spatial, and temporal flows in images onscreen (Fig. 3.2).

Figure 3.2 From left to right, artists who experimented with the visualization of sound: Thomas Wilfred with the first home clavilux, 1930; Oscar Fischinger in his studio, 1924-1925; James Whitney with sound pendulums, 1944; James Whitney at his optical printer, 1945. Photography. Museu d'Art Contemporani (Barcelona, Spain), 2000; Hayward Gallery. Force Fields: Phases of the Kinetic

The abstract visual music film took a number of forms, from hand-painting film or glass to stop-motion animation.[16] German filmmakers used non-representational figures to focus

Thomas L. Hankins and Robert J. Silverman, "The Ocular Harpsichord of Louis-Bertrand Castel; or, The Instrument That Wasn't," in *Instruments and the Imagination*, (Princeton, N.J.: Princeton University Press, 1995), 72–85.

[14] Scriabin's *Prometheus: The Poem of Fire*, Op. 60 (1910) has a part for color organ, but the work's performances have rarely used light projections; see William Moritz, "Abstract Film and Color Music," in *The Spiritual in Art: Abstract Painting 1890–1985*, ed. Edward Weisberger (New York: Abbeville Press, 1986), 298.

[15] Sarah Street and Joshua Yumibe, *Chromatic Modernity: Color, Cinema, and Media of the 1920s* (New York: Columbia University Press, 2019), 127.

[16] See the range of definitions offered by Cindy Keefer in "Visual Music's Influence on Contemporary Abstraction," in *Abstract Video: The Moving Image in Contemporary Art*, ed. Gabrielle Jennings (Oakland: University of California Press, 2015), 74–97. As a predecessor to 1920s German Absolute Film, which scholars often associate

spectators' attention on interplays of light, movement, and eventually color and synchronized sound. One of the earliest visual music films, Walter Ruttmann's *Lichtspiel Opus I* (1921), was screened with live performances of a score composed by Max Butting (where Ruttmann played cello).[17] But several visual musical films were intentionally silent, made not to illustrate music but to evoke it, like Hans Richter's *Rhythmus 21* (1921) and Viking Eggeling's *Symphonie diagonale* (1924). Richter's *Vormittagspuk* (1927-28) for example, organizes light and shadow in a contrapuntal structure that aims to transcend the screen to solicit spectators' acoustic and kinetic senses in addition to vision. Architectural approaches, as in Theo van Doesburg's form film, were not accompanied by music but used the film-specific elements of light, space, and motion to create dynamic sculptures "rather like the orchestral work of Schönberg, Stravinsky or Antheil."[18] Films like Richter's used montage and lighting to create multiple graphic patterns. Like the interweaving of two or more musical lines in musical counterpoint, these visual pieces were as spatially textured as they were temporally layered.

French Impressionist filmmakers arguably took musical analogies even further than the Germans, as Impressionist visual polyphony explicitly solicited sonic sensations from spectators. Both Jean Epstein and Germaine Dulac related musical durations and rhythms to cinematic techniques of composition and editing. Dulac described the ideal form of cinema as a "visual symphony," where she cut and arranged images to musical rhythms (e.g., this shot is an eighth note, the next a half note) and timbral qualities within notes (what Dulac calls "the sonorities

with the origins of visual music film, Keefer notes the now-lost work of the Italian Futurists Arnoldo Ginna and Bruno Corra in 1910s (76).

[17] Gregory Zinman, "Analog Circuit Palettes, Cathode Ray Canvases: Digital's Analog, Experimental Past," *Film History* 24, no. 2 (2012): 135–157, 138. Zinman claims that *Opus I* was the first abstract film to be screened in public.

[18] Theo van Doesburg, "Film as Pure Form," trans. Standish D. Lawder, *Form* 1 (1966 [1929]), 11.

constituted by the feeling contained in the image itself"[19]). As an example of how material qualities of shot composition and rhythmic montage make music, her 1923 domestic drama *La Souriante Madame Beudet* creates a refrain from close-ups of the title character. Dulac strikes bittersweet melodic chords with superimpositions as Beudet yearns for a caring lover. Layers of trick photography and rhythmic montage engage cinema as a way to draw emotions in time and space much like music does with sonic contours; this film does so over shots from everyday life.

When synchronized sound became a technological possibility in the late 1920s, drawing with sound developed even more forking paths. Commercial animators made *Steamboat Willie* (Walt Disney, 1928), *Betty Boop* (Max and Dave Fleischer, 1930), and *Fantasia* (1940), among many other cartoons and animated films; these often deploy exact image/sound correspondences, as in mickey mousing, when music mimics movement. Avant-garde animators made movement musical in more abstract ways. From Len Lye and Norman McLaren at the UK's General Post Office Film Unit to Germany's Oskar Fischinger, many filmmakers in the '30s developed complex relationships between images and jazz and classical music. In *An Optical Poem* (1937), Fischinger animates paper cut-out shapes to Franz Liszt's *Hungarian Rhapsody No. 2*. Akin to Dulac's superimpositions where emotions danced around *Beudet*, Fischinger's color variations portray changes in tempo or timbre, as when the melody shifts between strings and brass instruments. His abstract style went mainstream when he animated a sequence for *Fantasia* (1940) set to J.S. Bach's *Toccata and Fugue in D Minor*. But his rhythmic light beams and colorful dots were disrupted with silhouettes of orchestral instruments added by Walt Disney and his sequence director to anchor audiences in a narrative.[20] When these mainstream tastes usurped

[19] Germaine Dulac, "Aesthetics, Obstacles, Integral Cinégraphie," trans. Stuart Liebman, in *French Film Theory and Criticism: A History/Anthology*, vol. 1, *1907–1929*, ed. Richard Abel (Princeton, N.J.: Princeton University Press, 1988 [1926]), 395.
[20] Tom Sito, *Moving Innovation: A History of Computer Animation* (Cambridge, MA: MIT Press, 2013), 15.

his abstract style of depicting instruments, Fischinger left Disney to continue creating abstract pulsations of color, shapes, and sounds with his own pioneering techniques.

The aforementioned 1920s–40s filmmakers used cinematic materials to visualize rhythm and harmony. They pushed the etymology of cinematography from "writing with light" to making light musical. To increase the precision of visual stimuli to approximate musical affect, the animator Mary Ellen Bute turned to math and technology to realize "the visual perception of classical and semi-classical music" with everyday materials such as ping pong balls.[21] Using mathematical theories, lighting effects, and lenses, Bute made three-dimensional moving sculptures wherein sound, light, and graphical forms interact on multiple planes—akin to Gregg Toland's depth of field shots in *Citizen Kane* (Orson Welles, 1941). While little known in a male-dominated history of animation, Bute surpasses Fischinger as a master of sonic shape and depth (e.g., in 1937's *Synchromy No. 4: Escape* with Ted Nemeth, her own *Toccata and Fugue*).

Figure 3.3 Bute operating the oscilloscope in "Abstronics," *Films in Review* 5, No. 6 (June-July 1954)

[21] Mary Ellen Bute, "New Film Music for New Films," *Film Music* 12, no. 4 (March-April 1953). Cited in Lauren Rabinovitz, "Mary Ellen Bute," in *Lovers of Cinema: The First American Film Avant-garde, 1919-1945*, ed. Jan-Christopher Horak (Madison: University of Wisconsin Press, 1995), 320.

Bute furthered previous artists' transmedia practices of drawing with light in time by using a machine called the oscilloscope (Fig. 3.3).[22] Her work in the early fifties drew the attention of Bell Labs' Dr. Ralph Potter, who customized an oscilloscope for her to paint directly with light rather than drawing and transferring animations.[23] The instrument displays the waveforms of electronic signals as they travel through a cathode ray tube. Bute played its switchboard of knobs like a synthesizer: she could "draw right on the Oscilloscope with the music on the soundtrack going through the machine, thus coordinating the two. You can also alter and distort the forms taking the fundamental dictation from the music as it goes through the Oscilloscope."[24] But this took practice, similar to the hand-eye coordination needed for the theremin; she learned to control the oscilloscope's electrical inputs, working within its constraints to build up a repertoire of shapes and forms that she could draw in time-based performances. Her direct performances of light music paralleled an instrumentalist's technical and expressive mastery.

[22] Bute searched for an instrument to produce geometric shapes instead of color organs' horizontal bands or diffuse spots. Bute, "Light as an Art Material and Its Possible Synchronization with Sound," lecture before the New York Musicological Society, January 30, 1932, New York City, unpublished typescript, p. 1, Bute papers (in Rabinovitz).
[23] Bute's Bell Labs oscilloscope brings visual music full circle back to Alexander Graham Bell's inventions.
[24] Bute, "Abstract Films," unpublished typescript, n.d., Bute papers, pp. 5–6 (cited in Rabinovitz, 326).

Figure 3.4 Notes for *Abstronic* (1952) in "Abstronics," *Films in Review* 5, No. 6 (June-July 1954)

Bute debuted her oscilloscope artistry in *Abstronic* (1952), a title that combines Abstraction and Electronics—and signals the machine's affordances of both spontaneity and programming. Before the oscilloscope, she synchronized music to hundreds of hand-drawn figures, but in *Abstronic* she light-painted motifs inspired by Aaron Copland's "Hoedown" from *Rodeo* and Don Gillis's "Ranch House Party" (Fig. 3.4)[25] Her adoption of new technologies as cinematic tools contributed to a thread running through visual music filmmaking, as several artists repurposed technology for drawing sound.[26] For example, John Whitney used an analog computer to animate the spirals in *Vertigo*'s opening titles (Alfred Hitchcock, 1958).

[25] Mary Ellen Bute, "Abstronics: An Experimental Filmmaker Photographs the Esthetics of the Oscillograph," *Films in Review* 5, No. 6 (June-July 1954). Available at: http://www.centerforvisualmusic.org/ButeBiblio.htm.
[26] For an in-depth discussion of Bute's use of the oscilloscope to explore perception, see Chapter 4 of Andrew Johnston, *Pulses of Abstraction: Episodes from a History of Animation* (Minneapolis: University of Minnesota Press, 2021). Before Bute, Fischinger invented a wax-slicing machine synchronized to a camera shutter to film the colorful cross-sections of shapes. After her, as Moritz and Keefer note, several Californian visual music filmmakers, including James Whitney, Jordan Belson, Harry Smith, and Charles Dockum, experimented with alternate technologies. Jud Yalkut frequently collaborated with Paik on video-film works. And outside the US, New Zealand-born Len Lye painted abstractions directly on film and optically printed them in films such as *A Colour Box* (1935).

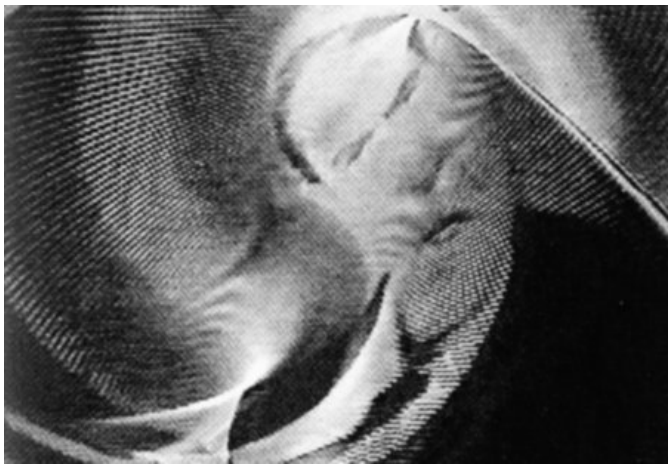

Figure 3.5 Still of Nixon in Nam June Paik, *Electronic Opera No. 1* from *The Medium is the Medium*, 1969. Bußmann, Klaus and Florian Matzner, eds. Nam June Paik: eine DATA base. Germany: Edition Cantz, 1993

Visual music continued to collide with mainstream media in Nam June Paik's 1960s television art. As Gene Youngblood describes Paik, "He is to television what John Whitney is to the computer; he does with TV sets what David Tudor does with pianos."[27] From his associations with Fluxus member John Cage and composer Karlheinz Stockhausen, Paik furthered intermedia art by plugging it into technology. He modulated color and light frequencies in a TV set's cathode ray tube to create works like *Electronic Opera #1* (1969), which warps images—including one of Nixon's head—with positive-negative reversals and other electromagnetic distortions (Fig. 3.5). Paik was deeply concerned with "how to *humanize* the technology and the electronic medium […] What I'm aiming at with my Lissajous figures and other distortions is a television equivalent of Vivaldi, or electronic Compoz. Lumia art will then become a permanent asset in the collections of millions of people."[28] Paik took Lumia and other conceptions of color music and light art off of the pedestal of high art to make them widely available—resonant with Yoko Ono's Fluxus voice works and event scores. Bute's hoedown sketches and Paik's video images redrew the high-art boundaries around images and sounds. These avant-garde artists

[27] Gene Youngblood, *Expanded Cinema* (New York: Dutton, 1970), 302.
[28] Nam June Paik quoted in Youngblood, *Expanded Cinema*, 308.

treated film and intermedial materials as "a laboratory where relations among music, image, and text could be tested"—which is how Carol Vernallis describes music videos.[29] As in this later laboratory, avant-gardists made sound-image relations increasingly flexible with new technologies and techniques for the film medium. Screen-based media were testing grounds to visualize music's sensual forms and rhythms: artists translated sounds into figures, from ping pong balls and dots to *Vertigo*'s spirals. Through the use of familiar shapes and forms, visual music presented sounds onscreen as acoustic mirrors that could reflect new insights about society. From eidophones to oscilloscopes, transcribing sound revealed how technologies could synthesize human hearing and perception—with some machines even resembling human sensory organs, like Bell's ear phonautograph. As a site for negotiating the interplay between sensory transmission and bodily perception, the development of both technologies and techniques in visual music opened up new ways to chart relationships between sound and sight, and human and machine.

The Cut-and-Paste Montage of the Fairlight CMI: Music Visualized in '80s MTV

In a technological extension of visual music, the Fairlight offered an interface for drawing sounds, which would then be redrawn through new images in music videos. Its digital technology allowed artists to shape timbres at the precise level of visualized sound waves. Bulky and best suited for studio use, it had two microprocessors, floppy disk drives, two six-octave keyboards, and a QWERTY keyboard connected to a monitor. It was created in 1975 in Sydney by two high school friends, the synthesizer player Kim Ryrie and electronics engineer Peter Vogel. In their aim to emulate acoustic instruments with digital synthesis, they licensed and

[29] Vernallis, *Experiencing Music Video*, iv.

incorporated Tony Furse's work on the Qasar M8 analog-digital synthesizer—specifically its 8-bit microprocessors and light pen, which modified waveform frequencies. As a powerful tool for customization, the light pen complemented Vogel's happy accident of programming the keyboard to play back sampled sounds at different pitches. Thus, in 1979, Ryrie and Vogel marketed what Samantha Bennett calls "the first computer-based digital synthesizer with on-board sampling capability."[30] Critics quibble over the designation of "first digital sampling synthesizer"—for Kevin Young, that was the Computer Music Melodian, created in New Jersey in 1976, and followed in 1977-78 by New England Digital's Synclavier Synthesizer System.[31] Most critics specify that the CMI was unique in its polyphonic capabilities—that is, multiple notes could be played at the same time.[32]

Despite all of these epithets, the CMI Series I was neither popular nor widely distributed after its release. Only artists and studios with $25,000 to $36,000 could acquire it, like Stevie Wonder and producer Richard James Burgess. But its presence in studios like Trevor Horn's ZTT Records spread its use through songs as varied as Frankie Goes to Hollywood's "Relax" (1983) and Grace Jones' "Slave to the Rhythm" (1985). Horn, who sang in the Buggles' "Video Killed the Radio Star" (1981), the first video shown on MTV, went on to produce many albums that sound quintessentially '80s—thanks in large part to his extensive use of the Fairlight.

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[30] Bennett, *Modern Records, Maverick Methods*, 20.

[31] Kevin Young, "Keyboards 2007," *Canadian Musician* 29, no. 2 (March/April 2007): 53. Predating the first digital sampler debate, there are several analog samplers, such as the Chamberlin (1949) and Mellotron (1963) that used magnetic tape and the Optigan (1971) and Orchestron (1975) that used pre-recorded optical soundtracks.

[32] Such a distinction is still debated by critics. For Mark Vail, the title belongs to the 1974 Rocky Mount Instruments Keyboard Computer by the Allen Organ Company, which wasn't labeled as such since "at that time everyone thought of synths as monophonic analog beasts"; Mark Vail, "RMI Keyboard Computer -- First digital polyphonic synth," *Keyboard*, June 1, 2004, 102. Vail also notes Yasuhiko Mori's 1979 development of a four-voice polyphonic sampling keyboard for Korg. But Korg set aside Mori's plans to release the Trident synthesizer because it was easier to reproduce commercially; see Mark Vail, "Korg's 40th Anniversary," *Keyboard*, April 1, 2003, 56.

In its three ways of creating sound—digital synthesis, 3D waveform drawing or editing, and sampling found and instrumental sounds—the Fairlight generated an array of timbres previously unheard in pop music. But it had constraints: its limited random access memory could only record and replay sounds less than a second long, and with a low 8-bit quality, producers like Burgess avoided using it to sample lead vocals or key acoustic elements.[33] While Fairlight samples tended to sound choppy, many artists argued that this was part of its charm. Moreover, the ease of digitally recording and playing back samples built upon prior incorporations of found sounds into music, from the Beatles to the *musique concrète* pioneers discussed in Chapter 2. Beyond splicing magnetic tape for overdubs, Fairlight users could see and edit sounds onscreen. Since its digital sample libraries and visual editing attracted users beyond the avant-garde, the Fairlight exploded the range of possible timbres in songs, especially in pop. For Ragnhild Brøvig-Hanssen and Anne Danielsen, the Fairlight's visualization of sound on its computer monitor "pushed popular music farther into the frame of the 'montage aesthetic.'"[34] Once artists learned its recording, editing, and looping capabilities, they could graft synthetic to real sounds in a cut-and-paste aesthetic that permeated everything from the Pet Shop Boys to 1980s hip-hop.

Much of the Fairlight's impact on music composition and the development of future technology was visual, as its graphic interface foreshadowed those of Digital Audio Workstations (DAWs) like Pro Tools and GarageBand. On the green glow of the video monitor, users navigated between designated "pages" for tasks such as recording samples and editing or drawing waveforms. On Page 2, "Disk Control," users selected sounds from one of the Fairlight's 28 sound libraries, stored on floppy disks that were swapped in and out. The multi-

[33] Richard James Burgess, *The Art of Music Production: The Theory and Practice* (Oxford: Oxford University Press, 2013), 141.
[34] Ragnhild Brøvig-Hanssen and Anne Danielsen, *Digital Signatures: The Impact of Digitization on Popular Music Sound* (Cambridge, MA: The MIT Press, 2016), 14.

track editing window that prefaced today's DAWs was Page R (for "Real Time Composer"), debuted with the Series II in 1982 (Fig. 3.6). This update of Series I's sequencer allowed artists to arrange sampled sounds in rhythmic and melodic patterns. Page R's graphic depictions of notes in horizontal plots were accessible to both specialized keyboard players and music hobbyists. For example, Canadian guitarist Dave Beatty enjoyed manipulating loop length and vibrato speed "by squeezing and stretching the sound samples in real time. […] I found it amusing to push the computer in ways that hadn't been heard of at the time."[35]

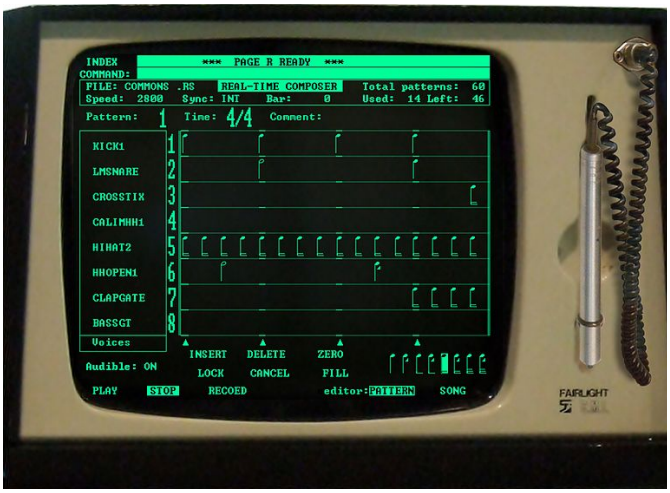

Figure 3.6 "'Page R' and light pen on Fairlight CMI Series II," Joho345, CC-BY-3.0, https://commons.wikimedia.org/wiki/File:Fairlight_II_Page_R.jpg

Other features required more time and patience, however: the light pen, one of the most novel parts of CMI, was dismissed as a faulty gimmick by Synclavier co-developer Cameron Jones. With the Fairlight's low-quality sampling rate, "[u]sing a light-pen to draw a visual representation of a sound wave is kind of like using a pencil to draw a high-resolution JPEG image."[36] Some dedicated artists, however, took up the pen. Peter Gabriel maintained that one had to learn to control it like an instrument, since it did not always accurately tweak frequencies.

[35] Dave Beatty quoted in Kevin Young, "Classic Keyboards: Canadian Musician's 2017 Focus on the Keys," *Canadian Musician* 39, no. 4 (July/Aug 2017): 54.
[36] Cameron Jones quoted in Greg Milner, *Perfecting Sound Forever: An Aural History of Recorded Music* (New York: Faber and Faber, 2009), 317.

But Herbie Hancock celebrated the Fairlight's combined light pen and menus: "The fact that you can draw your waveforms, loop any points you want, and merge different waveforms together is fantastic. There's nothing even close to that as far as I know."[37] In 1986, the Series III replaced the light pen with a stylus and graphics tablet,[38] but the light pen nevertheless left an indelible mark on the possibility to visualize sound in waveforms. For the light pen could alter samples' frequencies as close as possible to their source—depicting sound in light much like visual music filmmakers. While its technological fidelity may have fallen short, the light pen was the Fairlight's most literal representation of the way artists could see sound: they drew and sampled sounds to cue up the words and images they wanted their songs to convey. Tweaking waveforms visually produced an analogous sonic result, creating twinned contours of emotional grammar.

The sentiment of using found sound to express thought and music was baked directly into the Fairlight's reviews and advertisements. For writer Giles Dawson, it was as simple as using your own two hands: "Insert a systems disc in the left-hand drive, a library disc in the right, and you can explore a world of sound limited only by your imagination."[39] Such a claim caused organizations like the UK Musicians' Union to worry that the Fairlight might put musicians out of work by stealing acoustic sound production away from classical performers. After all, an ad in *Keyboard* suggested that it was "the most comprehensive musical instrument ever conceived."[40] Accounts of the Fairlight's low-fidelity sampling went some way to assuage such fears: as audio analysts at the 1980 International Computer Music Conference reported, "Steinway needn't worry about competition from this instrument. In general, the Fairlight offers an enormous

[37] Herbie Hancock quoted in *Keyboard Staff*, 1983, 53; quoted in Paul Harkins, *Digital Sampling: The Design and Use of Music Technologies* (London: Routledge, 2019), 20.
[38] Harkins, *Digital Sampling*, 61.
[39] Giles Dawson, "Machines Alive with the Sound of Music," *New Scientist* 99, no. 1369 (August 4, 1983), 333.
[40] "Orchestra for sale?" advertisement, *Keyboard* (February 1982), 15.

palette of sounds to the musician, but it can't do everything. Like a camera, the CMI becomes transparent to the viewer, with no characteristic sound of its own."[41] These remarks are curious today, given that listeners recognize the ORCH2 orchestra hit across a panoply of songs and also snub eight-bit tones as cheap and tinny. Beatty, though, admires its retro digitality for custom sound effects, because "the sound texture and timbre of the Fairlight sound cards are still very distinctive and hard to duplicate."[42] Present-day listeners hear the Fairlight's sonic mediation so palpably since sampling rates are much higher now—so it is possible that its sonic snapshots were less marked in its day. Still, the Fairlight's samples were marked in other ways: even non-musical users like Peter Gabriel's cousin, Stephen Paine, soon realized that "it was impossible to achieve the expressiveness with a keyboard that players of acoustic instruments have with finger and/or mouth control."[43] While Paine decries the expressive limits of early digital technology, Beatty reminds us that the digital can have retro appeal—words usually accorded to the analog.

Through its digital reproductions of analog sounds, the Fairlight disrupted this binary. It gave users both an orchestra in a box (as regaled by early proponents; Fig. 3.7) and the ability to switch to other instruments faster than humans could. With it broad palette of timbres, and the ease of swapping instruments in and out even after a recording session, the Fairlight opened up enormous possibilities for artists that surpassed the analog vs. digital debate. When artists had access to analog instruments through a digital interface, the speed and potential of their musical analogies surpassed those of visual music filmmakers or magnetic tape producers with overdubs.

[41] Steve Levine and J. William Mauchly, "The Fairlight Computer Music Instrument," in *Proceedings of the 1980 International Computer Music Conference* (1980), 566.
[42] Beatty quoted in Kevin Young, "Classic Keyboards," 54.
[43] Paul Tingen, "Fairlight: The Whole Story," *Audio Media* (January 1996), 48-55. Available at: http://www.anerd.com/fairlight/fairlightstory.htm.

Figure 3.7 "Orchestra for sale?" advertisement (Keyboard, February 1982), 15. Available at: Retro Synth Ads, October 13, 2011, http://retrosynthads.blogspot.com/2011/10/fairlight-cmi-orchestra-for-sale-ad.html

While Fairlight advertising at first suggested it could nullify orchestras by modeling the sounds of instruments, by 1982 ads emphasized the possibility of creating timbres never before heard. That year, one ad proclaimed that the Fairlight can "capture and play any sound at all—even sounds not previously considered as musical."[44] In this shift from mimicking analog instruments to embracing digital possibilities, the diverse array of the Fairlight samples contests stereotypes of the futuristic sounds that come from '80s synths. Indeed, some synths set the tone for the decade: the Yamaha DX7, as Megan Lavengood writes, had a preset called E. PIANO I that "function[ed] as a shorthand for the '80s sound as a whole" with its bright, clear timbres.[45] But the Fairlight injected new sonic signifiers into the decade's music that went beyond stereotypes of "inhuman-sounding" digital synths.[46] From tribal flutes to car engines, Fairlight samples captured various found sounds that in turn infused artists' videos with threads of

[44] "Orchestra for sale?" advertisement, *Keyboard* (February 1982), 15.
[45] Megan Lavengood, "What Makes It Sound '80s?: The Yamaha DX7 Electric Piano Sound," *Journal of Popular Music Studies* 31, no. 3 (September 2019): 73–94, 89.
[46] Critics of early '80s synths found them too precise, without humans' slight discrepancies in timing, attacks, and expressive emphases. For more on this topic, see Brøvig-Hanssen and Danielsen, *Digital Signatures*, 58.

fantastical and realistic imagery. Especially when artists used the Fairlight to blend acoustic and digital sounds, they blurred lines between musical instruments and objects[47]—and analog and digital technology. "[B]etween 1978 and 2000," Samantha Bennett contends, "commercial popular music production rarely aligned exclusively to one sonic domain or another. In reality, the majority of recordists blended technologies from both [analog and digital] domains into their workflows" based on a variety of factors, from artists' financial means to aesthetic preference.[48] As I argue, Fairlights bridged digital and analog and extended artists' sonic and visual creations. Crucially, the Fairlight was not a complete orchestra in a box: artists had to use analog microphones and cables to record found sound. To unlock the full potential of this graphic interface for sound, artists still needed to import sounds to visualize in their videos.

The 1984 video by Zbigniew Rybczyński for The Art of Noise's "Close (To the Edit)" is just one example that depicts critical debates about digital versus analog, and acoustic versus electronic instruments. Its title demonstrates the extent to which "we created the music through editing […] and sampl[ing] whatever was lying around," as group member Paul Morley put it. Sonically, the Fairlight punctuates most of the track, with the groove carved from a sample of a "neighbor's VW Golf stalling" and a scalar "dum dum" vocal that forms the backbone of the bass line. Other vocal samples function as fills, from "group members Gary Langan and JJ Jeczalik saying 'urgh,' and money,' which we played backwards" to the "hey" that has been sampled since by The Prodigy in "Firestarter."[49] In the video, three male band members and an

[47] For example, to Mark Mothersbaugh (Devo member and composer of *Pee-wee's Playhouse* and Wes Anderson films), Fairlight samples "sounded like acoustic instruments as much as Formica wood paneling looked like real wood. It was better, but not as good—it was very limited, but for a certain aesthetic, it was better, in a way." He went on to sample a toy piano "[t]hat became the musical universe for *Rugrats*." Daniel Goldmark, "An Interview with Mark Mothersbaugh," in *The Cartoon Music Book*, eds. Daniel Goldmark and Yuval Taylor (Chicago: A Cappella Press, 2002), 214.
[48] Bennett, *Modern Records, Maverick Methods*, 10.
[49] Paul Morley and Anne Dudley quoted in Imogen Tilden, "How We Made Art of Noise's Close (to the Edit)," *The Guardian* (3 July 2018), https://www.theguardian.com/music/2018/jul/03/how-we-made-art-of-noise-close-to-the-

actor—a young girl—use hammers and chainsaws to wreck pianos and saxophones. For Bennett, the video enacts a "metaphorical commentary on the Fairlight's sample-sequenced compositional potential as 'destroying': traditional musical instrumentation […] and Western Classicist music tradition and canon (as depicted by the Mozart bust)."[50] While the video might seem to condemn classical musical instruments, though, another reading emerges from the band's mixture of acoustic keyboards—Anne Dudley often used real pianos—and digital samples. For AON's Fairlight operator J.J. Jeczalik, such sonic layering set the acoustic instrument sounds in "incredible-high definition" against the "very low bandwidth drum track thrashing away in the background."[51] So while in the images, the band destroys acoustic instruments, AON's soundscape makes the Fairlight drum sound artificial, which raises the status of the acoustic instruments. The video thus sets up an audiovisual feedback loop between acoustic and synthetic instruments: it calls into question which sonic domain might fall into obsolescence, or whether they can coexist in harmony.

The many sampled drum breaks and vocal hooks in today's music reveal that digital samples of analog instruments still prevail. As I will argue in the following case studies, this enduring blend of analog and digital has roots in the circulation of the same samples across different Fairlight users' songs. For example, a sample called GLASMASH, in which Peter Gabriel was recorded breaking glass, recurs in Kate Bush's "Babooshka" and Frankie Goes to Hollywood's "Two Tribes." DIY samples circulated because Fairlight users "would send us back floppies and say hey, look at these samples that I created," as Peter Vogel recounts.[52] The

edit-anne-dudley-paul-morley. Christina Aguilera's "Back in the Day" also uses what sounds like the "Hey!" sample.

[50] Bennett, *Modern Records, Maverick Methods*, 23.

[51] J.J. Jeczalik in 2011 interview with Harkins, quoted in Harkins, *Digital Sampling*, 57.

[52] Estelle Caswell, "The sound that connects Stravinsky to Bruno Mars," *Vox*, YouTube, 9:25, May 15, 2018, https://www.youtube.com/watch?v=8A1Aj1_EF9Y.

Fairlight's preset sounds also were used widely throughout '80s synth-pop, such as the "Sararr" (a.k.a. ARR1) patch that is perhaps most recognizable in "Shout" (1984) by Tears for Fears; its breathy female vocal also traverses "Moments in Love" by the Art of Noise and even *Miami Vice*.[53] I call such recycling of found sound "intersonic citation"—the sonic version of intertextuality, when the same sounds recur in different songs. The intersonic citation of Fairlight samples spread in both avant-garde and commercial realms, likely due to their distinctive timbres (recall Beatty's attraction to its retro textures). Recycled sounds both referenced prior songs and triggered new sound worlds due to the different musical contexts of song genres and styles—and the different visual contexts of music video imagery. The intersonic citation of Fairlight samples of found sounds also stirs a listener's aural memory back to previous images of what a sampled object sounded like in daily life, akin to the personal and collective associations sparked by found sounds on transistor radios and magnetic tape in Chapters 1 and 2. By tracking the ways in which artists recycle Fairlight samples and alter their sonic and visual associations, viewers can grasp how artists both signify and cite sonic expressions of self and society.

Music videos with Fairlight samples often contain feedback loops of sounds that respond to images and images that respond to sounds. As "Close (to the Edit)" demonstrates, Fairlight-inspired videos do not follow a 1:1 correspondence where a sample is synchronized to a shot of the object that produced it. Rather, imagery stems from the atmospheres and flavors evoked by sounds. The found sounds of the Fairlight influenced four particular aesthetic categories in early '80s music videos: theatricality, sexuality, science fiction, and mass culture, which can be seen in dance moves, props, narratives, and more. The Fairlight's interface for drawing and tweaking sound waves became a laboratory, a theater, for developing and rehearsing visual associations

[53] Engineer Tom Stewart created ARR1 by sampling a blues singer named Sarah "with a unique husky voice." Paul Harkins, *Digital Sampling*, 26.

with an array of sounds. In the words of Jonathan Sterne, "Sounds could neither hold faith nor be faithful—that task was left to listeners and performers."[54] Following Sterne, one could say that as artists create new audiovisual contexts for sounds in music videos, viewers can trace how performers' motions and images respond to the contours of the Fairlight's gritty 8-bit samples.

Dancing Around Broken Glass: The Fairlight's Theatricality in Kate Bush's "Babooshka"

> If I'm writing a song about another person, I'll really try to become that person. [….] When you create the videos, you tend to use a more theatrical approach rather than the real thing. […] To create the visual ideas… it really does depend on the song, because the song lays down every key mood and who you are, what you wear, what color the set is, you know. It's really the song [that] dictates it all.
>
> Kate Bush, 1980[55]

Among Fairlight users who blended acoustic and synthetic sounds, British artist Kate Bush is notorious for throttling between extremes. Bush is a boundary figure somewhere between Karen Carpenter and Yoko Ono: she was discovered by Pink Floyd guitarist David Gilmour and later "stereotyped as an wide-eyed, tuneful eccentric […] an MOR, ballad-singing, BBC Radio 2-friendly songstress," and a technological genius in her work as her own producer.[56] She rose to fame with her self-penned debut single "Wuthering Heights" (1978), which topped the UK charts within a month. In 1980, her third album *Never for Ever*, which she co-produced, was the first #1 album in the UK by a solo female artist. But many critics, from *Melody Maker* staff to BBC Radio 1 DJ John Peel, could not take seriously her extended vocal range, heady lyrics, or her

[54] Jonathan Sterne, *The Audible Past: Cultural Origins of Sound Reproduction* (Durham: Duke University Press, 2003), 282.
[55] Kate Bush, "Profiles in Rock," interview by Doug Pringle, CITY-TV, Toronto (Canada), December 1980, available at https://www.youtube.com/watch?v=OBifL6tVRjY.
[56] Ian Cawood, "'Don't let me go! Hold me down!': Inspiration, Voice and Image in Kate Bush's 'Hounds of Love,'" *Popular Music* 35, no. 1 (2016): 41–63, 43–44. Emma Mayhew analyzes these critiques in "Positioning the Producer: Gender Divisions in Creative Labour and Value," in *Music, Space and Place: Popular Music and Cultural Identity*, eds. Sheila Whiteley, Andy Bennett, and Stan Hawkins, 149–162 (Aldershot, England; Burlington, VT: Ashgate, 2004), 156.

theatrical performance style.[57] In order to continue pursuing her unconventional projects—showcased in the collision of styles in *The Dreaming* (1982)—she distanced herself from EMI: she set up her own studio space in time to produce 1985's *Hounds of Love*. In her "potent blend of programming and playing," biographer Ron Moy remarks, she is known for her "multiple overdubbing of elements onto existing rhythm tracks, and a judicious balance between the synthetic, the electronic and the acoustic."[58] Blending ancient and cutting-edge instruments, often on the Fairlight, her work tilts between genres and from sincerity to theatricality.

Figure 3.8 Bush at the Fairlight. Photo by John Bush. Diliberto, "Kate Bush," *Keyboard*, July 1985, 56-57

Bush manages her kaleidoscopic musical mixtures with a near-autonomous role in her production process; she also writes her own material and plays a range of keyboards from piano to the Yamaha CS80 analog synthesizer, plus the cello and violin.[59] The Fairlight in large part balances the wide variety of sounds in her compositions; as John Diliberto reviewed *Never for*

[57] For more on critics of Bush in the early years of her career, see Cawood, "'Don't let me go! Hold me down!'", 43. See also Faith Brown's parody of Bush on her titular *Chat Show* in 1980: divasblogger, "Kate Bush impression by Faith Brown: The Faith Brown Chat Show, 1980," 6:20, July 15, 2014, https://www.youtube.com/watch?v=IzDo5lwjrqg.
[58] Ron Moy, *Kate Bush and Hounds of Love* (Aldershot, England; Burlington, VT, Ashgate: 2007), 35.
[59] Holly Kruse, "In Praise of Kate Bush," in *On Record: Pop, Rock and the Written Word*, eds. Simon Frith and Andrew Goodwin (London: Routledge, 1990), 390.

Ever, samples "like kotos and mandolins gave her music a new exotic quality that seemed to free her voice, allowing it to be more natural" (Fig. 3.8) [60] "Natural" here marks a connection between voice, body, *and* technology, unlike critics who disregarded Karen Carpenter's prowess in the overdubs used to hone her voice and songs (see Chapter 2). Bush similarly mastered multiple crafts: she studied dance and mime under Lindsey Kemp and Adam Darius, which primed her for music video performances. With two key tools, the Fairlight and expressive dance, Bush created music and images on themes of romantic love and desire, often inspired by the Victorian novels she devoured. Her music videos thus accentuate the theatricality latent in everyday life. In what Brøvig-Hanssen and Danielsen call a theatrical approach to vocal production, she "stages the singing subject and even splits it into different characters."[61] To see how Bush's mix of acoustic and digital sounds inspired mimetic and inventive acts, I turn to "Babooshka," the first track on *Never for Ever*. Peaking at #5 in 10 weeks in the UK and the 20th best-selling single of the year in Australia, the song marks an early successful use of the Fairlight.[62]

Figure 3.9 Still of Bush as the wife in "Babooshka" (Keith MacMillan, 1980)

[60] John Diliberto, "Kate Bush: From Piano to Fairlight with Britain's Exotic Chanteuse," *Keyboard*, July 1985, 58.
[61] Brøvig-Hanssen and Danielsen, *Digital Signatures*, 39.
[62] Burgess, *The Art of Music Production*, 243.

In the "Babooshka" video (Keith MacMillan, 1980), Bush builds on The Art of Noise's digital destruction of acoustic instruments to dramatize a domestic scene. Its story derives from the English folk song "Sovay," about a young woman who disguises herself as a highwayman to gauge her husband's commitment to her.[63] In the video, a double bass—an acoustic instrument that towers over her 5'3" frame—symbolizes the estranged husband of Bush's character. That character splits into two personas: in the verses, Bush as the wife wears a black V-neck dance unitard with a black veil draped over her head (Fig. 3.9). She never lets go of her double bass husband—she grabs "his" neck and swings it from side to side to illustrate the opening lyrics, "She wanted to test her husband." Her gestures often mime the lyrics as her lips do; if one reads the song retroactively, Bush depicts a large amount of backstory before putting it into words. In the first eight bars, she bows deferentially to the bass in time to an exotic, vaguely Russian melody, played on both piano and her CS-80. But in the next eight, she turns jauntily to face the camera and strikes strong poses to the thrums of John Giblin's fretless electric bass, which foreshadow her plan to trick her husband into revealing his infidelity. In the choruses, she poses as the lover who lures her husband: her second costume imparts a Russian twist with a headdress and a sword strapped to the hilt of a glorified bikini. Now without her bass—and considerably less clothed—Bush never breaks the camera's gaze.

[63] Moy, *Kate Bush and Hounds of Love*, 24.

Figure 3.10 Still of Bush as the alter-ego, titular "Babooshka" (Keith MacMillan, 1980)

In much of the video, Bush stares and lip syncs at the camera—a direct address that jars with her third-person narration, until the listener realizes that Bush is posing as the wife who is posing as the lover Babooshka. This nesting dolls conceit seems intentional, as they are also called babushka dolls. Bush's shift from one persona to another reaches a height of theatricality (mimetic of her vocal range) as she cries, "All yours, Babooshka" to implicate the cheating husband she imagines before her. Direct address seems warranted here, but it was also a common trope of MTV rock videos, which emphasized, as Margaret Morse writes,

> the act of performance in creating a story world. The [star's lip-synchronization…] link[s] the viewer […] in several ways—through identification, through direct address, and most significantly through the viewer's own 'performance' of the song through synchronizing body and lip movements with the star's own.[64]

In validation of Morse's claim that direct address and lip sync build rapport, Bush implicates viewers to feel her character's rage in her exaggerated gestures: her eyes open and her body thrusts animatedly as she grabs the hilt of her sword. She wields it in the video's final moments as if the sword has the last word in infidelity. Her theatrical wrath strikes Ian Cawood as an "unwillingness to commercialise her music [in order to] use it to speak what she regards as an

[64] Margaret Morse, "Postsynchronizing Rock Music and TV," *Journal of Communication Inquiry* 10, no. 1 (January 1986): 15–28.

emotional truth, directly to her audience."[65] Like Bute, Bush wished to transmit emotion through image and sound with as little mediation as possible. In an interview with VH-1, Bush remarked, "Everyone can relate to an image—it's such a good way of getting people to understand what you really mean."[66] As the canvas for her videos, Bush records her voice in one take without overdubs. In so doing, direct address also occurs sonically: a Fairlight sample of smashed glass creates a dramatic crack in the fourth wall.

Figure 3.11 Kaleidoscopic static during GLASMASH sample in still from "Babooshka" (Keith MacMillan, 1980)

The "Babooshka" video synchronizes one of the first Fairlight samples used in pop music to the moment when the veiled Bush reveals her identity to catch her husband in the act of infidelity (Fig. 3.11). Appropriately called GLASMASH, it was originally smashed by Gabriel and Burgess, the latter of whom programmed Bush's Fairlight. Burgess recalls:

> We took glasses, I guess, from the kitchen. We had, I seem to remember, a concrete block or something in the studio and we just threw them down on the concrete block and recorded it. We had several samples and we stacked them up and then just found a combination of keys that made the best sound. The pitch changing is all from the keyboard on the Fairlight and mostly they were clusters, semi-tone clusters, on the keyboard.[67]

[65] Cawood, "'Don't let me go! Hold me down!'", 60.
[66] Kate Bush quoted in VH-1 interview, January 1990. Available at: http://gaffa.org/reaching/iv90_vh1.html.
[67] Richard James Burgess in 2011 interview with Harkins, quoted in Harkins, *Digital Sampling*, 30.

Echoing the dynamic actions of creating the sample, in the video the broken glass disrupts the image with kaleidoscopic color and static, and it interrupts the expected four-beat drive of the pop song. The found sound echoes *musique concrète* recordings of everyday events; it may remind listeners of moments when relationships reach a breaking point and a wine glass is smashed in the course of an argument. GLASMASH also shatters the seamless visual transition between Bush's two characters, who previously were knitted together by subtle zooms to matches on action and her insistent rhythmic dancing. But with GLASMASH, Bush commandeers viewers' access to her star image by momentarily obliterating it, in a subversion of direct address. Once the glass breaks and the verse-Bush lifts her veil, Babooshka-Bush takes up her sword to dance with it like a guitar: by musicalizing her weapon, she signals to viewers her control as both songstress and video artist. The Fairlight's mode of visualizing sound provokes Bush's penchant for montage aesthetics in both her music and her videos. As she says, working on the Fairlight gives her "associations of the sounds straight away as [she] start[s] writing the song."[68] When she cuts and pastes surprising sounds and images together, she crafts breathtaking moments of synchronization that unveil her work to express herself as both an artist and persona.

Both the Fairlight and dance thus operate as fulcrums between theatricality and Bush's real-life identity as an artist in "Babooshka." The Fairlight sample shatters the typical reception of a singer as the auteur of their video. Madonna models this, as her dancing for Sally Banes "def[ies] gender stereotypes and expectations," since it "always functions together with (and cannot be separated from) camerawork and editing."[69] Bush's forceful dancing similarly reacts to

[68] Bush quoted in November 1985 interview with Christopher Ward in program "Egos and Icons" on the Canadian channel Much. Available in zack11993, "Kate Bush Documentary, including rare interview footage. Part two," YouTube, October 30, 2009, https://www.youtube.com/watch?v=IY7D2qgSxtM&t=1s.
[69] Sally Banes, "TV-Dancing Women: Music Videos, Camera-Choreography, and Feminist Theory," in *Before, Between, and Beyond: Three Decades of Dance Writing*, ed. Andrea Harris (Madison, Wis: University of Wisconsin Press, 2007), 330; 325.

and spurs on the editing that surrounds her revelation. Instead of a mere to-be-looked-at female star, Bush and her production team create prismatic static that alerts listeners to *musique concrète* within pop. This rupture in both sound and image signals her character's breaking point amid the noise of the status quo.

Bush's audiovisual collage entwines pop and avant-garde, and acoustic and digital, in ways that stand in for both instruments and concepts but also transform them. Unlike purists who refuse to mix acoustic and digital sounds, Bush samples musicians and alters them digitally. As she told *Keyboard* in 1985, what excited her most about the Fairlight "is the combination of real and natural sounds and extremely electronic synthesized ones."[70] Listeners notice how she blends these worlds: as one forum-goer reported, the Fairlight lent Bush's early albums "such a strange but human breathing quality."[71] For example, "Babooshka" features the balalaika, a traditional Russian stringed instrument likely fed into the Fairlight but played initially by Paddy, Bush's brother and career-long collaborator.[72] The balalaika is not as overt as GLASMASH, but it airs the sound of the Babooshka-Bush persona before viewers see her in the video. It infuses one sensory world of Bush's character with another, as in the quick superimposition (Fig. 3.12) of Babooshka-Bush on the back of veiled-Bush's bass when she spins it in the second verse.

[70] Diliberto, "Kate Bush," 72.
[71] johnsiddique, "Albums featuring prominently the Fairlight CMI," Steve Hoffman Music Forums, February 14, 2016, https://forums.stevehoffman.tv/threads/albums-featuring-prominently-the-fairlight-cmi.500109/.
[72] Similarly, Rolf Harris plays the didgeridoo, a native Australian instrument, on "The Dreaming" (1982)—a song that attempts to amplify the wrongful exploitation of Aboriginal Australians. Diliberto, "Kate Bush," 64.

Figure 3.12 Superimposition of the alter-ego in still from "Babooshka" (Keith MacMillan, 1980)

Bush's knowing, theatrical wink to viewers accords with Morse's suggestion that music videos gain much of their performative power from "drawing the imaginary world into being."[73] The briefest flicker of an image can speak volumes as it collides with adjacent images, lyrics, and music. But so can snippets of sounds: in choruses before the glass-breaking climax, the backing vocals sung by Paddy and Garry Hurst on each "Babooshka" downbeat sound as if they are mixed with a faint hint of GLASMASH—though this may stem from the delay effect of crunchy consonants cluttering the texture.[74] Digitally manipulated either way, the vocals pave the way for broken glass to connote the apex of the wife's emotion: GLASMASH is a cry of sadness and anger at promised intimacy and fractured trust. Like Big Boi from Outkast praised Bush's album *50 Words for Snow* (2011), in "Babooshka" she displays "raw emotion. It's almost like a scene from her diary. She seems to be in love like a motherfucker. Really, really, *really* in love."[75] In this early use, the Fairlight plays a role in empowering women's voices as producers of their music, not merely as a voice. For Kruse, the instrument combines "a variety of sounds into a

[73] Morse, "Postsynchronizing Rock Music and TV," 21.
[74] Bush alludes to her penchant for this latter type of manipulation: "I'm very into natural sounds—particularly taking them out of their range… and maybe sometimes putting them backwards—I s'pose I like distortion of natural things, I like to still feel there's something natural in it." In "Kate Bush and the Fairlight," *Electric Soundmaker & Computer Music* 1, no. 62 (October 1983). Available at: http://gaffa.org/reaching/i83_es.html.
[75] Doree Shafrir, "Big Boi Raves About Kate Bush's '50 Words for Snow,'" *Rolling Stone*, November 22, 2011.

melodic whole [… it] mirrors its focus on interpersonal relationships and the interrelatedness of life."[76] As Bush uses the Fairlight to channel female rage, GLASMASH inspires her to fill the music video screen with emotive fragments from her own and others' lives.

Blending analog and digital, Bush uses her Fairlight to draw out the intense emotions that arise in relationships. She thrills at the ability to "actually see a sound [on it]. Incredibly ugly sounds can look really beautiful—it's really like another dimension: visual interpretation of the world rather than audio."[77] The Fairlight thus became a micro-theater for visualizations of sound that "act out" the highs and lows of emotion in each crest and trough of a sound wave. Bush took up its light pen to heighten the drama of real-life scenarios, embracing the new visions of sounds and everyday life that the theater of the Fairlight inspired. In this way, the Fairlight's abstract forms of visualization, as in the sound waves Bush tweaked to find timbres and textures for her desired sound-image associations, led to the narrative forms that arise in her videos.

In *Never for Ever*'s "Army Dreamers," for example, a repeated gun cocking sample that layered "multiple weapons on top of each other"[78] comes to express grief for the titular "Army Dreamers" who do not live to fulfill their dreams. But in the video, the collaged sample gains a "come-hither" valence, as it first appears synchronized to Bush's blinking eye in extreme close-up. The gun simultaneously summons several emotional meanings—associations of sexuality, war, and pain—much like the glass in "Babooshka." For beyond the multiple images that accrue for one sample in a song, samples also spread across songs in intersonic citation. GLASMASH was prevalent among other bands who used the Fairlight: for example, in Frankie Goes to Hollywood's 1984 "Two Tribes," it synchronizes with a punch thrown in a boxing match

[76] Kruse, "In Praise of Kate Bush," 391.
[77] "Kate Bush and the Fairlight," *Electric Soundmaker & Computer Music* 1, no. 62, October 1983. Available at: http://gaffa.org/reaching/i83_es.html.
[78] Richard James Burgess in 2011 interview with Harkins, quoted in Harkins, *Digital Sampling*, 31.

between Reagan and Chernenko in Godley and Creme's video—which ends with the world exploding, as if to mimic Bush's shattering. These instances of intersonic citation reveal how widely music video imagery can vary for the same sound: while both artists sonify a violent revelation, Frankie frames GLASMASH as a political intervention, and Bush stages it as a feminist one, in a theater where the Fairlight's ways of seeing sound make the personal political.

Peter Gabriel's Risqué Reroutes of World Music: Avant-Pop Meets Animation

Like Bush, Peter Gabriel often combined music and theater. While Bush preferred music videos over touring, Gabriel enjoyed stage performances; as lead singer for the progressive rock band Genesis from 1967-75, he opted for costumes like "a fox wearing a red dress."[79] In his solo career, he emphasized social justice activism at Amnesty International concerts and sampled instruments and sounds from around the world. His interest in world music stems from interweaving disparate sounds to create sonic theater. In the visual sphere, the theatricality that inspired his Genesis concert costumes found a home in his early music videos.

Gabriel's songwriting process begins with images instead of words, making him an exemplary figure for studying how the Fairlight prompted images in both songs and music videos. "I think visually, and I often picture things when I'm writing," he explains.[80] Below, I examine how this song- and image-making process unfolds in the hit video for "Sledgehammer" (Stephen R. Johnson, 1986). The Fairlight's found sounds permeate Gabriel's '80s oeuvre; as one of the first artists to buy one in 1980, he used it at least up until 1986 in the album *So*, which features "Sledgehammer." "In the earliest days of sampling with the Fairlight," Gabriel's

[79] Brad Schreiber, *Music Is Power: Popular Songs, Social Justice, and the Will to Change* (New Brunswick: Rutgers University Press, 2019), 171.
[80] Peter Gabriel quoted in Steve Guttenberg, "Peter Gabriel," *Sound and Vision* (October 28, 2005 [September 28, 2005]), https://cdn.soundandvision.com/content/peter-gabriel.

keyboardist Larry Fast recounts, "[Gabriel] had a really good ear for listening to some fairly mundane sound and imagining what it would sound like if it was, say, sampled and shifted down in pitch."[81] Gabriel layered sounds through a creative process of destruction and regeneration much like Nam June Paik prepared pianos and TVs.

Gabriel and Paik share an avant-garde ethos of distorting mainstream trends in order to break audiences out of habitual ways of listening and seeing. In Paik's 1963 *Exposition of Music—Electronic Television* in Wuppertal, Germany, he damaged TVs with magnets and hammers to show audiences TV's component parts of light and sound waveforms. By destroying and then regenerating TV, he subverted its one-way broadcast into a feedback loop between artist and audience. Similarly, for 1982's *Security*, Gabriel and producer David Lord visited a junkyard in Bath to record "any noise they found interesting: scraped paving slabs, blown bottles and tubes, even smashed-up TV screens. All these sounds were sampled into his Fairlight CMI sampler and used extensively throughout the album."[82] Their smashing resulted in smash hits.

Beyond parallels with Paik in broken TVs, Gabriel was an avant-pop artist who broke into the mainstream with "Sledgehammer." The video won nine 1987 MTV Video Music Awards—to this day a record number of wins in one night—including Video of the Year, and the Brit Awards' Best British Video. For Saul Austerlitz, its potpourri of stop-motion animation by Aardman Animations (who later made *Wallace and Gromit*) and the Brothers Quay reflected "the visual jumble many thinkers saw in MTV: a pileup of discordant imagery, tied together only by its propulsion and voluptuous magnetism."[83] Dominated by Gabriel's face, the video accords with the star promotion of many MTV videos, but he also called for "[music] video to be treated

[81] Larry Fast quoted in Barry Cleveland, "Fast moving music," *Electronic Musician* 15, no. 3 (March 1999)
[82] Jem Godfrey, "Creative Sound Design For Music: Tips & Techniques," *Sound on Sound* (July 2011), https://www.soundonsound.com/techniques/creative-sound-design-music.
[83] Saul Austerlitz, *Money for Nothing*, 57.

as art and not promotion" in his acceptance speech at the '87 VMAs.[84] As the video juxtaposes his face with dancing chickens and spry claymation, unexpected snatches of avant-garde music and imagery rough up the gloss of MTV's 24/7 programming and make it playful.

Paik and Gabriel also share the thematic concern of sexuality, which strongly features in "Sledgehammer." While some of the animations, like singing clay bumper cars, look like child's play, the household objects depicted in the images reflect the lyrics' strings of sexual innuendos. Paik also sought to restore playfulness to representations of sex using technology: in *Listening to Music through the Mouth* (1962-63), gallery visitors operate the tone arm of a turntable with their mouths. By emphasizing the tactility and even orality of audiovisual media,[85] Paik created a bodily feedback loop between art's visual and sonic textures and those of the audience's memories of sexuality. Similarly, "Sledgehammer" uses the Fairlight's textured sounds to recall various tactile and kinetic pleasures.

"Sledgehammer" begins like the "The Miracle of Life" episode (*Nova*, 1983) often shown in health class to demonstrate biological reproduction. These pulsating blobs of sperm, however, are accompanied by a sample of a Japanese *shakuhachi* bamboo flute on the Fairlight.[86] Inspired by Vogel's crash tutorial of smashing milk bottles to use as Fairlight samples, Gabriel also recorded instruments he collected around the world. Significantly, in this opening both found footage and found sound exoticize biological byproducts of semen and breath. A larger-than-life mythology is erected around Gabriel through images of reproduction and wanton uses of the flute, a funky groove, and gospel choir—questionable touches of world music similar to

[84] Simon Frith summarizes Peter Gabriel's acceptance speech in "Making Sense of Video," 214.
[85] Natilee Harren, *Listening in Fluxus Forms: Scores, Multiples, and the Eternal Network* (Chicago: University of Chicago Press, 2020). On Paik's multisensory aims, see Ina Blom, "The Touch through Time: Raoul Hausmann, Nam June Paik and the Transmission Technologies of the Avant-Garde," *Leonardo* 34, no. 3 (2001): 209–215.
[86] Jeremy Montagu, "shakuhachi," in *The Oxford Companion to Music*, ed. Alison Latham (Oxford: Oxford University Press, 2011). The *shakuhachi* flute originated in China but was developed in Japan from the 8th century.

those across his oeuvre.[87] This song's collage of smuggled styles is used to prop up the message of Gabriel's sexual machismo. Do his primitivist samples and stop-motion selves only end up feeding back into MTV's egocentrism? To answer, we can look to the groove of the video.

The Fairlight not only kicks off the song but also drives the beat with sampled tambourine hits that supplement the groove played by trumpeter Wayne Jackson and saxophonist Andrew Love. Called the Memphis Horns, they often played for Stax Records.[88] Think the sultry, matter-of-fact opening of Otis Redding's "Try a Little Tenderness," but up-tempo with a throbbing guitar riff and drums. Soon after the groove kicks off, extreme close-ups of Gabriel flood the screen, from a blinking eye to a wriggling ear and a mouth that opens wide to deliver the song's first line. The visual rhythms of his lips and eyebrows trembling in stop motion echo the angular style of Bush's dancing; much as the Fairlight inspired her theatricality, Gabriel's visual depiction of Fairlight grooves exaggerates the minute actions of his body. Stop motion staged his body as hyperbole: as the Brothers Quay reported, Gabriel "was passed around as though on a litter from one set-up to the next, non-stop."[89] Artists labored over each scene for hours while he lay underneath glass. From this passive position, he was able to flood the image with his own (Fig 3.13). But for Brenda Schmahmann, his effusive masculinity transgresses the status quo, since he unpeels layers of himself, revealing softer sides of fruit and clay.[90] The video's potpourri of in-camera effects and digital sampling transforms bodily and musical organs into plastic organic material that grooves—and grinds against gendered expectations.

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[87] The "world music" genre entails "non-Western, indigenous popular music marketed to an international audience." Kathryn Kalinak, *Film Music: A Very Short Introduction* (Oxford University Press, 2010), 88.
[88] Steve Sullivan, *Encyclopedia of Great Popular Song Recordings* (Lanham, Md.: Scarecrow Press, 2013), 337.
[89] The Brothers Quay quoted in David Knight, Neon Kelly, Owen Lawrence, and Sharon Steinbach, "25 Videos that Changed the World," *Promo* (September 2006), 22.
[90] Brenda Schmahmann, "Staging Masculinities: Visual Imagery in Peter Gabriel's 'Sledgehammer' Video," in *Peter Gabriel from Genesis to Growing Up*, eds. Michael Drewett, Sarah Hill, and Kimi Kärki (Farnham, Surrey, England; Burlington, VT: Ashgate, 2010), 57–70.

Figure 3.13 Peter Gabriel in still from "Sledgehammer" (Stephen R. Johnson, 1986)

While most scholars focus on the video's lineage of plasticine stop-motion from Jan Švankmajer to the Brothers Quay, John Richardson argues that the techniques of pixilation and claymation parallel new sampling and sequencing technologies that let artists edit musical rhythms and textures down to micro levels. The Fairlight's visualization of sound waves helped animators to synchronize stop motion with sound. In "Sledgehammer," Richardson observes, "sonic microrhythms latch onto similar patterns in the visual sphere and the tactile qualities of images migrate across the sensory divide into sound. In this way, the music may be perceived as every bit as malleable, or impressionable, as the plasticine images that accompany it—becoming, in a tangible sense, plasticine music."[91]

[91] John Richardson, "Plasticine Music: Surrealism in Peter Gabriel's 'Sledgehammer,'" in *Peter Gabriel, From Genesis to Growing Up*, 204. Plasticine images and music can't be wholly conflated, since their plasticity differs greatly in kind. In the latter, the material of animation is plastic: Aardman Animations used plasticine modeling clay and wire to bend figures into poses. With slight tweaks to shoot each frame, poses never can be duplicated exactly. But the Fairlight is plastic in its digital reproducibility of sounds, in the sense that Jonathan Sterne defines plasticity as "the malleability of sound itself and […] the plasticity of the sound event over time *and* space." Sterne, *The Audible Past,* 182; 205. Page R allows artists to refine, rearrange, and reuse samples with ease—as demonstrated by frequent occurrences of intersonic citation from GLASHMASH to ARR1. But the Fairlight's plasticity is at odds with the analog, labor-intensive process of stop motion. Like the magnetic tape editing and disc-to-disc overdubbing discussed in Chapter 2, stop-motion poses are arduous to retrieve. In contrast, the Fairlight's digital sound storage and visual cut-and-paste workstation enabled sonic experiments to occur without loss.

The music composition of "Sledgehammer" was plastic from the beginning, thanks to the Fairlight's digital display for editing multiple tracks. As his engineer Kevin Killen reports, Gabriel laid down all the sounds before fitting the lyrics and melody into them many months later.[92] Since Fairlight sounds drove the groove, they form what Gabriel calls "the spine of the music."[93] But like the flute sample, the groove also borrows heavily from other cultures: for example, director Stephen R. Johnson at first "thought it was just another white boy trying to sound black." Gabriel says the song is an ode to '60s soul, but his voice also bears hints of the studio effects applied to Elvis's voice to smooth over rock 'n' roll's transition from Black artists like Chuck Berry and Muddy Waters to mainly white rockabillies.[94] Like the echo effects that enrich Elvis's vocal textures,[95] "Gabriel's baritone," as Carol Vernallis remarks, "is often recorded with a lot of reverb, doubled at the octave, and multitracked."[96] He also shares with Elvis what Jacob Smith, Maureen Mahon, and others call rasp,[97] a simultaneously breathy and throaty vocal style used in field songs, gospel, and blues. Many white singers have elided the rasp's Black heritage, from minstrel performer Billy Golden to John Lennon, whose first solo album *Plastic Ono Band* (1970) featured raspy screams. For Smith, Lennon's fame recodified

[92] Richard Buskin with Kevin Killen, "Classic Tracks: Peter Gabriel 'Sledgehammer,'" *Sound on Sound* (August 2014), https://www.soundonsound.com/people/classic-tracks-peter-gabriel-sledgehammer.
[93] Peter Gabriel quoted in Tony Banks, Phil Collins, Peter Gabriel, Steve Hackett, Mike Rutherford, *Genesis: Chapter and Verse*, ed. Philip Dodd (New York: Thomas Dunne Books/St. Martin's Griffin, 2007), 81.
[94] In 1954, when DJ Dewey Phillips played Elvis's early records, Memphis listeners called in to confirm their curiosities about Elvis's ambiguous-sounding voice—until Phillips coaxed out his racial identity in an interview. See Glenn C. Altschuler, *All Shook Up: How Rock 'n' Roll Changed America* (Oxford: Oxford University Press, 2003).
[95] Slapback echo effects emphasized Elvis's "aggressive performance [and…] a fullness of [his] vocal presence." Albin Zak, *I Don't Sound Like Nobody: Remaking Music in 1950s America* (Ann Arbor: University of Michigan Press, 2010), 158.
[96] Vernallis, *Experiencing Music Video*, 260.
[97] Jacob Smith, *Vocal Tracks: Performance and Sound Media* (Berkeley: University of California Press, 2008), 154. Maureen Mahon, *Black Diamond Queens: African American Women and Rock and Roll* (Durham: Duke University Press, 2020). Mahon describes Tina Turner's "forceful, raspy vocals and her willingness to forgo a pretty or clean vocal sound a[s] what render[s] her voice as not typically feminine" (247). Smith's and Mahon's accounts set Gabriel's rasp in a soundscape of racial and gender ambiguity, especially in light of Turner's use of the rasp in her rise to rock fame in the mid-1980s.

the rasp "as an existential cry of pain at modern life."[98] Even though Gabriel's is, as Killen calls it, a "lovely little rasp,"[99] Lennon's avant-pop legacy continues with Gabriel, especially in his technological voice enhancements and world music touches with Fairlight samples.

Figure 3.14 Gabriel in claymation; still from "Sledgehammer" (Stephen R. Johnson, 1986)

Stop motion visually heightens these sonic textures with ever-shifting shapes and jitter. Animation was fairly new to MTV in 1986, as Steve Barron's rotoscoped video for A-ha's "Take on Me" debuted only one year before. The tactile and intense graphical motion of these videos appealed to contemporary critics as the ur-text for MTV, a channel that John Fiske likened to an "orgasm—when signifiers explode in pleasure in the body in an excess of the physical."[100] Like Richardson's notion of music's plasticity, Fiske uses the same term for rock music since it "places sensation above sense, the body over the mind"—which is a fitting description for "Sledgehammer." To fit the song's innuendos, The Brothers Quay and Aardman animate a host of images around Gabriel, from the titular sledgehammer to dancing headless chickens (Fig. 3.14). When the latter appear, the initial Fairlight flute returns, but within the groove it sounds

[98] Smith, *Vocal Tracks*, 162.
[99] Kevin Killen quoted in Richard Buskin, "Classic Tracks: Peter Gabriel 'Sledgehammer.'"
[100] John Fiske, "MTV: Post-Structural Post-Modern," *Journal of Communication Inquiry* 10, no. 1 (1986): 75.

like a parody of exoticism. The flute sample no longer animates sperm, but fantastical chickens. Richardson calls this an "instance of inanimate objects rendered animate and vice-versa"[101]—but doubly so, since the sample once was played by a musician but now by a machine. Importantly, Gabriel's combination of the Memphis horns and Fairlight flute, of human and machine players, signals how voraciously he extracted cultural signifiers as sonic commodities in order to score a hit. Appropriating Japanese music and the rasp, Gabriel pulls sounds' strings like the wires Park stuck into raw chickens, mining timbres from specific contexts for egocentric art.

If the Fairlight makes any object sound, then users run the risk of exploiting resources, as in Gabriel smashing his way through the Bath junkyard. Digital reproducibility thus can incur high environmental costs; in "Sledgehammer," these mainly serve Gabriel's star image. On the other hand, animators handle plasticine modeling clay with care to craft each pose. The lesson here is that music video's feedback loops of sound and image effects tip at the fulcrum of the human hand, whether drawing with sound, light, or clay. Artists' manipulations on the Fairlight shape sounds into textured and melodic contours akin to the way music video imagery reshapes sound by creating new visual associations. Through digital technology, the human hand can draw sound waves, and drag and drop images that map onto objects in one's imagination and in life.

Since the Fairlight operates as a fulcrum between analog and digital audiovisual production, it becomes possible to visualize the labor of drawing sound in both music and music video images. In "Sledgehammer," a careful eye and ear to the audiovisual processes of construction and manipulation help us trace Gabriel's extraction and manipulations of samples. Our recognition of the other audiovisual actors involved disrupts the egocentric feedback loop of stars on MTV. This close attention also helps viewers to spot Fairlight-inspired stop motion in

[101] Richardson, "Plasticine Music," 198.

mainstream TV: the opening credits of *Home Improvement* mimic the stop-motion boards that box up Gabriel's face to make a house fall down around Tim the Tool Man Taylor. Combined with flute riffs that accompany Taylor's grunts and summon the *shakuhachi* sample, it is a parody of avant-garde destruction and regeneration that Paik might have praised. *Home Improvement* and "Sledgehammer" expose the Fairlight's digital repository of sounds and the images inspired by its distinctive sounds as circulating commodities. That is, the 8-bit quality of Fairlight samples makes their circulation audible, and the imagery in music videos that contain intersonic citation often resembles previous videos, as in the stop motion jitters that link Gabriel and Taylor. The textural and graphical dimensions of Fairlight sound-image relations point to analogies drawn by the human hand that, in digital circulation, become ghosts in the machine.

The Intersonic Citation of Record Scratches and ORCH2: Futuristic Visions of Hip-Hop

The use of the Fairlight became increasingly associated with uncanny and futuristic emblems in the early- to mid-1980s, as demonstrated by Frankie Goes to Hollywood's "Relax" (1984) and Herbie Hancock's "Rockit" (1983). In the former's "laser version" video by Godley and Creme,[102] Fairlight sound waves are transduced into laser beams that surround the Frankie performers (Fig. 3.15). This futuristic aesthetic was entirely familiar to '80s MTV, down to its space logo. Lasers amplify light frequencies through electromagnetic radiation, in a process that evokes the Fairlight's visual translation of sound waves. The video's rainbow-colored lasers also

[102] Several music videos exist for "Relax," which provide an interesting case study of intersonic citation. The first (Bernard Rose, 1983) was a leather S&M affair with simulated gay sex that was banned by BBC TV, as the track had been upon its release. After the BDSM and laser versions, another MTV video version contains footage from the band's performance of "Relax" in Brian De Palma's cult film *Body Double* (1984). Intersonic citation's visual magnetism also occurs in *Zoolander* (Ben Stiller, 2001), which uses "Relax" to play up sexual stereotypes.

serve as a more covert proxy for frontman Holly Johnson's homosexuality than Gabriel's overt innuendos, as the former was not yet accepted on '80s mainstream channels like MTV.

Figure 3.15 Still of Holly Johnson (Frankie's frontman) in "Relax" (Godley and Creme, 1984)

In the same duo's video for Hancock's "Rockit," a run-of-the-mill apartment teems with robot sculptures made by British artist Jim Whiting. As the robots dance to Hancock's Fairlight-fueled beat while running on hydraulics, Godley and Creme use reverse motion to jerk the robots backwards and forwards, mimicking the motion of vinyl scratching on a turntable. This use of reverse motion recalls films by Dziga Vertov and Maya Deren and stresses how avant-garde film techniques pervaded award-winning videos on early MTV, from "Sledgehammer" to "Take on Me" and "Rockit," which won five MTV awards in 1984. As *Promo* regaled the video for "Rockit," "[t]his combination of sound and visuals would help to popularize the art of 'scratching,' now a staple part of turntable culture."[103] Hancock combined the record scratching of GrandMixer DXT (then D.ST) with Fairlight samples and jazz fusion keyboard licks. In the video, the clash of robots with an ordinary living room echoes the Fairlight's digital/analog,

[103] Knight, Kelly, Lawrence, and Steinbach, "25 Videos that Changed the World," *Promo* (September 2006), 19.

avant-garde/mainstream melting pot, as do Hancock's brief appearances in TV set images of his keyboard-playing hands. As the arbiter of both the sounds and images in "Rockit," the Fairlight ushered in a vision of the future in one's own living room that hip-hop would spread through the streets.

Much as "Rockit" was a theater for both avant-garde and mainstream music, Afrika Bambaataa & Soul Sonic Force's "Planet Rock" (1982) fused electronica and hip-hop, which bore a family resemblance to the house and techno genres popularized in the 1980s. Yet, the track may be more notorious for its use of the Fairlight preset ORCH2, which persists in pop and hip-hop today. The "orchestra hit"—a large chord when many instruments play at once—in this 1982 track is sampled from Stravinsky's *Firebird Suite*. Due to the Fairlight's short sample time, it functions as a quick and powerful accent. It originated, Fairlight inventor Peter Vogel says, as:

> a complete accident. […] I grabbed a random LP that I had sitting on the shelf, and the very first sort of sound or chord on that track happened to be what has come to be known as the orchestral stab. There's a lot of different instruments playing notes to build up a very fat chord. I played it back at different pitches and it sounded quite unlike the original sound, but obviously it was a very interesting sound in spite of being corrupted from its original intention.[104]

Vogel captures the ethos of found sound, which applies to future far-flung uses of ORCH2—rumored to be "the most sampled sample of all times."[105] Known as both ORCH5 and ORCH2,[106] it yielded the unlikely pairing of orchestral sounds in avant-pop with beats from hip-hop. ORCH2 heightened the Fairlight's ability to bring avant-garde sounds into the mainstream.

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[104] Peter Vogel quoted in Myf Warhurst, "Which Aussie invention changed the sound of pop music?" Myf Warhurst on ABC, October 25, 2018, https://www.abc.net.au/radio/programs/myf-warhurst/peter-vogel/10429544.
[105] David Vorhaus quoted in Rob Puricelli, "David Vorhaus - That Fairlight Sound!" *Electronic Music* podcast, *Sound on Sound*, June 16, 2020, https://www.soundonsound.com/people/david-vorhaus-podcast. The British musician is also credited with choosing the record at the Rushcutters Bay Fairlight factory in 1978; a fan of the piece, "I found that particular sample [in Peter Vogel's record collection] and put it on his Fairlight."
[106] The colloquial use is ORCH5, but a 2011 Fairlight app description at Peter Vogel Instruments labels it ORCH2. I follow this company correction as Harkins does; see his *Digital Sampling*, 35-36, for this text and explanation.

Before using ORCH2, Bambaataa DJed in the South Bronx and tested synth-pop records on hip-hop dancefloors. He fused Kraftwerk with hip-hop in "Planet Rock" with DJ/producer Arthur Baker and keyboardist John Robie. While Robie played the melody from Kraftwerk's "Trans-Europe Express" (1977) on his Micromoog and Prophet 5 synthesizers, Bambaataa and Baker set up a Roland TR-808 drum machine—rented through the *Village Voice*—to loop Kraftwerk's rhythms in "Numbers" (1981). Bambaataa used Kraftwerk's signature vocoder to bring a futuristic flavor to the chorus lyrics "Rock rock to the Planet Rock, don't stop." After wrapping the music in a one-night session, Baker told his wife that "'our record is going to sell uptown and downtown' […] I knew if we used that beat and added an element of the street, it was going to work."[107] That kick drum beat, mixed with a Fairlight sample of handclaps, is still heard on hip-hop records. As Stephen Dalton notes, "the rock-steady rolling shudder of a train track […] was later widely sampled by dozens of hip-hoppers, industrial rockers and techno boffins [… such as] De La Soul, Doctor Dre, Will Smith, Wyclef Jean, Lil Wayne, and many more."[108] With samples from Kraftwerk and the Fairlight, the artists forged three lasting hip-hop hooks: the beat, the Trans-Europe melody, and the orchestra hit.

Fortuitously, the Intergalactic Studio session gave them access to one of the first Fairlights in the US; Baker recalls, "we used an explosion, the handclaps and the orchestra. Once we heard the orchestra [hit], which I think Tom [Silverman, manager of Bambaataa's label] hit, we thought, 'Oh, that's amazing. We've got to use that.'"[109] ORCH2 has the first word on the 5'20" version of "Planet Rock," with five hits in a row, and hits on every downbeat until the lyrics (largely sung by Bambaataa's Soul Sonic Force rappers Mr. Biggs, Pow Wow, and MC

[107] Baker quoted in Richard Buskin, "Afrika Bambaataa & The Soulsonic Force: 'Planet Rock,'" *Sound on Sound* (November 2008), https://www.soundonsound.com/people/afrika-bambaataa-soulsonic-force-planet-rock.
[108] Stephen Dalton, "Kraftwerk," in "Ultimate Genre Guide: Electronic Pop" from *Uncut* (2019): 8.
[109] Baker quoted in Richard Buskin, "Afrika Bambaataa & The Soulsonic Force: 'Planet Rock.'"

G.L.O.B.E.) begin. It recurs in pivotal spots throughout the song, lodging it in memory and helping it to become a part of hip-hop's sonic language. As a preset on the Fairlight, it was ready-to-hand for musicians who used the machine without the extensive training that Bush, Gabriel, and Trevor Horn received. While Bush decried its cheesiness and overuse—"Every time anyone who has a Fairlight hears it they go, 'Oh no! Not again!'"[110]—even avant-gardists could not resist using it. ORCH2 was the first sound Horn played,[111] and it fills many beats on the title track for Bush's *The Dreaming* (1982) and the ending of AON's "Close (To the Edit)" (1984).

For musicologist Robert Fink, such avant-pop artists tend to use "the grainy, slowed-down, 'half-dead' sound of a classical orchestra taken out of context [… as] a kind of Orientalist exoticism": they render ORCH2 as aesthetic currency, a spooky and hollow-sounding effect, before moving on to create their own samples.[112] The Bambaataa crew, however, used ORCH2 like many '80s synths hobbyists used the DX-7's E. PIANO I. Harkins suggests that hip-hop artists used ORCH2 more widely than synth-pop artists because "it resembled the sound of scratching with turntable styluses by DJs like Grand Wizzard Theodore and Grandmaster Flash"[113] or DXT in "Rockit." As a functional equivalent of the record scratch, ORCH2 upheld the Fairlight's ability to cut and paste sounds from avant-garde to popular contexts. Moreover, ORCH2 citations suited divergent uses, from white avant-pop to Black cultural odes.

The beats in "Planet Rock" are not a happy accident, as Baker's and others' narratives imply. Harkins, for one, says that the track's artists use the preset amid their "appropriation of sounds from other recordings," thereby suggesting the band as lesser than the avant-gardists who

[110] Diliberto, "Kate Bush," 64.
[111] Trevor Horn quoted in Sam Inglis, "Trevor Horn: The Art of Record Production," *Electronic Music* podcast, *Sound on Sound*, May 1, 2019, https://www.soundonsound.com/people/trevor-horn-art-record-production.
[112] Robert Fink, "The Story of ORCH5, Or, the Classical Ghost in the Hip-Hop Machine," *Popular Music* 24, no. 3 (2005): 343.
[113] Harkins, *Digital Sampling,* 36; Goodwin claims this for samplers in general in "Sample and Hold," 37–38.

created new samples.[114] However, as Fink points out, Robie adapted the sample by playing "eight versions of ORCH5 simultaneously, using both hands, on the pitches of a root-position minor triad."[115] While the chord in Stravinsky was an open fifth, A-E, Robie's minor mode orchestration has a flavor of grief and alienation that Fink associates with Afrofuturism. Did Robie do this to avoid copyright infringement or to match the chromatic minor of the Kraftwerk melody? His intention is unclear, but the music video helps us to suss out the sonic and visual associations of the track, and their evocations of Black life under Reagan conservatism.

Tricia Rose summarizes the year when "Planet Rock" was released as one when "factory production and solid blue-collar work were coming to a screeching halt in urban America. Urban blacks were increasingly unemployed, and their best options were to become hidden workers for service industries or computer repair people."[116] But the artists of "Planet Rock" used the technologies of samplers and vocoders to broadcast Black identities in the face of oppression. For Rose, Bambaataa adapted Kraftwerk's robot conceit for hip-hoppers who felt they "were labor for capitalism […] like wearing body armor that identifies you as an alien: if it's always on anyway, in some symbolic sense, perhaps you could master the wearing of this guise in order to use it *against* your interpolation."[117] Building on this image, ORCH2 functions as a type of sonic armor that gains power when the music video's montage synchronizes breakdance moves to the orchestra hits. Banes describes breakdancing as "a physical analogue for a musical impulse" that leads to "using your body to inscribe your identity on streets and trains […] in a flood of

[114] Harkins, *Digital Sampling,* 34.
[115] Fink, "The Story of ORCH5," 344.
[116] Tricia Rose quoted in Mark Dery, "Black to the Future: Interviews with Samuel R. Delany, Greg Tate, and Tricia Rose," in *Flame Wars: The Discourse of Cyberculture*, ed. Mark Dery (United Kingdom: Duke University Press, 1994), 213.
[117] Rose quoted in "Black to the Future," 214. For more literature on Blackness, technology, and sound, see Alexander G. Weheliye, *Phonographies: Grooves in Sonic Afro-Modernity*, Durham: Duke University Press 2005), Louis Chude-Sokei, *The Sound of Culture: Diaspora and Black Technopoetics* (Middletown, Connecticut: Wesleyan University Press, 2016), and Kara Keeling, *Queer Times, Black Futures* (New York: NYU Press, 2019.

rhythmic motion and fleeting imagery."[118] The dance form thus resembles the Fairlight's feedback loop of visualizing found sound, as the timbres that are transduced into physical movements then become images and visual contours in the music video. In the "Planet Rock" video, ORCH2 is sonic armor that celebrates hip-hop culture with rap and record scratches, plus graffiti and fashion. For example, the first hit is timed to a clip of a woman who blows a kiss. As the music video is cut to the original 12" version that begins with Bambaataa's vocoder entreaty to the crowd to get funky, the blown kiss is cut in as if the woman responds to Bambaataa. But she is replaced in a beat by footage of breakdancers that provides the rhythmic animus to the Fairlight hits and Kraftwerkian driving beat: they hit challenging dance moves like the splits on cue with ORCH2. Its record-scratching sound is the impetus for hip-hop dancing defiance.

Figure 3.16 Still of Pow Wow, Mr. Biggs, and Afrika Bambaataa (background) in "Planet Rock" (Tommy Boy Records, 1982)

Throughout the track, repetitions of orchestra hits usher in footage of breakers and crowds, which enliven the interspersed footage of the band (a typical "performance video" in

[118] Sally Banes, "To the Beat Y'All: Breaking is Hard to Do," *Village Voice*, April 10, 1981. Reprinted in Sally Banes, *Writing Dancing in the Age of Postmodernism* (Hanover, N.H.: Wesleyan University Press/University Press of New England, 1994), 122.

Marsha Kinder's taxonomy of MTV videos[119]). The band wears Afrofuturist costumes, such as Pow Wow's headdress, which dominates the visual field (Fig 3.16). These visual elements blend old and new, in much the way Fink defines ORCH2 itself as a shifting sonic signifier:

> a brittle, grainy sample whose frequency spectrum is shifted noticeably towards the upper registers of the orchestra. This has the paradoxical effect of making the sample sound both 'old' (because its low fidelity cannot capture the full range of the orchestra, as in the pre-LP era), and 'new' (because the sound itself is noticeably devoid of romantic lushness).[120]

Taking the Fairlight preset's cue, Bambaataa and the band reproduce the sounds of the past with a flavor of the future. Their costumes in the music video evoke aspects of kinship, spirituality, and robots, while the breakdancing footage forecasts the dance moves of the future. With costumes that blend vestiges of Black culture with space-age suits, the band's appearance extended both ORCH2's old/new mashup and the Afrofuturist use of space costumes as "visual tool[s] to stimulate higher thinking and to prepare audiences for something new"[121]—as in colonizing a new planet for the flourishing of Black life. Aurally, the 808 drum and Fairlight made "old" acoustic drum, string, and record scratches amid the Kraftwerk sounds that sowed the seeds of techno. As Steven Shaviro writes, paraphrasing Kodwo Eshun on the Black origins of Detroit techno, "alienated, militaristic stiffness could be used to signify a sharp break with the racist social relations of the human here and now, in favor of a posthuman black future."[122]

"Planet Rock" embodied Afrofuturist sounds and visions through polyvalent signifiers of Blackness. One was technological prowess, through Kraftwerk's technopop and the vocoder's

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[119] Marsha Kinder, "Music Video and the Spectator: Television, Ideology and Dream," *Film Quarterly* 38, no. 1 (Fall 1984): 4. Kinder describes music videos in three types: dominated by performance, by narrative, and by dreamlike imagery.
[120] Fink, "The Story of ORCH5," 343.
[121] Ytasha Womack, *Afrofuturism: The World of Black Sci-Fi and Fantasy Culture* (Chicago: Independent Publishers Group, 2013), 58.
[122] Steven Shaviro, "Supa Dupa Fly: Black Women as Cyborgs in Hiphop Videos," *Quarterly Review of Film and Video* 22, no. 2 (2005): 172. As Eshun explains, Detroit musicians appropriated white techno to assert Blackness.

robotic synthesis. Another was a refusal of primitivism, as the Fairlight reframed *Rite of Spring*'s white classical take on pagan Russia as the 8-bit sonic impression of a record scratch that became synonymous with hip-hop. The Fairlight's past/future mashup aligns with the capacity for Afrofuturist sound and music "to transduce the qualities of consciousness holding present relations in place into something qualitatively different," as Kara Keeling characterizes Sun Ra's free jazz from the future.[123] While listeners today might groan at ORCH2's 8-bit cheesiness or the persistence of orchestra hits in songs like "Finesse" by Bruno Mars (2016), in this 1982 track it aligned Black visual and street culture with Black musical practice. Once avant-garde orchestra hits also fueled new mainstream musical movements like new jack swing, as in the Fairlight punctuation in Bobby Brown's "On Our Own" (1989) featured in *Ghostbusters II*. In "Planet Rock," the Fairlight amplified found sounds and dance moves to establish hip-hop as an art where man meets machine, avant-garde meets mainstream, and the past lifts off into the future.

Fake It and Make It: Scoring Mainstream TV and Film on the Fairlight

> […] the real thing often doesn't sound like the real thing. That happens a lot in movies. If you want running water, it doesn't necessarily sound like running water if you just record a stream. Sometimes you have to fake it up in order for it to sound correct.
>
> Richard James Burgess[124]

As much as the Fairlight afforded the synthesis of cultural texts, it also allowed for the fabrication of them—especially in network television and mainstream film. But fabrication was first realized in avant-pop tracks like "Army Dreamers" (1980), when Bush and Burgess sampled and overdubbed several different gun sounds for the sound of one cocked gun. As in the Foley process Burgess alludes to above, his layers of sonic textures aestheticized the gun sound to

[123] Keeling, *Queer Times, Black Futures*, 68.
[124] Richard James Burgess quoted in 2011 interview with Harkins, *Digital Sampling*, 31.

convey Bush's plural meanings. But unlike Foley's early days, when optical film soundtracks and magnetic tape had to be spliced exactly, the Fairlight's visualized sound waves afforded speedy precision that was ideal for TV and film sound editing. It was used heavily first in Australia in the independent science fiction film *Liquid Sky* (Slava Tsukerman, 1982) by composers Brenda Hutchinson and Clive Smith. As Smith recalls, "we relied on Slava's very animated gesturing for creating the original music cues," turning visual gesture into sonic contour much as the Fairlight drew sounds.[125] The Fairlight also was used substantially by Australian composer Peter Best on *Crocodile Dundee* (Peter Faiman, Australia, 1986) and *Crocodile Dundee II* (John Cornell, Australia, 1988). But composer Jan Hammer broke the Fairlight into mainstream recognition in 1984 with *Miami Vice*: his title theme went #1 on the Billboard Hot 100 in 1985 and won two Grammys in 1986. Hammer not only sold the Fairlight to a popular crowd; he also was featured in a music video, a rare feat for a composer.

Figure 3.17 Jan Hammer performs the *Miami Vice* theme in a promo music video (Joel Goodman, 1985)

In a 1985 promotional music video (Joel Goodman), Hammer performs the theme for *Miami Vice* on the Fairlight while standing in front of footage in which he also appears as a

[125] Clive Smith quoted in Courtenay Gallon, "*Liquid Sky*: Cult Cinema, Film Scoring, and the Fairlight CMI" (Master's Thesis, Florida State University, 2007), 39.

character (Fig. 3.17). As a villain who dupes the main characters Crockett and Tubbs, he matches these sly tricks onstage with a Fairlight, guitar, and keytar. In front of this film within a film, he controls two places at once and many other instruments besides. The show's executive producer, Michael Mann, gave him extensive freedom as a composer for the show, so long as he made music "that was like nothing else on television at the time."[126] Hammer worked from a rough cut of each episode and transitioned smoothly in and out of licensed pop songs, creating an avant-garde/mainstream mashup. Instead of being driven by the narrative ("I never read the script") as was common at the time in commercial film and TV scoring, Hammer determined in large part the show's emotional resonances with music.

Miami Vice prompts many comparisons to MTV, starting with its original conception as "MTV cops" by NBC programming chief Brandon Tartikoff. As director Lee Katkin put it, "The show is written for an MTV audience, which is more interested in images, emotions and energy than plot and character and words."[127] *Miami Vice* continues to draw criticism for its surface narratives and intended audience. As writer Brian Faucette remarked, "With an emphasis on conspicuous consumption, as well as on law and order, this was a show for the Reagan era."[128] Accordingly, the show's politics tended toward sexism and avoided commentary on race relations. But the music is emotionally charged, traversing styles from calypso to blues. "It's definitely more rock than rock and roll," Hammer explained, "meaning that it has a very physical visceral feel as far as the drums go. It's backbeat, but it could turn very tribal, very Phil

[126] Jan Hammer quoted in Jesse Serwer, "Songs of Fire and 'Vice': Jan Hammer on the Music of 'Miami Vice,'" *Rolling Stone*, October 8, 2014, https://www.rollingstone.com/music/music-news/songs-of-fire-and-vice-jan-hammer-on-the-music-of-miami-vice-167528/.
[127] Katkin quoted in Richard Zoglin and Denise Worrell, "Cool Cops, Hot Show: With Flashy Visuals and a Rock Score, Miami Vice Sets a New TV Beat," *Time* 126, no. 11 (September 16, 1985).
[128] Brian Faucette, "Miami Vice (NBC, 1984–89)," in *Cop Shows: A Critical History of Police Dramas on Television,* eds. Roger Sabin, Brian Faucette, Ben Bethell, Ronald Wilson, and Linda Speidel (Jefferson, North Carolina: McFarland & Company, Inc, 2015), 107.

Collins."[129] In this way, the score did not always redeem the surface imagery: some episodes veered into Gabriel's world music territory, like the gamelan, koto, and flute Fairlight samples used to evoke Thai culture on the "Golden Triangle" episode. Fusing Indonesian and Japanese instruments in Page R made an exotic melting pot that erased the cultural specificity of Thai music. Hammer's TV score sampling mirrored classical Hollywood cinema leitmotivs, which often essentialized locales with exotic music in order to anchor viewers in a setting.

In microcosm, the promotional music video shows how the Fairlight briefly entered the public eye in the '80s. To make Hammer's compositional process appeal to a mass audience, the video portrays him as an action hero. Yet MTV's "emphasis on speed and surface allure"[130] prevails instead of Hammer's behind-the-scenes labor of sourcing and sequencing Fairlight samples on an extremely tight schedule—for each episode, he composed 20 minutes of music in less than a week. Hammer's attempts "to stretch the limits of the Fairlight by using as many off-the-wall sounds as possible"[131] are elided by typical MTV star-worship, of a kind that Bush, Gabriel, and Hancock tried to avoid. While the textures of their samples come to the fore in the contours of their video imagery, the trend of videos made for MTV audiences like "Relax" and the *Miami Vice* promo tend to tone down inventive uses of technology in favor of star promotion.

After its success on *Miami Vice*, the Fairlight passed into relative obscurity in the film industry until it resurfaced in Brad Fiedel's score for *Terminator 2: Judgment Day* (James Cameron, 1991), which used two Fairlight CMI IIIs: "one for percussive sounds and one for the

[129] Hammer quoted in Dominic Milano, "Jan Hammer Scores Big with Miami Vice," *Keyboard* (September 1985): 52. Available at: https://www.jan-hammer.net/forum/article-comments/38-keyboard-magazine-interview-scanned.
[130] Austerlitz, *Money for Nothing*, 41.
[131] Hammer quoted in Milano, "Jan Hammer Scores Big with Miami Vice," 40. As with many Fairlight users, Hammer yearned to match sonic complexity in images. The "Rockit" video occupies a middle ground: it seldom shows Hancock's hands, rendering the artist piecemeal, but the robots also emulate contours of the samples.

sustains and melodies."[132] For the antagonist T-1000, Fiedel used the Fairlight to create what he called "a sample of a room full of brass players warming up and playing [… taken] down into a speed and pitch that was not recognisable. [… It sounds like] artificial intelligent monks chanting in a weird chapel or something."[133] Many viewers likely neglect how Fiedel matched Cameron's CGI innovations with his Fairlight prowess. When Cameron doubted some of the score's tones, Fiedel told him, "you're creating something that people have never seen before, and it ought to sound like something people have never heard before to support that."[134] As early Fairlight ads had regaled, Fiedel—and the Fairlight users in this chapter—sculpted new sounds and layered timbres in complex arrangements that expressed the particularities of objects and emotions.

The artists studied in this chapter recognized the potential for innovative timbres to provoke new imagery in music videos, and even in mainstream film and television. As they drew their impressions of everyday objects and feelings with sound, they generated new visual contours in music videos, emulating sonic waveforms and creating avant-garde superimpositions. The adage of the Fairlight advanced from "sounds never before heard" in 1982 ads to sounds heard 'round MTV in the intersonic citation of GLASMASH, ORCH2, and other samples. In videos, the waveforms visible on the Fairlight's monitor were translated into new contours, which sometimes resembled the sampled instrument, and other times gave samples new valences, from Bush's avant-garde GLASMASH kaleidoscope to Bambaataa's ORCH2-inspired breakdancing. Through intersonic citation and the adoption of experimental visual techniques, Fairlight artists' videos reflected a range of audiovisual signifiers, even for the same sample. For

[132] Alex Ball, "How the Terminator 2 music was made," February 13, 2019, 19:18, https://www.youtube.com/watch?v=nnpYowxlwsU. Ball extensively explains many of Fiedel's Fairlight samples.
[133] Fiedel quoted in Ryan Lambie, "Brad Fiedel Interview: Composing Terminator 2's Iconic Score," *Den of Geek*, December 5, 2017, https://www.denofgeek.com/movies/brad-fiedel-interview-composing-terminator-2s-iconic-score/.
[134] Fiedel quoted in Ryan Lambie, "Brad Fiedel Interview."

Bush, GLASMASH screened emotional violence; for Frankie Goes to Hollywood and Godley and Creme, it was political. Hancock rendered technology warm in "Rockit"; Fiedel made it colder in *Terminator 2*. Gabriel and Hammer extracted resources from other cultures; their videos depicted their gains as star capital. For artists who drew their songs' inspirations into being on the Fairlight, sound visualized vastly different outcomes.

The sonic signifiers of Fairlight samples became plastic in the hands of artists and music video producers, as human touch imbued 8-bit simulacra with sensuality, violence, and exoticism. From the Fairlight's analog connections of drawing sound, artists used digital inscription as a theater for sculpting sounds and music video images into personal and communal forms of expression. The Fairlight launched an era of artists' visual negotiations with the technology of sampling. Whether musicians used presets or a newly recorded sample, their Fairlight sound collages were agents of change in making music video plastic—and in redrawing the limits of a commercial medium. As these artists nudged MTV videos out of their corporate box of star promotion, videos increasingly emphasized the ways in which materials and human bodies came to matter and mean. The Fairlight's meetings of man and machine shaped visions of gender, sexuality, and race as they sounded in everyday life—in contours and hits that still resound in songs and music videos today.

Chapter 4

Pitch-Shifted Personas: Believing in Life after Auto-Tune with Cher and Her Heirs

> Cher and her producers pushed Auto-Tune past its safety settings on the single "Believe," producing that quavering, metallic chipmunk sound—"the Cher effect"—that established Auto-Tune as a gimmick in the public consciousness. Over the years since, dozens of acts prominent in pop and hip-hop have followed Cher and pushed Auto-Tune further for conspicuous effect or stunt purpose.
>
> David Hajdu[1]

Auto-Tune is a software plug-in for pitch correction that, since its 1997 debut, has cast doubt on pop stars' authenticity because they no longer need the skill to sing in tune. Producers apply Auto-Tune to countless pop voices today, creating an industry-wide digitally polished sound. Singers can even use Auto-Tune live, often to such subtle degrees that only producers' ears can detect it. But Auto-Tune has also drawn suspicion in the case of its more ostentatious uses: the software's retuning speed can be set to zero milliseconds for instant pitch correction that produces machinic, garbled tones. Instead of a behind-the-scenes Photoshop for the voice, "the Auto-Tune effect" (hereafter TATE) makes singers' voices sound unnatural, even inhuman.

For many years, TATE was known as the "Cher effect" after her 1998 hit "Believe." Through an overt use of Auto-Tune, "Believe" transformed Cher's image and revitalized a fading career. Ironically, she did so with an old song: "Believe" was written nearly a decade before Warner Brothers chairman Rob Dickins had Cher record it, because he thought the chorus resonated with her divorce from Sonny Bono. Cher contributed only a few lines to the song's final version but, crucially, she introduced the idea of voice distortion. She asked producers Mark Taylor and Brian Rawling to duplicate a telephone-like sound she heard in an Andrew Roachford record. To meet Cher's request for artifice, the duo distorted select syllables with

[1] David Hajdu, "David Hajdu on Music: Imperfect Pitch," *The New Republic*, July 12, 2012, 29.

Auto-Tune's retune speed at zero "to make the whole phrase sound really arresting."[2] When Dickins worried that Taylor's and Rawling's use of TATE had gone too far, Cher quipped, "You can change that part of it, over my dead body!"[3] After all, "Do you believe in life after love?" urges listeners not to dwell in the past but to pursue something new.

In 1998, the year "Believe" debuted, artists were looking for a new sound of the future, as Douglas Rushkoff characterizes pre-Y2K attitudes: "[w]e were all futurists, energized by new technologies, new theories, new business models, and new approaches that promised not just more of the same, but something different."[4] Whereas singers from the 1970s to the 1990s used the vocoder to sound futuristic, Cher and her producers had found a new path. On "Believe," Auto-Tune simultaneously sounds old and new, a collision of temporalities that for Sianne Ngai "often directly accounts for why a gimmick seems to be over or underperforming […] because the social timing of its appearance is off."[5] This sonic aesthetic resonated with Cher's career that, from movies to fitness videos, honed an "image [that] is bound up with a contradictory refusal of convention (about gender or age, for example) and a celebration of artifice and self-construction (surgery, workouts, wigs)."[6] Auto-Tune makes legible her joyful refusal of pop industry norms.

Popular music scholars and critics alike have shaped Auto-Tune's discourse as a gimmick through anxieties that pitch correction could make anyone a singer, thus saturating the market and cheapening music's value. As a capitalist aesthetic category, the gimmick at once attracts and repulses us, since it promises to save time and labor but then appears to work both too much

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[2] Mark Taylor and Brian Rawling, "Recording Cher's 'Believe,'" *Sound on Sound*, February 1999, https://www.soundonsound.com/techniques/recording-cher-believe.
[3] Strauss, Neil. "Cher Resurrected, Again, by a Hit: The Long, Hard but Serendipitous Road to 'Believe,'" *New York Times*, March 11, 1999.
[4] Douglas Rushkoff, *Present Shock* (New York: Penguin, 2013), 10.
[5] Sianne Ngai, *Theory of the Gimmick: Aesthetic Judgment and Capitalist Form* (Cambridge: Harvard University Press, 2020), 3.
[6] Yvonne Tasker, *Working Girls: Gender and Sexuality in Popular Cinema* (London; New York: Routledge, 1998), 192.

and too little to do so. At the same time, gimmicky software like Auto-Tune seems ahead of its day but then archaic the moment it's overused. When Auto-Tune arrived on the cusp of Y2K, consumers and artists dreaded negative impacts of technology on art. They feared that, like synthesizers, Auto-Tune might replace human labor as a tool that supplants the "natural" voice.

Auto-Tune grew up in an era when pop music was becoming more of an arena for image-makers than it was for the solely vocally talented, given the rise of choreographed concert tours and DVDs, reality TV shows, and the Internet as new forms of marketing pop stars. Less than ten years after Milli Vanilli's lip-sync illusion collapsed, "[t]he image-makers' task ha[d] been made much easier by the increasing use of auto-tune."[7] According to John Potter and Neil Sorrell, since subtle uses of the software smoothed out blemishes in tuning and timbre, Auto-Tune allowed some singers to concentrate more on their visual presentation than their musical accuracy. But Cher's use of TATE sparked accusations of gimmickry, particularly through visual associations with chipmunks and robots. David Hajdu, quoted in the epigraph, dismisses TATE as a "metallic chipmunk sound," at once too animal and mechanical. Another critic denigrates "the first verse [of Believe], when Cher sings 'I can't break through' as though she's standing behind an electric fan."[8] Yet, as Cher's own choice of voice distortion makes clear, TATE was not a party trick to sell more records. As the music video for "Believe" shows, TATE ushered in three new personas for Cher: a caged entertainer, a pop star surrounded by cheering clubbers, and a woman who sees her boyfriend cheat on her. Cher moves rapidly between these personas—even swapping bodies with the clubbing woman—to critique an ageist and gendered industry that prevents a 52-year-old woman from singing youthful music. In the song and video,

[7] John Potter and Neil Sorrell, *A History of Singing* (Cambridge: Cambridge University Press, 2012), 259.
[8] Josh Tyrangiel, "Singer's Little Helper," *Time International (South Pacific Edition)* 173, no. 6 (February 16, 2009): 41–43.

Cher and her producers use Auto-Tune to create new audiovisual personas that simultaneously revive her career and disrupt pop industry norms. Since Cher, artists from Jennifer Lopez to Charli XCX have used TATE to produce new and lasting visual personas, refocusing what critics label as a gimmick into a tool of self-fashioning that subverts expectations of female subjectivity.

TATE surpasses its label as a tacky use of technology when stars use it tactically to remake their public image. As Catherine Provenzano observes in her ethnography of digital tuning software, "artists using The Auto-Tune Effect have employed a 'creative irreverence' toward the technologies of pitch correction and voice equally, an irreverence that eschews hegemonic expectations of both spoken and sung vocality." Provenzano makes this claim predominantly for male Black R&B and hip-hop artists who use TATE, while through covert auto-tuning "female voices have been most subject to 'taming,' and are more often subject to standards of sounding 'normal' and 'unmediated,' but still superhumanly 'good.'"[9] In what follows, I ask how women use TATE to show their irreverence for a pop music industry that uses Auto-Tune to polish "unruly" (read: feminized and racialized) voices for mass consumption. I revise readings of Auto-Tune from a pitch-correction device to one that transforms performers' star images as well as their artistic goals—often away from industry ideals of "correction."

In this chapter, I also show how a series of female pop artists, including Cher, Jennifer Lopez, Charli XCX, SOPHIE, Laura Les of 100 gecs, and Caroline Polachek, have used Auto-Tune as a means to adopt new, various, and often pliable personas. By analyzing TATE as a persona effect, I break the binaries that surround the device—especially its so-called "unnaturalness." The schism critics draw between the "natural" voice and the "unnatural" manipulation of it by a machine was not new with Auto-Tune: recording engineers have been

[9] Catherine Provenzano, "Emotional Signals: Digital Tuning Software and the Meanings of Pop Voices," (PhD diss., New York University, 2018), 391; 385.

manipulating voices in the studio for decades (a point made by its inventor, Andy Hildebrand[10]). Furthermore, TATE is not created with Auto-Tune's zero retune speed alone; engineers render the voice more machinic through other effects like reverb to make it sound hollow or brassy.[11] Critics decry Auto-Tune not because it is "unnatural"—as Chapter 2 argued, technology always mediates recorded or miked voices—but because it transforms voices into mechanical instruments. For Miriama Young, with TATE "the voice takes on a characteristic 'stepped' quality, as if it were being played back through a keyboard."[12] As shown in Chapter 3, the Fairlight Computer Musical Instrument could play sampled voices on a keyboard, but Auto-Tune takes this to an extreme, turning the voice into a keyboard by flattening its vibrato. Moreover, like late-19th-century automated player pianos, which have been mined for uncanniness in high-tech fictions like *Westworld*, Auto-Tune's algorithms have the superhuman ability to teleport between pitches. If TATE stokes critics' fears of unnaturalness, so should digital music production across a range of genres, given the variety of tools in DAWs that manipulate voices and instruments.

To break the natural/unnatural binary, I follow recent cultural critics who dismiss claims that Auto-Tune ruins a voice's nature and instead argue that Auto-Tune functions as an emotive tool that makes it possible to perceive a person's voice as multiple and in flux. For Ragnhild Brøvig-Hanssen and Anne Danielsen, "The morphing of the robotic with the human presents a humanized machine that can be used to express conditions of alienation, numbness, emotional

[10] "[After Milli Vanilli,] the public was weary of the idea of 'fake' or 'affected' music. … What they don't understand is that the method used before – doing hundreds of takes and splicing them together – was its own form of artificial pitch correction." Hildebrand quoted in Zachary Crockett, "The Mathematical Genius of Auto-Tune."
[11] Provenzano, "Emotional Signals," 3.
[12] Miriama Young, *Singing the Body Electric: The Human Voice and Sound Technology* (Farnham, Surrey, UK: Ashgate, 2015), 96.

distance, or flatness."[13] Along with Provenzano, these scholars insist that Auto-Tune has created new expressive capabilities for singers, opposing critics who reject Auto-Tune as dehumanizing.

This study adds a third strand to this debate, one that has played a part in the "unnatural" and "emotional" camps but has never been explicitly addressed: the visual imagery that accompanies Auto-Tune in artists' music videos. I argue that Auto-Tune's reception has been conditioned by visual culture, such as the nonhuman figures of animals and cyborgs that critics judge as being in conflict with pop industry goals to control and normalize voices. The past two decades of digital tuning have prompted judgments about artists on the basis of sight—whether their voice is in tune with expected performances of their gender or race. One example is the hypersexualized portrayal of Ke$ha when she uses Auto-Tune, described on the *Switched on Pop* podcast as "this bratty, somewhat annoying persona"—she is coded as simultaneously juvenile and sexually promiscuous.[14] Auto-Tune's accompanying imagery—in ads, album covers, and music videos—reveals not only essentialized beliefs about which voices go with which bodies but also ways of interpreting how contemporary pop stars are branded as commercial personas. In the following case studies, I investigate Auto-Tune's image-making capabilities: how it generates artists' economic and social value as a commercial gimmick that can also be a gambit for inventing new personas. The Auto-Tune effect has generated creative personas for many singers in the past two decades—and in the history of voice modulation, many before that.

[13] Ragnhild Brøvig-Hanssen and Anne Danielsen, *Digital Signatures: The Impact of Digitization on Popular Music Sound* (Cambridge, MA: The MIT Press, 2016), 126.
[14] Simon Reynolds (guest); Charlie Harding and Nate Sloan (prods.), Episode 102, "Do You Believe in Life After Auto-Tune?" *Switched on Pop* (January 22, 2019, USA; Panoply), https://switchedonpop.com/episodes/102-do-you-believe-in-life-after-autotune?rq=autotune.

Auto-Tune's Predecessors of Voice Modulation: The Vocoder, Sonovox, and Talk Box

Auto-Tune arrived amid a plethora of analog and digital effects that had already been used in voice processing for decades. Early devices presage Auto-Tune's links to ventriloquism and the nonhuman, from animals to machines. Perhaps the most notorious is the vocoder (*voice + encoder*), a device that is often confused with Auto-Tune due to its similarly futuristic sounds. Tellingly, Cher's producers said that they used the Digitech Talker vocoder pedal and not Auto-Tune in "Believe" to prevent people from finding out about TATE.[15] Since the vocoder is still mistaken for Auto-Tune in today's performances,[16] it is worth diving into the history of this vocal device—especially as its effects have produced imagery tied to gender, race, and power.

The idea for the vocoder emerged in 1928, when inventor Homer Dudley discovered that his mouth was a visual metaphor for radio broadcasting: vocal cords acted as transmitters and the tongue and mouth as radio wave shapers.[17] In the mid-1930s, Dudley created the vocoder, which combines two inputs—the voice spoken through a microphone, called a modulator or soundwave shaper, and a carrier signal, now often a synthesizer but back then, noise and signal generators. The vocoder maps the vocal frequencies of the modulator onto the carrier signal, which renders the voice mechanical and even grating. Initially, vocoders were used by the Allies during World War II to encode and transmit military secrets. Vocoders were set up in a chain of stations comprising the SIGSALY encryption system, which was commanded by figureheads like Winston Churchill and Franklin D. Roosevelt. At station vocoders, statesmen scrambled the vocal frequencies of the messages they wanted to send. Then, the vocoder on the receiving end

[15] Mark Taylor and Brian Rawling, "Recording Cher's 'Believe,'" *Sound on Sound*, February 1999, https://www.soundonsound.com/techniques/recording-cher-believe.
[16] Critics and scholars have conflated and confused voice modulation devices across history. Dave Tompkins explains, "As with T-Pain and Auto-Tune, Roger Troutman is the most famous vocoderer to never use a vocoder. Talk boxes and vocoders are confused more than bad for good." Dave Tompkins, *How to Wreck a Nice Beach: The Vocoder from World War II to Hip-Hop: The Machine Speaks* (Brooklyn, NY: Melville House, 2010), 138.
[17] Tompkins, *How to Wreck a Nice Beach*, 40.

was used to reassemble the garbled speech in the correct order.[18] Like magnetic tape, then, the vocoder was limited to small circles of men and wartime purposes before it became musical.

In the postwar era, musicians used vocoders with synthesizers to more radically manipulate the voice's output. The vocoder spread into musical genres from avant-pop's sounds of science fiction—popularized by Kraftwerk and Wendy Carlos's score for *A Clockwork Orange* (1972)—as well as hip-hop with Grandmaster Flash & The Furious Five, and Afrika Bambaataa & Soul Sonic Force's "Planet Rock." These dance-floor hits swept audiences into the future, as the vocoder's robotic sounds increasingly inspired metallic costumes and other signs of Afrofuturism onstage. As Alexander Weheliye explains, Black musicians' uses of vocoders in R&B dissolve binaries between humans and machines and music and noise, "dispersing the machinic across the musical text rather than giving it an integral and system-maintaining role."[19]

Across different genres, the vocoder's potential to transform voice modulated ways of seeing humanity and futurity. In avant-pop, Kraftwerk and Laurie Anderson cybernetically fused humans and technology. For example, in the video for "O Superman," Anderson stages herself as a mechanized object with the vocoder to comment on human surveillance and militarization under Cold War capitalism.[20] In hip-hop, as with "Planet Rock" in Chapter 3, the vocoded voice conveys an Afrofuturist impulse to "teleport the whole planet here through music," as Sun Ra said.[21] Thus, the kind of futurity communicated by vocoded voices varies widely by an artist's

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[18] Tompkins, *How to Wreck a Nice Beach*, 42.

[19] Alexander G. Weheliye, "'Feenin': Posthuman Voices in Contemporary Black Popular Music." *Social Text* 20, no. 2 (2002): 37. Weheliye's "vocoder effect" advances conceptions of Afrofuturism through an assemblage of artist and machine. Vocoder uses by Grandmaster Flash & The Furious Five and Afrika Bambaataa contribute to the movement in "provid[ing] particular performances of the human—singularities, if you will, that always incorporate their own multiplicities—as opposed to mere uncritical echoes of the white liberal humanist subject" (30).

[20] In her fittingly minimalist video for the 1981 hit (https://www.youtube.com/watch?v=Vkfpi2H8tOE), Anderson turns her arm into a visual symbol of her vocoder by using it like a shadow puppet in a spotlight. As Eu Jin Chua observes, she "frequently interposes a substitute persona between herself and her audience, and it is this which does the talking"; Eu J. Chua, "Laurie Anderson's Telepresence," *Postmodern Culture* 16, no. 2 (2006).

[21] Sun Ra quoted in the opening sequence of *Space Is the Place* (John Coney, New York: Plexifilm, 2003 [1974]).

political impulses and chosen genre. As a machine that transforms relations between input and output, the vocoder customizes how humans can express individuality as well as community. By synthesizing a voice's signature tones with novel ones, vocoders create a hybrid communicative form that multiplies oneself into new personas, whether Afrofuturistic or feminist.

While the vocoder was instrumental to teleporting emotions to a new mechanized realm via music, it was introduced by Bell Labs as a "gimmick."[22] Long before Auto-Tune arrived, then, voice modulation was considered gimmicky, a label that for Ngai "names an experience of dissatisfaction—mixed, for all this, with fascination—linked to our perception of an object making untrustworthy claims about the saving of time, the reduction of labor, and the expansion of value."[23] Critics maligned vocoders for their gaudy mechanism and too-obvious attempts at creating personas. Voice manipulation becomes a gimmick when a musician's comedic or showy affect draws attention to a put-on act and an inhuman-sounding voice. The vocoder's successors pushed this anxiety even further when they made a mechanical puppet talk.

Figure 4.1 Stills of Stringy the Guitar playing "St. Louis Blues" with Alvino Rey in a ca. 1944 film

A guitar-shaped puppet learned to sing through voice modulation when, in 1939, the electric steel guitarist Alvino Rey created a hybrid sound of voice and guitar with a carbon throat microphone. As with the vocoder, the throat microphone was developed for military use, to make

[22] Tompkins, *How to Wreck a Nice Beach*, 37.
[23] Ngai, *Theory of the Gimmick*, 3.

pilots' speech intelligible over noisy jets. But Rey turned this voice-throwing technology into amusement with "Stringy," the steel guitar puppet who sang with the help of Rey's wife, Luise (Fig. 4.1). She wore a throat microphone offstage to voice Stringy, which was patched into the sound of Alvino's onstage electric guitar. Luise's work as a ventriloquist remained offstage—she is entirely off-camera in the 1944 film pictured above.[24] For Sarah Kessler, ventriloquism "produces an intimate relationship between one human agency and one or more nonhuman agencies" and is "associated with a perverse desire, and even a need, to speak through someone else in lieu of being able to speak for oneself. Edgar Bergen was always said to be shy with women and to thus woo them through his brash, confident alter ego Charlie McCarthy."[25] Ironically, Bergen and McCarthy rose to fame on the radio—a medium where audiences couldn't visually check for ventriloquism, thus revealing that voice modulation drives the gimmick. Like ventriloquism, voice modulation entangles humans with nonhumans, and agency with servitude.

Voice modulation technology often casts women's labor and artistry into doubt or erases it altogether. In this history, as Sianne Ngai claims for gimmicks overall, "women continue to be, as they historically have been due to the gendering and subsequent devaluation of specific activities […], capital's most popular and longstanding profit-protecting device."[26] Notably, women's labor to make the voder (the vocoder's predecessor) talk onstage at the 1939 World's Fair was also ignored while the press celebrated Dudley and his male-gendered voder nicknamed Pedro (Fig. 4.2). An exhibition photo bills Pedro as "the only actor in the Bell Telephone

[24] Michael Dregni, "The Heil Talk Box," *Vintage Guitar* 27, no. 11 (September 13): 44. The 1944 film can be seen at KoolKlipsFromDeke, "Alvino Rey plays 'St. Louis Blues' with Stringy the talking steel guitar!," December 12, 2009, YouTube, https://www.youtube.com/watch?v=jPd9cxqKCVg.
[25] Sarah Kessler, "Puppet Love: Documenting Ventriloquism in Nina Conti's *Her Master's Voice*," *Camera Obscura* 92, vol. 31, no. 2 (2016): 86.
[26] Ngai, *Theory of the Gimmick*, 78.

Exhibit" and omits the woman who "puts Pedro through his paces."[27] By placing women behind a curtain or even hiding them in plain sight, voice modulation effaces the female face of labor.

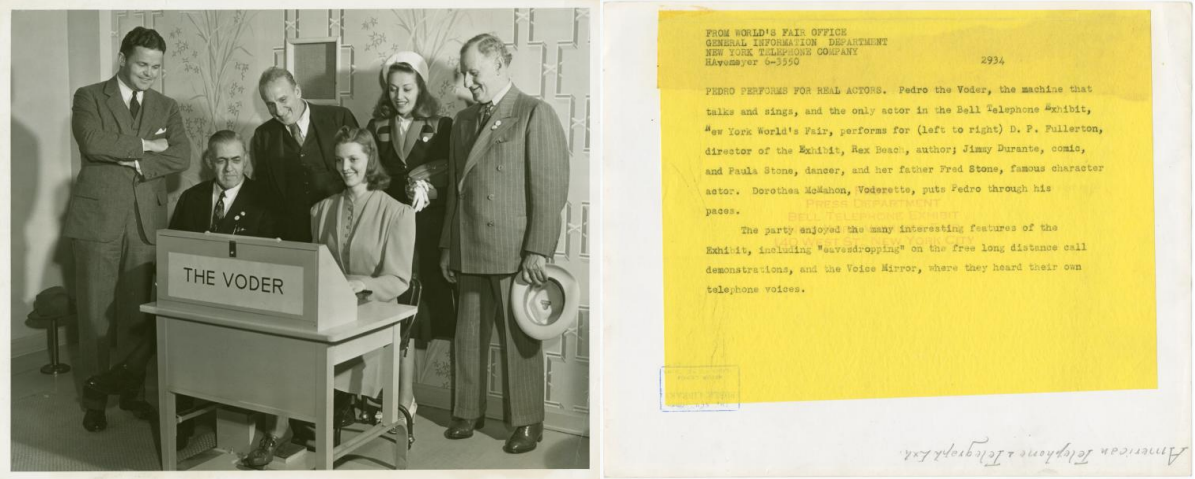

Figure 4.2 "American Telephone & Telegraph Exhibit - Group at Pedro the Voder," The New York Public Library Digital Collections, https://digitalcollections.nypl.org/items/5e66b3e8-faf1-d471-e040-e00a180654d7

By the same token, staged voice manipulation sets up an arena for virtuosic performance that would expand past men with guitars. The same year Rey debuted his "Singing Guitar," the Sonovox shifted the carrier signal source from guitar to records, which were then routed to transducers attached to a vocalist's throat instead of the microphone used by Luise. The Sonovox was popular in radio stations because it could adopt records and even the materials of advertised products as sound sources, thus drawing consumer's attention to the product.[28] Sonovoxes used singing pots and pans for ad spots and even Lucille Ball's voice in the 1939 Pathé short "Machine-Made Voices!"[29] A mechanical object provided the sound for the Sonovox, which the vocalist's mouth shaped into phonemes—much as Dudley designed the vocoder as a mouth-like

[27] Manuscripts and Archives Division, The New York Public Library. "American Telephone & Telegraph Exhibit - Group at Pedro the Voder," New York Public Library Digital Collections. Accessed November 14, 2021. https://digitalcollections.nypl.org/items/5e66b3e8-faf1-d471-e040-e00a180654d7.
[28] Jacob Smith, "Tearing Speech to Pieces: Voice Technologies of the 1940s," *Music, Sound, and the Moving Image* 2, no. 2 (Autumn 2008): 183-206, 195. Smith notes that "notions of gender played an important role in shaping how the Sonovox was used, not only in animated cartoons, but in radio advertising and film melodramas, where it did not alter or improve an existing voice, but made objects speak to what was assumed to be a female audience" (192).
[29] British Pathé, "Machine Made Voices!" April 13, 2014. https://www.youtube.com/watch?v=Rld73C5Rfh4.

radio station. Whether the talking object is a kitchen pan or a guitar, the player's mouth and amplification technology work together to manipulate the voice. In this configuration, the human mouth is the sense-making ventriloquist, and the advertised pan or Ball's voice are nonsensical dummies, consigned to voice the gimmick like Luise Rey and the female operators for Pedro the Voder.

Talking-guitar gimmickry hit an apex in the 1960s and 1970s through male virtuosi, whose Talk Boxes injected the "wah-wah" jazz trombone sound into rock and country history. Another guitar/voice assemblage, the Talk Box has a box-shaped loudspeaker that connects to the guitar output and to a microphone with a tube fed into a vocalizer's mouth, which shapes the output sound. The device, popularized by Pete Drake and Peter Frampton, "was like another larynx—the guitar did the riffing, Frampton mouthed the words, and the sound that produced [it] went into the microphone."[30] As with Stringy and the Sonovox, microphones were anthropomorphized as human throats. But importantly, little effort is made to hide the Talk Box, unlike earlier voice-transforming technologies that involved women. An exception to this is Ball's Pathé Sonovox short, which shows off the process of combining her voice with record sounds. But was a woman only able to star in this gimmick because of her celebrity? Frampton one-ups her, not just showing the gimmickry but telling it too, calling the Talk Box "a cheap gag […] kind of a one-trick pony. It's limited. And I think once you play a note or lick you've kind of showed your hand […] a little goes a long way."[31] As Ngai explains, "the perpetual reuse of a device for producing an effect is often exactly what transforms it into an impoverished

[30] David Rowell, *Wherever the Sound Takes You: Heroics and Heartbreak in Music Making* (Chicago: University of Chicago Press, 2019), 31.
[31] Frampton to Rowell, *Wherever the Sound Takes You*, 53.

gimmick."[32] But when the gimmick of voice modulation is placed at the center of one artist's act and repeated across an oeuvre, it becomes a shtick that fans flock to, an artist's signature.

Figure 4.3 Still of Stevie Wonder on the Talk Box at The David Frost Show, March 8, 1972

Whereas Frampton obeyed the social law of gimmicks by sparingly using the Talk Box, Roger Troutman's many 1980s funk and R&B hits overflowed with it. Indeed, Black performers promoted the Talk Box to a large extent, including Stevie Wonder back in 1972 with *Music of My Mind* and his cover of "(They Long to Be) Close to You" by the Carpenters (Fig. 4.3).[33] As Troutman told Donnie Simpson on BET's *Video Soul*, the talk box "gave the voice box a whole new character […] a sexy character, in a way."[34] Troutman attached the talk box's plastic tube to a synthesizer in order to play rapid melismas—virtuosic strings of notes associated in popular music with soul and R&B singers (e.g., the vocal flourishes in Marvin Gaye's or Whitney Houston's US national anthem renditions, or Mariah Carey's performances).[35] As his voice modulation jumped octaves and zipped between notes, Troutman tapped into a nostalgia for

[32] Ngai, *Theory of the Gimmick*, 67.
[33] suicidenet, "Stevie Wonder – Close to You / Never Can Say Goodbye (David Frost)," live on The David Frost Show in 1972. YouTube, February 11, 2021, https://www.youtube.com/watch?v=grWpHuxrh3I.
[34] BeyeZee, "Roger Troutman on the Talkbox [Video Soul - 1987]," March 11, 2011, https://www.youtube.com/watch?v=L_CBZkd2tGE.
[35] Melismas stem from several musical traditions, from Middle Eastern to medieval Gregorian chant, and they gain particular genre- and race-based coding in popular music. See Kathy Meizel, "Rock voice," in *The Bloomsbury Handbook of Rock Music Research*. Allan F. Moore, and Paul Carr (New York: Bloomsbury Academic, 2020), 66, and Brøvig-Hanssen and Danielsen, *Digital Signatures*, 126.

soulful melisma and a modern sensibility of desire that sizzled with a mechanical edge. He played his self-described "sexual" character for hits in everything from a Motown-era classic to the latest R&B. His funky Talk Box cover of "I Heard It Through the Grapevine," Marvin Gaye's 1968 soul-tinged single, hit number one on Billboard's R&B chart in 1981. And years before consumers could communicate love on the Internet, Troutman's band Zapp produced the ballad "Computer Love."

Not everyone loved the use of Talk Box in "Computer Love" (1985). For Weheliye, the Talk Box was gimmicky because it only repeated "computer love" instead of more profound lyrics.[36] As Ngai notes, "Calling something a gimmick is a distancing judgment, a way to apotropaically ward off the trick's attractions by proclaiming ourselves unconvinced by them. At the same time the gimmick enables us to indirectly acknowledge this power to enchant, as one to which others, if not ourselves, are susceptible."[37] Weheliye laments that the modulated voice channels desire not for the song's female protagonist but for the machine itself: only the "female voice represents the nonlingual sonorousness needed to carry out the affective labor [of singing], which neither the male nor machinic voices can."[38] Weheliye affords the female voice more skill than Troutman's gimmick, signaling a perceived failed male virtuosity in voice modulation.

Many of Troutman's interlocutors harbored similar anxieties about the Talk Box's diminishing value as a gimmick. As Simpson asked him, "Don't you worry that when it is a gimmicky kind of sound like that, that people may get tired of it?" Troutman merely quipped, "I think then I will become a stand-up comedian, or maybe I could go to Walt Disney and do

[36] See Weheliye, "'Feenin,'" for an extensive reading of "Computer Love." Note that the chorus Weheliye refers to as vocoderized is instead produced by the Talk Box. The very opening utterance of "Computer Love" sounds like it is produced with vocoder, with its metallic, hollow tones, but the next instances of joyous eruptions of "Computer Love," verse melismas, and chorus interjections ("Shoo-be-do-bop") have the warmer Talk Box sound.
[37] Sianne Ngai, *Theory of the Gimmick*, 55–6.
[38] Weheliye, "'Feenin,'" 47, footnote 50.

Donald Duck's voice," launching into an impression of the latter.[39] He deflects the accusation of a gimmick with comedy, another trick. And yet, the trick allows him another demonstration of unabashed virtuosity (Fig. 4.4). The interview, which Troutman turns into a talent show, reveals his talent as an improviser. He can switch into the Talk Box voice or a cartoon character in the blink of an eye, demonstrating both the animal and machinic sides of voice distortion.

Figure 4.4 Still of Roger Troutman demonstrating the Talk Box on Video Soul, 1987

Once critics recognized Troutman's virtuosity, they no longer labeled the Talk Box a gimmick; as musician John Lewis put it, "Zapp pioneered, on hits like 'More Bounce To The Ounce,' a strain of squelchy synth-funk using Troutman's custom-made talkbox, which manipulated his voice through a Minimoog."[40] With his innovation, poise, and humor, Troutman seemed aware that he was pushing the envelope, but he leaned into it: "People started saying 'well, you can't sing'… 'here comes a gimmick,' so I said well I'm gonna turn the whole thing around and I'm gonna do a love song with it, and that's when we came up with the penetrating syrupy jam ["Computer Love"]."[41] Troutman's response to being labeled a gimmick was to embrace the digital-sounding voice effect not for future shock but for a blues revival in love

[39] Simpson and Troutman quoted in BeyeZee, "Roger Troutman on the Talkbox [Video Soul - 1987]," YouTube.
[40] John Lewis, "TRANS USA EXPRESS" in "Ultimate Genre Guide: Electronic Pop," *Uncut* (2019): 121.
[41] Troutman quoted in BeyeZee, "Roger Troutman on the Talkbox [Video Soul - 1987]," YouTube.

songs. He created an assemblage of Talk Box and voice to lend a "sexy character": as Scot Brown writes, Troutman "'played' with notions of linear 'progress,' conjoining futuristic sounds with stories about down-to-earth or time-honored lyrical themes—such as the need for commitment, love, money, and setting aside time to party and enjoy life in the midst of its constant challenge"—themes that were crucial to blues and funk.[42]

For Troutman, the Talk Box was a character, a persona he used to teleport back into the past in order to sing songs about love that resonated with his increasingly digital era. His focus, rather than "link[ing] his high-tech funk sound to a science fiction or surreal story line" as Bambaataa did, was on the increasing mediation of social relations in his time.[43] He deployed the Talk Box to speak to the present. Yet critics continued to dismiss his music as too futuristic, like his "martianlike chorus" on "California Love" (1995) with 2Pac and Dr. Dre.[44] Troutman's labor of producing the Talk Boxed voice was consigned to a galactic effect rather than the Motown and funk histories that were central to his sonic archive. Critics often invoke aliens and space to label a vocal effect as a gimmick, as if to untether mechanically produced voices from the earthly sacrifices of blood, spit, and tears artists endure to choke out voice. Crucially, Talk Box users like Troutman were prone to infections and dental complaints from the unsanitary tube.[45]

While labels of futurism have become associated with voice modulation leading up to Auto-Tune, Troutman's Donald Duck effect invokes another persona frequently evoked by machine-manipulated voices. From the vocoder to Auto-Tune, the chipmunk voice dominates the genealogy of voice manipulation. The tension between alien and animal sounds extends back to

[42] Scot Brown, "The Blues/Funk Futurism of Roger Troutman." *American Studies* 52, no. 4 (2013): 119–23, 121.
[43] Brown, "The Blues/Funk Futurism of Roger Troutman," 121.
[44] Ben Westhoff, *Dirty South: Outkast, Lil Wayne, Soulja Boy, and the Southern Rappers Who Reinvented Hip-hop* (Chicago: Chicago Review Press, 2011), 224.
[45] Tompkins, "The Sacred Thunder Croak," *How to Wreck a Nice Beach*.

the vocoder's WWII military use, where men "didn't mind world leaders sounding like robots, just as long as they didn't sound like chipmunks. Eisenhower did not want to sound like a chipmunk."[46] Fears of emasculation in pitch modulation thus arose long before T-Pain's Auto-Tuned "gerbil voice," as Sasha Frere-Jones calls it: "when sung pitches alternate too quickly the [Auto-Tuned] result sounds unnatural, a fluttering that is described by some engineers as 'the gerbil' and by others as 'robotic.'"[47] Voice modulation has long drawn on and even fused animal and mechanical traits, from 18th-century automata like Jacques de Vaucanson's 1738 defecating duck and flute player—mechanical objects that operated on the principle that "[a]nimals, like machines, simply converted energy into work"[48]—to Donna Haraway's "rethinking of difference as the nexus of the cyborg and the domesticated animal."[49] The same year as "Believe," for example, a video called "The Hampster Dance" sped up a sample from Roger Miller's "Whistle Stop" in the opening credits to *Robin Hood* (1973) to produce mechanical animality.

While animals, humans, and machines have become increasingly intertwined in digital media, animality in particular has long been linked to raced and gendered difference in voice modulation. The mid-century vari-speed technique, where sounds were recorded at half their normal speed and then played back at regular speed, raises the pitch of the voice and has been applied to several Othered characters. Vari-speed created the Munchkin voices in *The Wizard of Oz* (1939), which inspired Ross Bagdasarian to use the technique for "The Witch Doctor" nearly twenty years later. After critics called it a "gimmicky song" in 1958, Bagdasarian "'decided the

[46] Tompkins, "The Vocoder: From Speech-Scrambling to Robot Rock," *NPR*, May 13, 2010, https://www.npr.org/templates/story/story.php?storyId=126781688.
[47] Sasha Frere-Jones, "The Gerbil's Revenge," *New Yorker* 84, no. 17 (2008): 128–29.
[48] Jessica Riskin, "Eighteenth-Century Wetware," *Representations* 83 (2003): 97–125, 263.
[49] For Lisa Åkervall, the intimacy between animals, humans, and machines "reaches its poetic apotheosis in contemporary online web forums and video-sharing sites that increasingly remix animal others into the network of modulation and dissemination of humans and machines." Lisa Åkervall, "The Auto-Tuned Self: Modulating Voice and Gender in Digital Media Ecologies," *Camera Obscura* 107, vol 36, no. 2 (2021): 74.

singers should be animals or maybe even insects'" and landed on chipmunks, perhaps for their cuteness factor, to make "The Christmas Song" a hit—resulting in Alvin and the Chipmunks.[50] As Jonathan Sterne and Mara Mills remark, increasing a tape recording's speed to raise its pitch became "a phenomenon referred to as the 'Donald Duck' or 'chipmunk' effect."[51] That these timbres were attributed to animals gave the technique a frivolous air, even though its principles of stretching and compressing time have been integral to music production ever since.[52]

From 18th-century automata to today, the visual iconography of voice modulation has been dogged by comparisons to animals and robots. This imagery casts modulation as a negative distortion of humanity. Consider the dismissals of humanity that arose especially in the cases of Luise Rey and Roger Troutman. As Ngai asks, "Given the consistency with which gender and race get written off as peripheral to capitalism, does the relation of those marked by these categories to the superfluous/necessary gimmick become especially charged?"[53] Early voice modulation technology often extracted the labor of minoritarian artists and repackaged it as that of nonhumans, such as Luise Rey's ventriloquism and Troutman's Donald Duck. Auto-Tune would push nonhuman caricatures to new heights, but it would also open paths to virtuosity.

Sounding for Riches and Sounding for Pitches: Auto-Tune as Audio-Visual Capitalist Commodity

There is a myth that Andy Hildebrand created Auto-Tune from the same algorithm he used to mine deep-sea oil as a signal-processing engineer for Exxon. Closer to the truth is that Auto-

[50] Stephen Cox, "'The Chipmunk Song' Turns 60: Secrets of a Holiday Novelty Smash," *The Hollywood Reporter*, December 21, 2018, https://www.hollywoodreporter.com/news/music-news/chipmunk-song-turns-60-secrets-a-holiday-classic-1169762/.
[51] Jonathan Sterne and Mara Mills, "Second Rate: Tempo Regulation, Helium Speech, and 'Information Overload,'" *Triple Canopy* #26 (2020): https://www.canopycanopycanopy.com/issues/26/contents/second-rate.
[52] Vari-speed wasn't used only for novelty—for example, George Martin used this technique in the Beatles' "Strawberry Fields Forever" to join two takes of disparate pitch and speed. See Chapter 2 on tape manipulations.
[53] Ngai, *Theory of the Gimmick*, 17.

Tune originated from a woman's idea to create a pitch-correction device, a suggestion that initially was met with shame. At the 1995 National Association of Music Merchants trade show, Hildebrand met with his distributor to discuss future music technology innovations after his looping software proved successful in film scoring and looper pedals. As Hildebrand recalls, his distributor's wife chimed in, "'Well, Andy, why don't you make me a box that would have me sing in tune?' I looked around at the table, and everyone just stared at their lunch plates, they didn't say a word."[54] Auto-Tune's origin story, of a box that hides its use because it is shameful to not be perfect, mirrors the iconography that critics used to judge it. Throughout Auto-Tune's history, some women and queer artists and artists of color who used the plug-in were criticized for not having the skills of "true" singers or for profiting off of a surface effect that cheapened their musical labor. Thus, Auto-Tune's status as a devalued gimmick contingent on feminized and racialized labor was inaugurated as soon as a woman suggested the device in 1995. But at that time, a technique at the heart of Auto-Tune's algorithm was viewed as anything but a gimmick, since Hildebrand applied that same tool to find undersea oil deposits. Mining capitalistic riches is a second persistent metaphor present at Auto-Tune's origin story.

Auto-Tune's connection to oil extraction has taken on mythic proportions in the popular imagination. Hildebrand's electrical engineering PhD focused on signal processing, but he translated these skills to process seismic data as an Exxon oil engineer. He used the mathematical tool of autocorrelation to turn seabed rocks into a map of sonic frequencies that flagged oil-rich sites. The tool, which "detects the *sameness* (correlation) of a waveform in comparison to *itself*" over time,[55] allowed Hildebrand to beam pitches undersea and listen to how the pitches differed

[54] Andy Hildebrand, quoted in Greg Eckard, "How an Oil Engineer Created Auto-Tune and Changed Music Forever," February 25, 2016, https://www.vice.com/en/article/bmaj4d/how-an-oil-engineer-created-auto-tune-and-changed-music-forever-interview-creator.
[55] Provenzano, "Emotional Signals," 140.

when they bounced off sediment on the ocean floor. These frequencies were used to plot data points about rocks' locations, densities, and deposits onto a visualization that helped Exxon identify which rocks would be rich with oil before drilling.

But after nearly two decades in geophysics, Hildebrand returned to an early passion—music. He studied composition at Rice University, extending his career as a high-school flutist in the Jacksonville Symphony Orchestra. Playing in an orchestra cemented his belief that "if you're not in tune it's gonna hurt some people's ears," which later fed into his desire to improve intonation during music recording and production processes.[56] Though he hadn't worked in geophysics for years, he realized months after the distributor's wife suggested a tuning box that he could apply autocorrelation to correct pitch in real time, albeit with a different set of algorithms. Thus, Hildebrand had two separate careers that overlapped in mathematical principles, but these didn't occur in the straight line that many trade presses draw between oil drilling and pitch shifting. And yet, while it's crucial not to collapse the mathematic differences between the oil and pitch detecting functions, they do share a conceptual idea—an audiovisual map of frequencies—that made their previously invisible commodities visible and tangible.

Hildebrand debuted Auto-Tune in 1997 as a plug-in for Pro Tools, the industry standard Digital Audio Workstation. Pitch correction has been possible long before, but with tape effects that altered the speed of the recording, as in Alvin and the Chipmunks. Auto-Tune, sold by Hildebrand's new company Antares Audio Technology, maintained the speed of the recording and increased consumers' access and ability to quickly isolate and alter pitches. Prior digital audio software attempted pitch correction by plotting the peaks or zero crossing of the waveform as point-by-point attributes. However, autocorrelation is more sensitive to the data contained

[56] Andy Hildebrand quoted in Provenzano, "Emotional Signals," 123–24.

across the waveform as it changes over time, making it more capable of processing diphthongs (vowels like "I" that begin with one vowel sound and end with another, creating different waveforms) without artifacts. Once Hildebrand discovered a way for the algorithm to compute this data quickly,[57] he was able to present users with an interface that made the sonic information in a series of notes visible and mutable.

Auto-Tune plots vocal pitches on an audio-visual map as information-rich signals that are compared to their surrounding waveforms. Autocorrelation matches input pitches to a scale chosen by users; in Western popular music this is typically in equal temperament, a tuning system that evenly subdivides the twelve pitches in a scale. Instead of using autocorrelation to discern rich matter in rocks for oil drilling, autocorrelation in Auto-Tune moves sonic matter to more tuneful places, which are marked as valuable in the currency of popular music. Auto-Tune analyzes the relationship between pitches in terms of distance from one another, as well as how a singer gets from one note to the next. I want to argue here that Auto-Tune maps notes onto a certain scale's pitches through a logic of teleportation—a lightning-fast and supernatural movement between pitches. Teleportation offers a way of understanding Auto-Tune's visual interface that also connects to the superhuman resonances that accompany it in music videos.

[57] For more on the mathematical simplification Hildebrand used to quickly process data in Auto-Tune, see Zachary Crockett, "The Mathematical Genius of Auto-Tune," *Priceonomics*, September 26, 2016, https://priceonomics.com/the-inventor-of-auto-tune/.

Figure 4.5 Screenshot of the drop-down menu for scales in Auto-Tune 8's Auto Mode

The default way that Auto-Tune teleports pitches is in Automatic (now called Auto) Mode, where users select the key and scale a song is in (e.g., A minor); then, the program snaps or slides the pitches that are out of tune to the correct notes of that scale (Fig. 4.5). This teleportation produces different effects according to the chosen retune speed. Much as the setting of zero milliseconds produces TATE, quicker retune speeds flatten vibrato and can produce noticeable artifacts. As Robert Strachan explains,

> This is largely to do with quantization, or how acutely the effect is made to fit with a predetermined grid relating to pitch in terms of timing. In the "adjustment time" of the plug-in any setting below 15 begins to have a pronounced effect and setting the parameter to zero produces an acute digitization of the voice. In normal operation, when quantizing is less pronounced, Auto-Tune allows for a more "natural" sounding pitch correction whereby the microtonal shifts remain perceptible.[58]

Thus, the grid in which Auto-Tune plots pitches shapes listeners' perceptions of sounds, especially when they are quickly snapped in tune and produce a robotic or mechanical effect.

For more finesse over this process, intrepid users—oftentimes, the skilled engineers in today's pop studios—can work in Auto-Tune's Graphical (now called Graph) Mode (Fig. 4.6). We can trace Graph Mode back to the Fairlight CMI, as its computer interface allows users to draw in sound with tools that reshape sound waves. Unlike the Fairlight's light pen, Graph Mode

[58] Robert Strachan, *Sonic Technologies*, 153.

works with a computer mouse, where users adjust points and curves on waveforms by clicking and dragging pitches into new contours. Graph Mode encourages finer tuning of the singer's voice in relation to itself—a pitch or effect that sounds good in the context of the song. In recent years, Auto-Tune's Graph Mode workflow has begun to look more like working in Melodyne, one of Auto-Tune's competitors, made by the German company Celemony.[59] In Melodyne, notes are represented as "blobs," variously shaped to correspond with "height (pitch), size (amplitude), and shape (timbre)"—which expands on the visual representation of pitch as line in Auto-Tune's Graph Mode.[60] The shapely materiality of Melodyne's interface emphasizes the plasticity of each note. Melodyne crystallizes the goal of visualizing sound that has been present throughout both cinema and DAW history, which intertwined when Avid and Digidesign merged in 1995 and fused their Media Composer editing suite with Pro Tools capabilities.

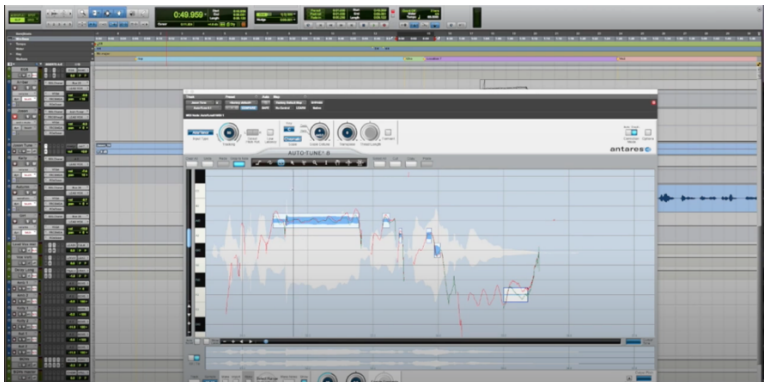

Figure 4.6 Screenshot of pitch correction by redrawing pitch curves in Auto-Tune 8's Graph Mode

[59] In one crucial difference from Auto-Tune, Melodyne can correct polyphonic pitches, e.g., multi-note guitar chords. Antares has the software "Auto-Tune for Guitar," but it still is monophonic, with one input for each guitar string. Melodyne is not the only competitor of Auto-Tune; another popular plug-in is Waves Tune. The phrase Auto-Tune has come to stand in for these plug-ins; thus, Antares's plug-in isn't necessarily the auto-tuning software used.
[60] Owen Marshall, "Auto-Tune In Situ: Digital Vocal Correction and Conversational Repair," *Critical Approaches to the Production of Music and Sound*, Samantha Bennett and Eliot Bates, eds., (New York: Bloomsbury Academic, 2018) 175–192, 179.

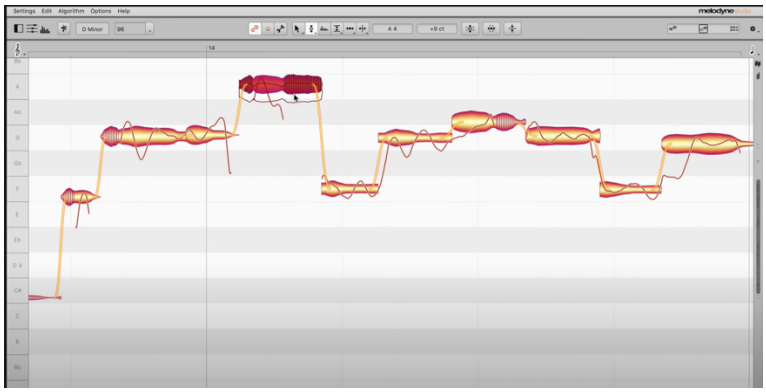

Figure 4.7 Screenshot of Melodyne "blob" adjustment that emphasizes the plasticity of waveforms

The increased plasticity of Auto-Tune's user-friendly interface stoked fears similar to those that the Fairlight CMI's instrument samples would replace orchestral musicians. Critics worried that Auto-Tune's ease and speed of pitch correction would replace producers' labor, or even turn non-singers into pop stars. The crux of criticism around overt uses of Auto-Tune, or TATE, is that it is created too quickly and too easily, coinciding with Ngai's antinomy that "[t]he gimmick saves us labor. / The gimmick does not save labor (in fact, it intensifies or even eliminates it)."[61] As Provenzano explains, TATE or the colloquial phrase "Auto-tuning" […] processes the vocal track by creatively 'misusing' Auto-Tune settings in a way that draws attention toward rather than away from the software's presence and mediation."[62] She continues,

> To say that Auto-Tune works automatically obscures not only the highly-skilled labor that professionalized uses of the tool requires, but also the enormous amount of programming, coding, and computational labor that goes into making this pitch shifting happen. The program's algorithm is sophisticated and intricate, working in a way meant to conceal its presence, to keep the software in the vocal signal 'inaudible.'[63]

Auto-Tune's covert and overt uses point back to Ngai's chronicle of gimmicks that either hide or show off their process—as in the "operational aesthetic" of P.T. Barnum's hoaxes—to advertise capitalistic production while attempting to hide its workings.[64] Hildebrand, who built the device

[61] Ngai, *Theory of the Gimmick,* 72.
[62] Provenzano, "Emotional Signals," 3.
[63] Provenzano, "Emotional Signals," 148.
[64] Ngai, *Theory of the Gimmick,* 72. On "operational aesthetics," see Neil Harris, *Humbug: The Art of P. T. Barnum*.

to imperceptibly correct pitch, is open about the fact that he made it possible to dial the retune speed to zero and create alien-sounding voices. But he didn't encourage that overt use, perhaps motivated by the shame around his distributor's wife's suggestion. As he repeatedly responds to remarks about TATE, "'I just built a car, I didn't drive it down the wrong side of the freeway.'"[65] But while he scorns the "misuse" of his device, it nevertheless helped him mine the tuning of human voices for significant profit, in both of its uses.

Even when Auto-Tune is used covertly, it has shaped pop voices. As Strachan observes, "its normative use [intended to be hidden or at least unobtrusive] has had pervasive yet less explicit consequences for accepted norms with regard to the sonic attributes of the voice in pop production more generally [… it] often produce[s] particular audible qualities in the voice."[66] Given its extensive use in popular music over the last two decades, Auto-Tune has generated a material change in pop voices, flattening them into noticeably more mechanical sounds, with dead-center pitches and glossy timbres that have become a vocal standard of airbrushed perfection. For Carlo "Illangelo" Montagnese, producer for artists from Florence and the Machine to the Weeknd, "If you don't pull a vocal through Auto-Tune these days, it almost does not sound normal! So you have to use it, though I apply it very subtly. You might not even notice it, but for me it makes a huge difference."[67] Thus, Auto-Tune is not only for correcting pitch but also for polishing timbres and creating sounds that are in tune with the type of personas recurrent in the pop music industry. In the past two decades, this tool has become indispensable to pop's

[65] Hildebrand quoted in Zachary Crockett, "The Mathematical Genius of Auto-Tune."
[66] Robert Strachan, *Sonic Technologies: Popular Music, Digital Culture and the Creative Process* (New York, NY: Bloomsbury Academic, 2017), 153.
[67] Montagnese quoted in Paul Tingen, "Inside Track: The Weeknd, Secrets of the Mix Engineers: Carlo 'Illangelo' Montagnese," *Sound on Sound* (December 2015): https://www.soundonsound.com/techniques/inside-track-weeknd.

glossy digital production. Auto-Tune sounds at home today in pop soundscapes, where the singer's voice dominates the mix amid a wash of reverb, delay, and compressed synthesizers.

While Auto-Tune was in the foreground of sonic aesthetics with Cher's "Believe" and T-Pain's oeuvre, it has retreated into the background but is widely used. Auto-Tune is analogous to CGI, which initially was shown off in music videos like Dire Straits' "Money for Nothing" (Steven Barron, 1985) and sci-fi and action movies like *Terminator 2* (James Cameron, 1991) and *Jurassic Park* (Steven Spielberg, 1993).[68] But CGI has since saturated contemporary media, in backdrops and elements such as crowds and weather particle effects that are meant to blend into the background (often with motion blur and surface textures to look more photorealistic). Like covert uses of Auto-Tune, CGI is meant to be overlooked but is everywhere.[69] Indeed, the terminological shift from "special" to "visual" effects parallels the shift from "TATE" to "auto-tuning": both are now used subtly and ubiquitously. As Steven Prince explains, visual effects "include the creation of fantastic, attention-grabbing creatures prevalent in everyday conceptions of what a movie special effect is, but visual effects go beyond this. Most often they are subliminal and invisible to viewers, and by no means are they confined to genres like science fiction and fantasy."[70] TATE is attention-grabbing, but auto-tuning is often inaudible to listeners because it has become integral to the soundscape of popular music.

The tension between virtuosity and ubiquity seen in CGI is echoed in how stars use and conceptualize Auto-Tune. Lady Gaga, who has worked with Montagnese and his prevalent auto-

[68] An early form of CGI is seen in the opening title sequence of *Vertigo* (Alfred Hitchcock, 1958), where John Whitney used an analog computer to animate the spirals. On CGI and its relation to cinematic realism, see Stephen Prince, *Digital Visual Effects in Cinema: The Seduction of Reality* (New Brunswick, N.J.: Rutgers University Press, 2012), Chapter 1, "Through the Looking Glass." On particle effects in particular, see Jordan Schonig, *The Shape of Motion: Cinema and the Aesthetics of Movement* (New York, NY: Oxford University Press, 2022).
[69] For a demonstration of the prevalence of visual effects compositing for iconic locations, see Stargate Studios, "Stargate Studios Virtual Backlot Reel 2009," Dec. 17, 2009, https://www.youtube.com/watch?v=clnozSXyF4k.
[70] Prince, *Digital Visual Effects in Cinema*, 56–57.

tuning, commented on her previously Auto-Tuned vocals in 2014 after she started singing jazz duets with Tony Bennett: "[T]here's a part of me that has been quiet for a long time that is now being reawakened, after years of producers and record label people telling me to make my voice sound more radio-friendly [… via] auto-tuning it more, or changing the timbre. They take the vibrato out so you sound like a robot."[71] Despite some input on her songs in production, Gaga lamented that her voice wasn't hers to control—that the persona reaching listeners was too polished for this self-proclaimed "rebel at heart." Gaga's story is yet another example of the ubiquity of Auto-Tune's timbre-polishing effect, but importantly, it also conveys that Auto-Tune is a persona-producing machine. Whereas the persona produced by Gaga's Auto-Tuned pop vocals fits the contemporary pop aesthetic, other artists use Auto-Tune to produce personas that stand out from the crowd and demonstrate virtuosity rather than pitch-corrected perfection. Across both overt and covert uses, Auto-Tune isn't merely pitch-shifting, but persona-shifting.

"The Cher Effect": Creating Personas for Y2K and a Career Comeback

In October 1998, Cher released "Believe," using pitch-shifting to create a persona- and epoch-shifting track. Since Auto-Tune's place in the digital soundscape was not yet established, it would take Cher's futuristic imagery in her video to contextualize the effect for audiences. Cher was the ideal person to make Auto-Tune legible, since she was a visual icon long before Auto-Tune came on the scene, known for her groovy fashion sense as part of Sonny & Cher in the 1960s. She appeared in increasingly extravagant costumes on various 1970s CBS shows and during tours, so that by the time of "Believe," music critics tended to focus on Cher's image over her voice. Barry Walters' *Village Voice* review of the *Believe* album exemplifies just how visual

[71] Craig McLean, "Lady Gaga on Tony Bennett: 'I've been Controlled for Years. He Liberates Me.'" *The Telegraph* (September 08, 2014).

that focus was, recounting her previous looks and praising Cher's resurgence into glamor via Europop for its widespread appeal. For Walters, the Europop genre

> allows women of a certain age to dress up as they play to at least three audiences—girlies young enough to be their daughters, female peers, and gay men of every vintage […] because the club-targeted bottom booms, the lushly aggressive arrangement soars, and the instrumentation flaunts a computerized nowness few studio hacks could achieve with conventional sonic airbrushing.[72]

"Believe" captures its Y2K moment as well as the popularity of Euro dance music for '90s youth, especially in its irresistibility as a song for lip-syncing. The song has been taken up by countless drag artists who make Cher's music and fashion flair patently visible. In the spirit of Cher remaking her image, the drag community has donned Cher's music to create iconic new looks and personas. Like Cher, drag artists embrace a multi-faceted version of identity over having one authentic self.[73] In Bollywood, as in drag, spectators know that the actor is lip-syncing, and no one questions the labor of playback singers like Lata Mangeshkar. With Auto-Tune, the labor of the singer is similarly effaced, and listeners don't deny that the singer's voice has been technologically manipulated. But whether they count it as virtuosic is another matter.

Cher's many looks are mirrored by the palette of emotions in her androgynous contralto voice. For Walters, the emotive material of Cher's voice was extended by TATE as "microchips manipulate[d] her patented warble into an electronic hiccup."[74] Her overtly synthetic voice in "Believe" drew critics' comparisons of Auto-Tune to the over-the-top artifice of her numerous plastic surgeries. In defense of Auto-Tune, its inventor Andy Hildebrand has stated, "to modify something isn't necessarily evil, my wife wears makeup!"[75] But makeup, plastic surgery, or

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[72] Barry Walters, "The Beats Go On," *Village Voice*, February 2, 1999, 127.
[73] Neepa Majumdar, "The Embodied Voice: Song Sequences and Stardom in Popular Hindi Cinema," in *Soundtrack Available: Essays on Film and Popular Music*, eds. Pamela Robertson Wojcik and Arthur Knight (Durham: Duke University Press, 2001), 161–181.
[74] Walters, "The Beats Go On," 127.
[75] PBS Nova Science NOW, "Auto-Tune," June 30, 2009, http://www.pbs.org/wgbh/ nova/tech/auto-tune.html.

TATE, which flaunt their artifice, can lead audiences to feel duped about how different a body or voice is from its so-called "natural" state. Instead of the gimmick's conflicting affects, we might judge the impetus to construct artifice, like women socialized to use beauty products covertly to appear "naturally" beautiful, or Cher's attraction to TATE as a form of sonic rebranding.

Both Cher's plastic surgery and use of TATE are judged as gimmicks because they make processes of glamour and persona production too overt. For example, as Charles Passy reacted to a 1999 concert performance, "Treat Cher like a piece of pop-culture candy. Just pray she doesn't stick to your teeth."[76] Yet Ann Powers insists on the powerful core of Cher's voice that cuts through the candy in order to critique ideals of pop femininity: "Cher manages to project candor and warmth within the vortex of glamour. She isn't afraid to tell her audience when her wig feels weird."[77] Whereas some critics finds Cher's performances of "Believe" gimmicky and out of touch, others insist that the TATE gimmick is a gambit for cutting-edge critique.

Cher's TATE makeover in "Believe" works for Powers because Cher has always had the latest fashion at her fingertips, and now also with audio effects. As Powers proclaims,

> Even the computer manipulations [Cher's voice] endures in Believe can't make it sound like anyone else's […] the song exemplified Cher's transcendence of such temporal boundaries. Cher was connecting the dots for her audience, showing that when you're a star of her magnitude, fashion will always return to you, hanging its head.[78]

While Ngai sees the gimmick as arriving either too early or too late, Powers sees Cher's use of TATE as timely—the latest fashion in vocal accessories. For Powers, TATE is an edgy appendage to Cher's "quintessential rock voice: impure, quirky, a fine vehicle for projecting

[76] Charles Passy, "Believe This: Cher's No Singer or Concert Act, Just Idol," *Palm Beach Post*, June 28, 1999, 2B.
[77] Ann Powers, "If There's One Star to 'Believe' in, It's Cher," *Morning Star* (July 9, 1999): 1D.
[78] Powers, "If There's One Star to 'Believe' in, It's Cher," 1D.

personality."[79] While TATE may flaunt its manipulation, the sound of its artifice is what makes it quintessentially Cher, not merely a short-lived trick but the enduring Cher effect.

Seeing the Cher Effect: Producing Personas in the "Believe" Music Video

Cher's single and especially its music video reveal that critics' anxiety over Auto-Tune isn't necessarily that it corrects pitch, for when it's done inaudibly, no one complains. Rather, it is that artists *misuse* Auto-Tune to thwart standard voices and images of pop music icons. As we will see, artists' music videos clinch TATE's powers of persona-production by deploying new personas and digital effects to critique glossy star images. Moments of visual distortion, such as the glitch art in Kanye West's "Welcome to Heartbreak" (Nabil Elderkin, 2009), are linked to voice distortion across the past two decades of Auto-Tune in music videos.

In the music video for Cher's "Believe" (Nigel Dick, 1998), visual imagery offers a way to decode how Auto-Tune shapes singers' pop star identities, especially through motifs of teleportation, visual distortion, and personas. Cher's video isn't the first in which teleporting has been used as an effect. Contemporaneously, Missy Elliott and Da Brat jump to different locations in space in "Sock It 2 Me" (Hype Williams, 1997) and a woman teleports through water portals in BBE's "Seven Days and One Week" (Martin Weisz, 1996). Most music videos defy a classical Hollywood coherence of narrative space and time, and instead display a "spatial and temporal hybridity, through which time and space are subject to recurrent alterations, transgressions, repetitions, duplications, and modulations."[80] Mathias Kosgaard's words also speak to Cher's reinventions of herself as new personas throughout her career. Like teleportation,

[79] Powers, "If There's One Star to 'Believe' in, It's Cher," 1D.
[80] Mathias Bonde Kosgaard, *Music Video After MTV: Audiovisual Studies, New Media, and Popular Music* (New York and London: Routledge, 2017), 139.

personas are another defining characteristic of music videos, constructed through the different signs and symbols stars take on, from make-up and costumes to acting and montage.[81] Pop star personas are also shaped by other media, such as the concert tours, album covers, and interviews that make up Cher's oeuvre. For Mitchell Morris, her contemporary gay and lesbian audiences in particular celebrated the complex layers of her personas, in "the imaginative room [she] offered us to assimilate the musical experiences offered into our own frameworks."[82] Her larger-than-life personas, with their notice-me constructedness, invite audiences to revel in the power of artifice.

Figure 4.8 Still of Cher's robot persona at the beginning of "Believe" (Nigel Dick, 1998)

Nigel Dick's video for "Believe" features three different personas for Cher: the robot, the pop star, and the heartbroken girl in a club—a foil for Cher who recovers her agency after romantic strife. At the beginning, Cher is beamed into a cage, eyes closed, arms outstretched. She's a wax figure on display in a club, standing perfectly still as if embalmed during the intro. As the club fills and a spacey major synth pad plays (what Taylor calls "a very distinctive, core part of the record — the song hinges on it"[83]), Cher comes to life. Lights bounce off of her wig festooned with a crown of fiber-optic cables. Her eyes open to showcase a distinctly robotic glow

[81] On personas in popular music, see Kai Arne Hansen, "(Re)Reading Pop Personae: A Transmedial Approach to Studying the Multiple Construction of Artist Identities," *Twentieth-Century Music* 16, no. 3 (2019): 501–529.
[82] Mitchell Morris, "Cher's Dark Ladies," *The Persistence of Sentiment: Display and Feeling in Popular Music of the 1970s* (Berkeley: University of California Press, 2013), 171.
[83] Taylor and Rawling, "Recording Cher's 'Believe.'"

(Fig. 4.8), which complements the track's repeated phasers that sound like jets taking off and landing every few seconds. Lighting also reinforces the idea of robotics, with lens flares lancing around her, presenting her at alternate times as a dark lady (the title of her 1974 hit) but also a bright, quasi-angelic one, especially when her palms are clasped in prayer. Or perhaps it is confession, atoning for the use of Auto-Tune and plastic surgery among an industry of ever-younger and sonically similar pop stars? However, Cher's video doesn't hide her use of Auto-Tune like Taylor and Rawling did when they said "Believe" used the Digitech Talker vocoder pedal instead of TATE. In the video, Cher and her visual creative team lay bare the use of TATE with costume and editing effects.

Figure 4.9 Still of Cher's first instance of teleportation in "Believe" (Nigel Dick, 1998)

Like Cher's three personas, the video's images and audiovisual effects present multiple levels of identification for spectators. In the opening, the repeated vocal "after love, after love" drips with delay, which creates a sense of boundless space. Sampled and filtered, the line at once sonically mirrors Cher's automata appearance and robot eyes, but also jars with the image of her trapped in a cage of unrequited love. As the song's disco beat takes over, listeners are transported to the similar beat of "Take Me Home" (1979), an instant hit in the aftermath of her 1975 divorce from Sonny. In a triumphant return to disco that is nonetheless tinged with melancholy in

"Believe," Cher sings the first verse, chorus, and second verse from the glass cage, surveilled by young and diverse fans whose faces are marred by shadows and receive far less screen time than Cher's illuminated face. The video's visual logic of shots and lighting promotes identification with Cher and her foil and evades a connection with the background figures. As Carol Vernallis writes, "Stars often possess greater mobility than do the supporting characters [in videos]," which is certainly the case for Cher and the woman as they move throughout the club.[84] But Cher has even greater mobility: when Auto-Tune contorts the syllables in verse one's "I *can't break through*" and "I'm so *sad* that you're leaving / it takes *time* to believe it," Cher's image pixelates and teleports across the screen (Fig. 4.9). This movement foreshadows a larger one: when the second verse ends with "I've had time to think it through / and maybe I'm too good for you," Cher teleports to a stage to sing the chorus in the guise of a pop star persona for her adoring fans.

The video's visual motif of teleportation opens up a theory of TATE as a mode of teleporting from one persona to the next. When TATE's instant retuning changes pitch faster than humans can, its modulations sound like mechanical steps instead of pitches connected with breath. Teleportation entails unnatural movement, like Cher's escape from containment. When she teleports out of the cage she seems to come untethered from her body, but the shots of her new persona identify a new form of embodiment for her. Teleportation offers a star strategic mobility: Cher's use of Auto-Tune simultaneously reflects a chase for an aging voice to keep up with pop conventions and also a line of flight away from those expectations—when Cher moves in ways that are impossible for humans, e.g., sideways across the screen. As Cher evades norms of human behavior, she develops new sonic and visual ways of being in pop and music videos.

[84] Carol Vernallis, *Experiencing Music Video*, 61.

Like *Dr. Who*'s TARDIS, a 1950s police box that looks out of sync with its futuristic abilities, TATE's pitch teleportation effect and Cher's body-swapping teleportation initially seem gimmicky. But teleportation has persisted in media, from Dorothy's silver shoes in *The Wonderful Wizard of Oz* (L. Frank Baum, 1900) to the scientist who merges with a fly in *The Fly* (David Cronenberg, 1986). Likewise, the continued presence of TATE and music video motifs of teleportation and distortion have transformed Auto-Tune from a sonic gimmick to a cultural theme that invites stars to acknowledge the artificial constructedness of pop personas. For while Auto-Tune programs pitches to snap into the "correct" place, artists can overuse this snapping mechanism to produce an excess. In a queering of the software, TATE's teleportation shatters an industry impulse to be appropriately on pitch and allows artists to emote outside of pop's norms.

When TATE distorts the pop industry's ideals of control and normalization, it becomes a tool of disidentification: "a performative mode of tactical recognition that various minoritarian subjects employ in an effort to resist the oppressive and normalizing discourse of dominant."[85] TATE is often critiqued as distorting the human qualities of pop voices. But Cher's purposeful distortions shift the voice away from industry standards of correctness and toward new forms of artistic expression enabled by technology. While critics of Auto-Tune label TATE as making the voice colder, flatter, and more metallic, in her Auto-Tuned moments, Cher's voice crackles with warmth. The video's color palette, however, creates a ground for disidentification. "Blues and greens seem emotionally cool," Carol Vernallis writes, "to suggest a slower speed, and to become solemn or subdued [… in] a mood of youthful moroseness"—according with studies that blue temporarily lowers one's blood pressure.[86] Yet, the song's driving beat, lyrics, and TATE

[85] José Esteban Muñoz, "'The White to Be Angry': Vaginal Davis's Terrorist Drag," *Social Text* 52/53, nos. 3 and 4 (1997): 80–103, 83.
[86] Vernallis, *Experiencing Music Video*, 123–24.

actively disidentify with the lugubrious color palette. Cher's initial positioning as a caged entertainer visually reinforced a chilling effect for her Auto-Tuned voice. But via TATE she reclaims her agency over a polished pop voice and the *mise-en-scène*'s icy veneer that entrap her.

Throughout "Believe," Cher's voice is omnipresent in the mix, not just in its aural focus but also in its ever-dissipating trails of reverb. The voice's dominance in pop mixes has led to its status as a fetish object, as listeners desire intimate knowledge of a singer through the textures of their voice. Such mixing highlights the voice's embodied characteristics, but Auto-Tune ungrounds the idea of a body's "natural" voice by changing its initial tuning and timbre. TATE's zero-millisecond retune speed snaps from pitch to pitch and uncouples the voice from its physical limits, collapsing time in a form of sonic teleportation. TATE allows artists to disidentify with pop music's pre-approved voices and identities, and in their music videos to form new associations between their voice and body by producing creative personas that untether them from having one perfect star image. TATE's "persona effect" allows artists to bend their voices towards other goals than pop perfection.

The audio-visual metaphor of Auto-Tune as teleportation helps us see how Auto-Tune's gimmicky status reveals anxieties of capitalist pop culture. When stars use Auto-Tune to teleport to new personas, they stretch the gimmick to subvert norms of femininity. For example, many critics see Cher as a robot and an icon for cyberfeminism in "Believe." Sasha Geffen describes Cher as a "cybernetic goddess,"[87] and for Kay Dickinson she fluctuates between "the organic and the inorganic, rather than heralding some bold and pure technological futurism."[88] Dickinson distinguishes Cher from outwardly futuristic claims in part because her plastic surgeries cohere

[87] Sasha Geffen, *Glitter up the Dark: How Pop Music Broke the Binary* (Austin, TX: University of Texas Press, 2020), 200.
[88] Kay Dickinson, "'Believe'? Vocoders, Digitalised Female Identity, and Camp," *Popular Music* 20 (October 2001): 339.

with a certain commodified female pop star image. Dickinson says that TATE plays a similar role, with Taylor and Rawling as "surgeon[s] moulding 'Cher' into something which cannot help but represent masculine dominance and the male resuscitation of a waning female singing career."[89] Writing only a few years after "Believe" debuted, Dickinson hadn't yet discovered that it was Cher who suggested the vocal effect to her male producers. But Dickinson's feminist pop industry critique incisively identifies forces that have shaped Cher's public persona.

Dickinson's account of "Believe" offers a reason to reevaluate Cher's place in a lineage of millennial robot femininity, which Geffen, Robin James (writing about Beyoncé, who uses Auto-Tune, albeit mainly covertly) and others ascribe to pop stars with voices that are more "chilly sound-effect" than "expression."[90] For Dickinson, Cher's technologized timbre is "reedy and more a 1970s or 1980s evocation of robotry than a newly contemporary effect. Like Cher herself, […] it is now a deliberately vintage sound and the fact that it was once the height of modernity lends it a certain charm."[91] Rather than the chilling effect critics attribute to excessive uses of machine gimmickry, Dickinson codes Cher's voice as vintage, even imparting a nostalgic warmth to communicate visceral, human emotions of love and loss. Most other accounts of Cher and Auto-Tune focus on the negative coding of Auto-Tune on Cher's voice as robotic. Recall Powers's positive review that nonetheless calls Cher's voice "impure" as if she needed TATE to perfect it. These critics suggest that Auto-Tune polishes women's voices for easy consumption. But when women deploy Auto-Tune as a self-disclosing gimmick, it can become a gambit for queer and feminist circles. Dickinson redeems TATE's passé timbre and its future-focused

[89] Dickinson, "'Believe'?," 342.
[90] Tom Breihan quoted in Robin James, "'Robo-Diva R&B': Aesthetics, Politics, and Black Female Robots in Contemporary Popular Music," *Journal of Popular Music Studies* 20, no. 4 (2008): 415. James calls Beyoncé, for her robot-Maria suit at a 2007 BET performance, and Rihanna, in her 2007 Umbrella" video, "robo-divas."
[91] Dickinson, "'Believe'?," 344.

modulations of pop stars for acts of critique in the present moment. Beyond Auto-Tune's label as a too-past and too-futuristic gimmick, Cher beams it into the present as she works out her emotions and the persona she wishes to project—an embrace of artifice that allows her to continue to have a singing career. This scene of processing happens to look like the future in the music video, but only at first glance. For all around Cher is a sense of being in the moment at a club, and, as her lyrics suggest, seizing agency in the midst of heartbreak.

To consider Auto-Tune as a technology of the present goes against the grain of most other critics, but indeed it was in line with attitudes that immediately followed Y2K. As Rushkoff illuminates, "People stopped thinking about where things were going and started to consider where things were."[92] Around Y2K, people turned to the quickly growing internet and asked how they could take advantage of its capabilities, which largely involved techniques of teleportation—to send messages more quickly, matching the high-speed aesthetic of music videos on MTV. Read through this historical lens, Cher's personas in "Believe" align more with humans grappling with technology than a cyborg body. As Tara McPherson describes the era:

> When I explore the web, I follow the cursor, a tangible sign of presence implying movement. This motion structures a sense of liveness, immediacy, of the now […] This liveness foregrounds volition and mobility, creating a liveness on demand […] *a sense of causality* in relation to liveness, a liveness which we navigate and move through, often structuring a feeling that our own desire drives the movement.[93]

McPherson coins the phrase "volitional mobility" to describe the feeling, not the fact, of liveness while web surfing: users want to feel like they teleport themselves through it, not the computer. TATE's teleportation is similarly attached to embodied desires. Like Dickinson celebrates Cher's visceral humanity, Susana Loza argues for a break between electronic music and technology's machine-dominated futures. As Loza writes, "Instead of dreaming of disembodiment, we need to

[92] Rushkoff, *Future Shock*, 11.
[93] Tara McPherson, "Reload: Liveness, Mobility, and the Web," *New Media, Old Media: A History and Theory Reader*, eds. Wendy Hui Kyong Chun and Thomas Keenan (New York: Routledge, 2006), 203.

work at embodying flexible sexualities, performative sexualities that confront the cultural signs that, for better or worse, have inextricably defined the limits and spaces of our desires. We have no choice but to envision the future of sexuality from the corporeal coordinates of our presents and pasts."[94] TATE's teleportation offers a strategic mobility of embodying new personas.

As Cher's video progresses, moments of strategic mobility reveal that her use of TATE is not merely about being a robot but escaping from that state, from the cage of fetishization that women have been consigned to in popular music. For Lisa Åkervall, "Believe" inaugurates "a technique that makes the sound of control and modulation audible as its own aesthetic."[95] The video likewise uses teleportation, distortion, and body-swapping to depict industrial control and then rupture it. Cher's experience is profoundly human in "Believe": in her first teleportation after verse one, she becomes Cher the performer, and she ultimately swaps bodies with a young woman who is experiencing heartbreak. The video's narrative of body-swapping seems to suggest that Auto-Tune isn't just a surface effect, a sonic airbrushing, but has emotional effects that go skin deep—symbolized by Cher changing places with the woman throughout the video, remaking herself by entwining her experiences with those of the woman.

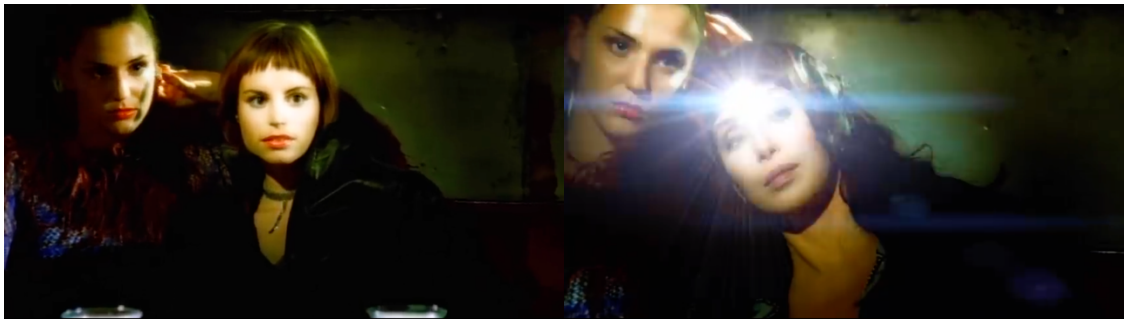

Figure 4.10 Stills of Cher swapping places with the woman in the club (Nigel Dick, 1998)

[94] Susana Loza, "Sampling (Hetero)Sexuality: Diva-ness and Discipline in Electronic Dance Music," *Popular Music* 20, no. 3 (2001): 349–57, 356.
[95] Åkervall, "The Auto-Tuned Self," 81.

As uses of Auto-Tune ramp up in the song, Cher undergoes a series of metamorphoses, even shedding older-looking clothes for younger ones from the first costume of a slightly-corporate-looking suit to a glitter shrug and camo pants. This costume change mirrors her embrace of a new demographic in Europop. But Cher adopts an even younger skin in the video's final scene on the roof. At the end of the second verse—also the midpoint of the song—Cher beams briefly into and out of the clubbing woman's place (Fig. 4.10) at "I need *time* to move on, / I need *love* to feel strong / cause I've had time to think it through / and maybe I'm too good for you"—lyrics that Cher added to the song while soaking in a bathtub because "the second verse was too whiny. It kind of pissed me off, so I changed it. I toughened it up a bit."[96] The persona effect created by the very first Auto-Tuned line is fully realized here, as the body-swap provides a clue that the woman is a stand-in for Cher, or vice versa. This moment occurs when the young woman sees her ex-lover dancing with another woman. In the next shot of the lovelorn female protagonist, Cher has taken her place, and then teleports onto the stage.

The Auto-Tuned body-swapping tease is completed at the end of the video in a scene that accords with *The Matrix*'s (Lana and Lilly Wachowski, 1999) fondness for apocalyptic roof scenes, which are replete with CGI in a parallel to the video's teleportation and visual distortion. As the young woman climbs up to the roof, the chorus returns, without Auto-Tune as it has been for previous iterations. However, with the second repeat of the chorus, TATE is applied to stress "*believe*" and other notable syllables. Only when TATE is added to the repeated chorus does Cher swap bodies with the heroine on the roof, as if to distance herself from the pop industry.

In all, the teleportation, body-swapping, and distortions paired with Auto-Tune in "Believe" cement the importance of the present, and not just the future, of the Cher effect. The

[96] Cher quoted in Mark Bego, *Cher: If You Believe* (New York: Cooper Square Press, 2001), 283.

effect and its realization in the video at first seem futuristic due to instantaneous teleportation, but these sonic and visual moments of teleporting invite viewers to revel in the present, in the "*time* to move on" that heartbreak requires. In these moments we consider the labor of being human and of artistry. Cher sounds her emotional labor with Auto-Tune, an emotive armor she puts on the same way she dons the persona of the clubbing woman. Critics of Auto-Tune have feared that it will erase human labor since its debut. But with a textured, emotional voice in a landscape of other digital effects, Cher sonically exposes just how much music production has always been entangled with machines. Simultaneously, her performance as a caged robot who breaks free reveals how pop stars can become machines in the cog of a powerful labor-plundering industry, but that tools like Auto-Tune offer strategic mobility from pop's polished and "correct" feminine voices. As Ragnhild Brøvig-Hanssen and Anne Danielsen discuss in relation to Lady Gaga's performance in "Starstruck" (2008), "the autotuned voice is used to stress the distance between the real person and the artistic persona."[97] In these ways, TATE is not merely a tool of capital but a self-disclosing gimmick that expresses artistic personas as well as the labor it takes to create them. TATE's reputation for being ostentatious allows artists to punch through the glossy veneer of pop production. In cases like Cher's career reinvention at age 52, TATE is not superfluous or trifling, but necessary for survival in a fast-moving industry. By baring the seams of the gimmick and acknowledging a technologically mediated artistic practice, the Cher effect allows her to craft a new persona and the hit of the present. Through Auto-Tuned voice distortion, Cher owns the labor of hit- and image-making—and paves the way for other women pop artists to do so.

[97] Brøvig-Hanssen and Danielsen, *Digital Signatures*, 127.

Taking Cher's Auto-Tuned Vision Forward: Jennifer Lopez and Her Heirs

Since Cher, overt uses of Auto-Tune in the past two decades have mostly been attributed to men.[98] T-Pain, for example, has been criticized across rap and hip-hop spheres for sounding too inhuman, most famously by Jay-Z for not having an "authentic" enough voice for rap.[99] Kanye West, on the other hand, was celebrated for his Auto-Tune-drenched *808s and Heartbreak* (2008), even though T-Pain consulted on the album. Much of Auto-Tune's critical debates have focused male rap/hip-hop artists, thus eliding the women who have been key to TATE's history but are not often remembered or celebrated for their contributions.

In one prime example, T-Pain was inspired to use Auto-Tune not by Cher, but by Jennifer Lopez, who is all but written out of Auto-Tune history. Mere months after "Believe," Lopez released "If You Had My Love," produced and remixed by Darkchild (a.k.a. Rodney Jerkins) in 1999. The single's use of TATE is more subtle than "Believe," though Darkchild echoes Cher's producers in instantly retuning select syllables. For T-Pain, the sparing use of TATE on Lopez's voice in an R&B track "sounded cool. I thought, somebody should do a whole song like that."[100] Thus began a use of TATE so pervasive that the Cher effect was rebranded as the T-Pain effect and became a gimmick ten times over. T-Pain's management team even developed an app called "I am T-Pain" where users could sing into iPhone mics and Auto-Tune their own voices. The novelty quickly wore off—as Ngai observes, gimmicks have a reputation "for producing a quick

[98] For Provenzano, "Auto-Tune is also branded, and not always felicitously, as a black male sound, and so far the market has severely limited this sounding possibility for women." Provenzano, "Emotional Signals," 381.
[99] See Jay-Z's "D.O.A. (Death of Auto-Tune)" (2009). As Provenzano reads Jay-Z's criticism of T-Pain, "Auto-Tune became a sonic marker of insufficiently aggressive masculinity and a dearth of the realness required to be a rapper, not because it altered or masked the voice but because it facilitated a kind of singing that belonged in the 'politically correct' pop world constructed for mainstream radio […] and easy commercial circulation via 'iTunes' and 'the ringtone.' T-Pain became targeted as chief among these fakers […] while other hip-hop artists, most notably Kanye West, were lauded for their 'experimental' and 'artistic' uses of the tool." Ibid, 63–64.
[100] T-Pain quoted in Ben Westhoff, *Dirty South: Outkast, Lil Wayne, Soulja Boy, and the Southern Rappers Who Reinvented Hip-Hop* (Chicago: Chicago Review Press, 2011), 225.

but immediately vanishing aesthetic payoff, which can neither begin a project nor sustain a tradition."[101] Yet the version of Auto-Tune's story that includes Lopez is cause to re-evaluate TATE as a gimmick, for her single extends Auto-Tune to a tradition that has long been integral to popular music—the riffs and hooks that have wound their way from R&B to hip-hop and pop.

Similar to Zapp's "Computer Love," Lopez's "If You Had My Love" (Darkchild Remix) incorporates modulated riffs at the ends of lines—e.g., "I need to feel true love or it's *got to end, yeah*."—and punctuations like "*baby*" and "*ooh*." The single's use of TATE on riffs links Lopez and Darkchild to a tradition of technologized soul in R&B, fueled by the use of vocoder since the 1980s. As Weheliye observes, "The interaction between the audibly mechanized and more traditionally melismatic and 'soulful' voice in contemporary R&B indicates […] a posthumanism not mired in the residual effects of white liberal subjectivity."[102] Following Weheliye, Lopez's Auto-Tuned riffs, like Cher's overt TATE, reject the presumed white male subject of cybernetics and make way for alternate versions of futurity to flourish.

Figure 4.11 Still of a male voyeur who ogles Jennifer Lopez in "If You Had My Love" (Paul Hunter, 1999)

[101] Ngai, *Theory of the Gimmick*, 64.
[102] Weheliye, "'Feenin,'" 22.

Yet Lopez's version of the future in "If You Had My Love," especially as articulated in the music video (Paul Hunter), is more fraught than Cher's. Significantly, Lopez's video continues Cher's theme of the caged pop singer and a logic of teleportation that aims to break free from the pop industry's confines. Throughout the video, Lopez dances in different parts of her house, which we see on surveillance camera footage. This footage, from a website called "Jennifer Lopez Online" created for the video, is pulled up on various users' diegetic screens (akin to the conceit in Janelle Monáe's 2018 long-form music video for *Dirty Computer*). We see Lopez mostly through the eyes of a male voyeur who peeps inside her bedroom and other intimate spaces (Fig. 4.11). The video foregrounds MTV's logic of teleporting between multiple personas in music videos, where montage knits together the star's various looks via their single, ubiquitous vocal track. Most videos hide the seams of the singer's persona-switching, but here we see the diegetic voyeur choose which version of Lopez to see next. Is he merely a gimmicky stand-in for the director's montage, or a subversive critique of a typical white male producer who wants to show the star's sex appeal first and foremost? The video "elicits images, feelings, and thoughts linked with happiness, parties, weekends, dancing, and sex," Vernallis writes. "Yet the song might be more militant than this (a feminist anthem)—a calculated bid for the Top Twenty or a personal statement. Where and to whom does this work belong?"[103]

Vernallis's uncertainty is warranted, as we also see others' screens of Lopez besides the voyeur's, such as garage mechanics who ogle Lopez while a car bursts into flames behind them, two female fans, and even young children. Unlike Cher's limited visual identifications of her foil and a mass of clubbers, Lopez hails additional spectators. Lopez's voice distortion disidentifies with traditional modes of spectatorial identification that solely focus on stars: it produces new

[103] Vernallis, *Experiencing Music Video*, 104.

and variable spectatorial relations. As Lisa Nakamura describes the video's framing of Lopez, "She becomes an object of volitional ethnicity as she is constructed as an object of the user's volitional mobility."[104] The man is portrayed as aggressive, choosing when to zoom in and out, and seems cast as the antagonist. But midway through the video, the voyeur clicks on "Jennifer's Dance," which triggers a *Matrix*-like trip through cyberspace that erupts into a Latin pop dance break. While this seems like the voyeur's choice, the sequence is the star's knowing wink at viewers, since Lopez was key to its concept of including many dance styles, from "House" to "Latin Soul," as well as the video editing as a whole.[105] Like the strategic mobility of TATE-driven teleportation, this break in the video's form allows the star and production team to reassert their dominance as authors of the music video, in an age when consumers are beginning to access music videos at their leisure through the internet, no longer dictated by TV programming.

Nakamura frames the video as contemporary with the *Matrix* films, in that the voyeurs click through and thus gain metaphorical control of Lopez's footage. "However," Nakamura writes, "unlike these films and other science fiction films, the video presumes multichanneled viewing in the context of everyday life rather than in an overtly fictional and phantasmatic future."[106] Like the "Believe" video highlights the common experience of heartbreak through the clubbing woman who swaps bodies with Cher, the "Love" video focuses on the ways everyday people watch a star. But this video interrogates what happens when that star is racialized and sexualized. In this way, Lopez's video positions elements of cutting-edge technology in an overwhelmingly present, not future, tense. The video isn't so much focused on future progress as

[104] Lisa Nakamura, *Digitizing Race: Visual Cultures of the Internet* (Minneapolis: University of Minnesota Press, 2008), 26.
[105] Jessica Earnshaw, "Jennifer Lopez, 49, Writhes Around in Sequin Stockings and Lingerie in JAW-DROPPING Scenes," *Express (Online),* August 16, 2018.
[106] Nakamura, *Digitizing Race*, 21.

it is on the way the fast-growing Internet will change the way stars are marketed—in Nakamura's words, a "webbed voyeurism, evoking the visual cultural of liveness through Webcams, and a particular sort of eroticized, privileged view of the star [… that] helped to determine [music videos] that came after."[107] Lopez's video, like Cher's, invented new forms of MTV's logic of teleportation, albeit in two directions. Cher's marked teleportation is more science fiction than Lopez's, which accords with Cher's more overt use of Auto-Tune. Lopez's video of webbed surveillance nods to a future of MTV that is processed by the internet, both formally—heralding algorithmic logics of music video editing in the 2010s[108]—and technologically, as YouTube supplanted television as the platform of music video distribution.

These two videos are groundbreaking in their visual and sonic persona effects, as stars teleport across sites and screens motivated by uses of TATE as a self-disclosing gimmick. Cher's video ultimately reads as self-reflexive artifice, where Cher manipulates her androgynous voice to critique the constructedness of contemporary pop stars who pass as natural and authentic. In Lopez's track and video, TATE is more feminized and sexualized than Cher's cutting-edge effect, but it still self-discloses its gimmickry with visual imagery that prompts critique of the music industry's fixation on stars' sex appeal. After Lopez, TATE accompanies sexualized personas such as the hyper-promiscuous Ke$ha, who is coded by critics as a juvenile brat. In the late aughts, the hypersexualized female voice is paralleled in T-Pain's use of TATE in tracks like "I'm Sprung" (2005) and "Buy You A Drank" (2007). As Ke$ha's and T-Pain's frequent TATE

[107] Nakamura, *Digitizing Race*, 23–24.
[108] Algorithmic editing is not just seen in 2010s music videos, but also in database cinema and short films, like Arthur Jafa's 2016 video compilation *Love is the Message, the Message is Death*. Jafa combines found and original footage across a century of Black media representation using a mode of algorithmic editing: Jafa sets the images to Kanye West's *Ultralight Beam* but instead of audio-visual tracks separated by time or causality, Jafa uses rhythmic, lyrical, and affective features of West's song to create "sets of affinities between kinds of movement, particularly those innovated and/or expressed through bodies of Black folk" (Kara Keeling, *Queer Times, Black Futures*, 139).

uses circulate in the mainstream, TATE loses potential for disidentification that is political and self-disclosed because it capitalizes on commercial appeal.

But in the mid-2010s, TATE swings back closer to Cher's self-reflexive aesthetic of artifice. Hyperpop artists such as Charli XCX embrace TATE with mechanical-sounding vocal effects. In Charlotte Rutherford's May 2020 video for "claws," Charli XCX and her production team set the bar for artists to get creative with their music videos at the beginning of COVID-19 lockdown. The video strips down the glossy production aspect of many pop videos with a behind-the-scenes shot from Charli's phone of her basement set before the video begins.[109] She bares the video's illusion of a green screen, which at first seems incredibly minimalist and low-budget. But then the green screen is maximized by the bubblegum pop production and lyrics—a glittering hyperpop jam produced by Dylan Brady of 100 gecs—and the range of Charli's outfits and screen backgrounds, from cars and rainbows to animated butterflies and robots (prompting one YouTube commenter to say, "I think it's safe to say this is the best character development in the music industry"[110]). The robot, which has the letters XCX emblazoned on its chest, appears when TATE is most heavily applied to Charli's voice—which is Auto-Tuned throughout[111]—in the bridge, as if nodding to Auto-Tune's cybernetic associations. When the bridge plays a second time, the green screen displays a metallic snake coming out of a woman's mouth, a more novel image to accentuate the inhuman-inside-the-human (Fig. 4.12). And yet, this is the same imagery used by Antares Throat, a plug-in that debuted in 2006 (Fig. 4.13). Throat is a "Physical Modeling Vocal Designer" that allows users to "adjust the shape of the lips, mouth, throat, vocal

[109] Meaghan Garvey, "Charli XCX: Stress-Cried a Lot while Recording Her Entire New Album in Quarantine," *New York* 53, no. 10, May 11, 2020.
[110] Babies4food, March 2021, on Charli XCX, "Charli XCX – claws [Official Video]," May 1, 2020, https://www.youtube.com/watch?v=WAo8X-rIt8k.
[111] As one critic put Charli XCX's use of Auto-Tune, "she's been known to sing like an anthropomorphic AOL dial tone or a glitched-out 'femme-bot' deep in the uncanny valley of AutoTune." Meaghan Garvey, "Charli XCX."

cords" with knobs that stretch, squash, widen, and constrict them, thus "go[ing] beyond the limits of human anatomy."[112] Charli XCX has acknowledged her embrace of Auto-Tune in several venues, and in the video, she revels in its artifice to cheekily create multiple personas. Via the strategic mobility afforded by TATE and the green screen, Charli XCX leans into Auto-Tune's nonhuman associations in the robot and snake imagery. As her lyrics suggest, she stages these figures to comment on the new intimacies she is navigating in her relationship with her boyfriend during Covid—as humans spend increasing hours with computers and pets—and to also wink at her self-disclosing use of TATE.

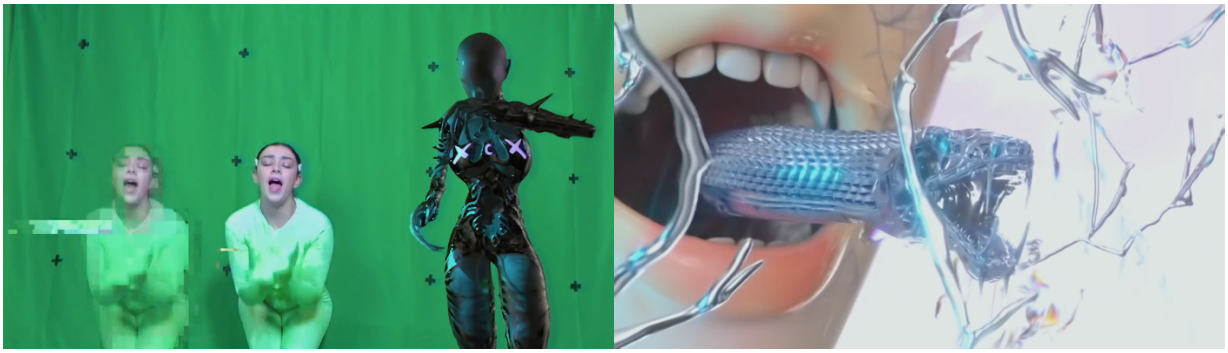

Figure 4.12 Stills from Charli XCX's "claws," paralleling Antares Throat imagery (Charlotte Rutherford, 2020)

Figure 4.13 Screenshot by the author of the Blog section of the Antares website

[112] Antares Audio Technologies, "Throat: Physical Modeling Voice Design Plug-in," August 4, 2020, https://www.youtube.com/watch?v=5xp9szeJrzA.

Charli XCX has worked with producers associated with PC Music, the London-based record label and artist collective, including the trans singer/producer SOPHIE. For critic Joe Lynch, PC Music artists combine "Auto-Tune, saccharine synths and ear-splitting distortion to make music that both celebrates and parodies the mainstream."[113] SOPHIE's own music exemplifies this hyperpop hard candy that bites back—in the face of Charles Passy, an early critic of Auto-Tune in Cher's "Believe." SOPHIE's tracks push Auto-Tune further into distortion than Charli XCX, who typically uses it electrify her own vocal range. By drawing attention to the constructed voice, SOPHIE critiques norms of gender performance. For example, in "Immaterial" (2018), a bouncy hit reminiscent of "claws," SOPHIE uses Auto-Tune to pitch her collaborator Cecile Believe up several octaves, akin to the Chipmunks. As Geffen hears the track, "Sophie nods to pop icon Madonna's 1984 hit 'Material Girl' while gently undermining the restraints of material reality, outlining a vision of consciousness unburdened by the body's narrow social connotations."[114] Through Auto-Tune, SOPHIE voices experiences that disidentify with the way society conditions bodies for certain gender norms, as her album art and other music video imagery also attest (Fig. 4.14). SOPHIE pushes artifice to its breaking point in both voice and body, to show what new forms of creation rise from the ashes of social norms.

Figure 4.14 Still of "Faceshopping" (SOPHIE, 2018): SOPHIE pushes artifice to destruction

[113] Joe Lynch, "Hyperpop Pops Off," *Billboard* 133, no. 8, June 5, 2021, 68.
[114] Geffen, *Glitter Up the Dark*, 214.

In SOPHIE's wake (d. 2021), artists like 100 gecs have continued the hyperpop trend of distorting vocals to new heights. Trans artist Laura Les of 100 gecs "pitches up her vocals, puts a lot of Auto-Tune in there and uses that to scream and express all that raw emotion."[115] Les distorts her voice to high-pitched chipmunk levels in the track "Money Machine" (2019) to pose as an inflamed trucker (Fig. 4.15). The track's music video is reminiscent of The Gregory Brothers' *Auto-Tune the News* videos, a YouTube sensation that arose in 2009 with Auto-Tuned news footage that satirized public media institutions. Les and Brady mimic their aesthetic of sensationalized everydayness for a critique of the "money machine" that conversely does not seek to monetize the internet like the Gregory Brothers. As Paula Harper observes, "[T]he use of Auto-tune by the Gregory Brothers and other copycats across the late 2000s and early 2010s served to standardize acts and practices of objectification, flattening out voices and converting human subjects into pre-musical potentially-viral data."[116] Les and Brady pose as rappers in an over-the-top gimmick that pokes fun at truckers, which initially looks like a similar type of flattening to the Gregory Brothers. However, when 100 gecs flatten their own voices with Auto-Tune they also apply glitch effects to their own images in the video, thus evading objectification. In the "pulsing, cavity-inducing" throes of "Money Machine,"[117] Auto-Tune becomes a self-disclosing gimmick that *critiques* manufactured ideals of money-making—like Cher critiqued commercial pop star personas.

[115] ElyOtto (aka Elliott Platt) quoted in Lynch, "Hyperpop Pops Off," 68.
[116] Paula Harper, "Unmute This: Circulation, Sociality, and Sound in Viral Media," Ph.D. diss, Columbia University, 2019), 160–61.
[117] Larry Fitzmaurice, "100 gecs: *1000 gecs*," *Pitchfork*, July 27, 2019, https://pitchfork.com/reviews/albums/100-gecs-1000-gecs/.

Figure 4.15 Screenshot of 100 gecs' audio-visual distortion in "Money Machine"

By using Auto-Tune to instigate audio-visual distortion as a form of critique, 100 gecs and other candy-coated hyperpop uses of TATE weave together Top 40 aesthetics with self-reflexive artifice, coming full circle back to Cher (and, indeed, to Anger and Rubin in Chapter 1). Following this trajectory, has TATE not become a sustained tradition, opposing Ngai's observation that gimmicks have an "immediately vanishing aesthetic payoff"? Over two decades, Auto-Tune artists dig into TATE's gimmicky status to disidentify with mainstream aesthetics. By using TATE as a tool of self-fashioning, these artists open up ways of expressing varied identities—aging, racialized, feminized, and trans—that disrupt a pop industry that would hold them to narrow norms of "authentic" voices.

Coda: The Persona Effect as Strategic Evasion: Caroline Polachek and the TATE Voice

When artists deploy TATE to evade the pop industry's confines of commercial personas, a sonic and visual politics of evasion becomes central to TATE's persona effect. Cher's and Lopez's videos both hinge on surveillance and the visual mediation of stars: when TATE puts them in the critical spotlight, they use teleportation and disrupt normal ways of seeing stars in music videos to evade visual forms of capture. TATE could be thought as a sonic correlate to facial distortion

technologies used to disrupt systems of surveillance and facial recognition. In a strategic form of evasion, TATE artists distance themselves from identity norms in pop.

Evasion is key to the sonic and visual logic of the music video for "Bunny is a Rider" (Caroline Polachek and Matt Copson, 2021), a song co-produced by singer Caroline Polachek and Danny L Harle, a former producer for PC Music. But as it turns out, Polachek also evades the use of technology to create TATE. Polachek, once the ethereal synth-pop voice of Chairlift and now a solo artist (and collaborator with Charli XCX), can modulate her voice to sound like TATE without its typical material constraints. Often, she sounds like Auto-Tune set to low retuning speeds because she snaps between notes seemingly effortlessly. But similar to the labor involved in creating and perfecting TATE that Provenzano cites, Polachek has an elaborate practice and warm-up routine to keep her voice limber for ultra-melismatic runs. Evasion, after all, is hard work, is strategic mobility. As Jia Tolentino observes, "Many of her songs contain synthetic-sounding vocal slips that a listener might attribute to Auto-Tune, but which Polachek achieves by flipping sharply between her head voice and her chest voice."[118] Her feats of vocal labor are matched by her artistic vision for the video, where teleportation—a visual effect present even without the use of Auto-Tune technology—becomes a form of strategic mobility and evasion like it does for Cher. Teleportation is the visual legacy of TATE from 1998 on.

In the 2021 video, the single's slick, exacting beats translate to dance moves that robotically snap in place and freeze, akin to popping and locking in hip-hop and funk.[119] At the same time, the lyrics emphasize evading others' gazes ("satellite can't find her"). For Polachek, the song is "about freedom via disappearance […] the power of non-response, which is [a] freedom that we barely have. It's also about the sexiness of being mysterious and being

[118] Jia Tolentino, "Vox Pop," *The New Yorker* 97, no. 29, September 20, 2021.
[119] For more on these dance traditions, see Sally Banes, *Writing Dancing in the Age of Postmodernism*, 121–58.

unavailable."[120] The video parallels Lopez's in its surveillance of a woman in close quarters; there is a similar tension in wanting versus not wanting to be seen. As Cat Zhang writes, "[Polachek] may be channeling the want to be immaterial, the ability to evaporate like a wisp of smoke, but when she sings *'I'm so nonphysical,'* it comes with embodied longing, as if she's aching for touch."[121] To Zhang's point, Polachek's video creates in- and out-of-body teleportation through the prop of an armband (Fig. 4.16), which recalls Laura Croft's superhuman athleticism in the *Tomb Raider* franchise.

Figure 4.16 Still of Caroline Polachek's teleportation in "Bunny is a Rider" (Caroline Polachek and Matt Copson, 2021)

Polachek uses her armband to beam herself to different parts of a maze built out of cardboard boxes. This scenery emerges from Polachek's character of Bunny, "this imagined version of myself or of anyone who's liberated [… in] being unbeholden to anyone. And that's when we thought of the maze, like disappearing from camera in this environment, that's really tricksy and really dynamic." Polachek created a maze of labeled boxes that resembles her own storage facility, which over the last several years "has been kind of like a mythical and terrifying

[120] Caroline Polachek quoted in Jasmine Kent-Smith, "Caroline Polachek on *Bunny is a Rider* and Collaborating with Danny L Harle," *Crack Magazine*, July 15, 2021, https://crackmagazine.net/article/profiles/caroline-polachek-on-bunny-is-a-rider-and-collaborating-with-danny-l-harle/.
[121] Cat Zhang, "The 100 Best Songs of 2021: Caroline Polachek, 'Bunny is a Rider,'" December 6, 2021, https://pitchfork.com/features/lists-and-guides/best-songs-2021/.

place for me where all my belongings are" and sparked the inspiration to recreate the myth of Theseus and the Minotaur in the Labyrinth.[122] While the box maze could represent Polachek's entrapment by the pop industry, it also invites associations with animals through the image of a caged bunny being pursued by the Minotaur. The Minotaur shadows her as she dances through the maze in snappy motions that emulate those of her voice. By foregrounding animals and machines, figures that have accompanied voice modulation since the 1930s, Polachek crafts her own audiovisual myth of the iconography of the TATE voice aesthetic.

As Polachek reveals, TATE has evolved into a persona effect that a voice can activate without the use of Auto-Tune software. The ubiquity of Auto-Tune across pop has led some singers to teach themselves to imitate TATE's aesthetic of flattening the pop voice—some for personal expression, like Polachek, and some for a gimmick, like the teenage singer Emma Robinson, who went viral for her imitation of Rhianna's "Stay."[123] Although Robinson produced TATE with own physical mechanism, critics repeatedly accused her of secretly using Auto-Tune, convinced that it was a trick. Polachek, however, is vehement about not using Auto-Tune.[124] To emphasize the superhuman step-like quality of her voice in the video, Polachek teleports among her boxes as she tries to outrun the Minotaur, which seems to become a metaphor for the commercial expectations that Polachek faced when Chairlift suddenly hit it big with their song "Bruises" in a 2008 Apple iPod Nano commercial. Since then, Polachek has been running from pop perfection in search of her own aesthetic of being unbeholden to the status quo. By invoking TATE's long-associated animal and machine images, the video suggests her efforts to evade the

[122] Caroline Polachek, "Caroline Polachek - Bunny is a Rider (Official Behind the Scenes)," August 12, 2021, YouTube, https://www.youtube.com/watch?v=gN79hNFRqu8.
[123] Emma Robinson, "Stay – Rihanna (Cover)," YouTube, July 3, 2013, https://www.youtube.com/watch?v=CXypB4tOlOc.
[124] To my ear, "Bunny" seems to have hints of Auto-Tune when Polachek repeats the final syllables of the chorus outro, but this may instead be created by the low-pass filter that makes her Lopez-like riff sound far away.

pop industry's negative labels of voice modulation. She achieves a quality of being unbeholden sonically in her independence from Auto-Tune by being able to emulate it with her own voice, and visually in metaphors of teleportation that refuse to be pinned down as one authentic self.

With her Tomb Raider persona, Minotaur myth, self-pastiche of the storage room, and more, Polachek weaves together several personas, from animal and machine to myth and popular culture. She connects these personas through the visual motif of teleportation, which has continued from Cher's video as a 23-year tradition of singers who use TATE to break out of commercial pop molds and create their own personas. While Provenzano sets out to show "why female pop voices are disproportionately molded into smooth, effortless-sounding singing voices, and why male voices more often are allowed to show the means of production, whether those means be the body, the software, the mediating technologies,"[125] I have argued that many women artists have used Auto-Tune to show the efforts of producing so-called "natural" pop personas. Far from Auto-Tune only taming women's voices in the pop sphere, a trajectory of women across different genres since Cher have used it to celebrate the artifice involved in artistry through Auto-Tune's persona effect. In their voices and their music video imagery, their pitch-shifted personas complicate Auto-Tune's gimmicky status as they instead use it to critique a pop music industry bent on reproducing gimmicky commercial personas for a hit machine.

Women artists who use Auto-Tune to create personas participate in a long tradition that has been anything but a gimmick for the ways TATE has advanced minoritarian expression in the pop industry and audiovisual aesthetics in music videos. Via contemporary tropes of science fiction, nonhumans, and more, singers use Auto-Tune to recast their voices and appearances and to refashion social categories, abilities, and networks. Through visual and sonic motifs of

[125] Provenzano, "Emotional Signals," 35.

teleportation and personas in music videos, artists use Auto-Tune to take their labor back from the pop grind of commercial personas and to express themselves outside of industry constraints. From Cher on, Auto-Tune's logic of teleportation—of stepping outside of the box or critiquing the box from within—suffuses pop culture: artists modulate their voices to also modulate social relationships, beaming up new visions of themselves and of society. Auto-Tune is so much more than its reductive reading as pitch correction technology. Via the strategic mobility, evasion, and disidentification that TATE affords, artists turn a software from uses of correction to ways of synthesizing and creating pitch anew.

Conclusion

MUSIC'S NEW VISUAL WAVES: Synthetic Pop Stars in Vocaloids, Deepfakes, and COVID-Era Videos

> [I]n the '70s, Miles Davis criticized hip-hop as "artistic necrophilia" for relying on the past artistic decisions in our shared archive. I disagree with him, but I love that phrase. With AI, you could have a Tupac hologram and create an entirely new Tupac catalogue using his voice model, and it could be something he would've never opted for. What does it say about us as a society that we keep reanimating the dead for our entertainment?
>
> Holly Herndon[1]

While Auto-Tune leads this study up to the present day, the story of popular music's visual shockwaves by no means ends with digital voice modulation software—it continues in the ways in which the voice of a pop singer becomes fully synthetic, not just modulated. Two 21st-century technologies make this possible: vocaloids and deepfakes. But 2020 also ushered in a new wave of visualizing the pop voice and its extrication with digital technology. The COVID-19 pandemic posed several challenges to vocal and music video production, which had to be done remotely and often resulted in animated videos. The following three case studies examine recent entanglements of popular music with technology that in turn become associated with particular visual motifs, including AI, surveillance, and digital mediation. These cases extend this study to the latest technologies and also anticipate further audiovisual aesthetic developments.

Hologram Waves

Seven years after Auto-Tune blurred the lines between humans and machines, Yamaha debuted the voice synthesis software Vocaloid. While Auto-Tune temporarily manipulates voices, Vocaloid gives users access to fully synthetic voices. Vocaloid software is sold as a boxed set of thousands of samples recorded by one singer. These singers record for approximately eight hours

[1] Emily McDermott, "In the Studio: Holly Herndon," *Art in America* 108, no. 1 (2020): 70.

a day for five days to create extensive combinations of consonants, vowels, and pitches for users to manipulate. While not the first voice synthesis program, Vocaloid allows songwriters to type in their desired lyrics and pitches and have them sung back by the prerecorded voice bank. Vocaloid software is like a complex musical version of text-to-speech, where users choose a particular voice—called fonts, fitting with the text-to-speech metaphor—and can add dynamics, vibrato, and more. Initially, Vocaloid software could sing only in English and Japanese, but Vocaloid 3, released in 2011, expanded to Spanish, Korean, Mandarin, Spanish, and Catalan.[2] The additional languages broadened the software's appeal, but the way it would become a cultural phenomenon was by packaging each singer's voice bank with a fictional name and image on the box cover art.[3]

Vocaloid companies market their boxed singers with a particular set of traits which, as Nina Sun Eidsheim details, has sometimes drawn on racial profiling. The first released vocaloids were named Lola and Leon, advertised as soul singers but recorded by two Black artists who sang a range of genres. Eidsheim describes how the marketing company Zero-G "conflated blackness and soul" both aurally and, to a hyperbolic extent, visually, on the box's packaging. As she writes, "Lola and Leon are portrayed as full lipped, with lips protruding, offering up a voice (or perhaps a body) and cropped very close in order to eliminate any association with a specific person. These voices are wrapped in imagery that plays on blackface iconography."[4] The singers' likenesses influenced the ways users imagined the vocaloid's racial identity and the musical genres they composed with it. And as vocaloids grew in popularity, "users have also

[2] Nina Sun Eidsheim, "Race as Zeros and Ones: Vocaloid Refused, Reimagined, and Repurposed," from *The Race of Sound Listening, Timbre, and Vocality in African American Music* (Durham: Duke University Press, 2019), 119–120. Some of the voice banks, like Miku's, are trilingual, with Japanese, English, and Mandarin.
[3] An exception is the third voice bank, named Miriam after the real-life singer Miriam Stockley, who did the recordings and who is pictured on the box cover.
[4] Eidsheim, "Race as Zeros and Ones," 121.

envisioned different *visual characters* for them" in fan art and music videos.[5] With the 2007 release of the most popular vocaloid to date, Hatsune Miku, the Japanese company Crypton Future Media widened the potential for fan art by giving Miku more physical and visual parameters than Lola and Leon, which then broadened the range of fan-created personas.

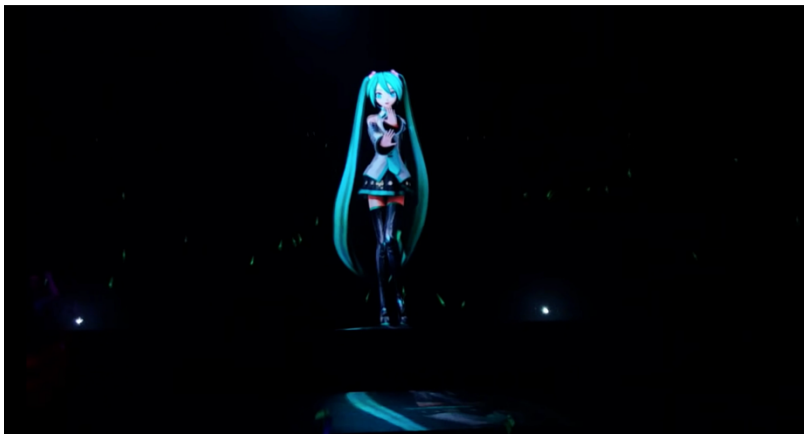

Figure 5.1 Still of Hatsune Miku hologram performing "Miku" by Anamanaguchi in 2016

Crypton marketed Hatsune Miku—whose name means "the sound of the future"—as a virtual idol, a popular form of entertainment in Japan that includes imaginary figures like Hello Kitty and Sailor Moon. As these idols' likenesses are inscribed all over visual culture, giving Miku an image in turn made her voice more spreadable on various media platforms.[6] Part of Miku's spreadability can be attributed to the openness of Miku's physical parameters—Crypton only described Miku as 16 years old, five feet and two inches, and 93 pounds. Her box art portrays an anime-style girl with blue pigtails and long legs, based on a design by graphic novelist Kei Garō, but she lacks a backstory so that fans have open license to dream up multiple personas for her (Fig. 5.1). While for Kai Arne Hansen, "narratives concerning pop artists' identities are partly defined also by journalists, critics, and audiences, whose responses to the

[5] Eidsheim, "Race as Zeros and Ones," 130.
[6] On the term spreadable as an alternative for viral media, see Henry Jenkins, Sam Ford, and Joshua Green, *Spreadable Media: Creating Value and Meaning in a Networked Culture* (New York: New York University Press, 2013).

persona play a part in shaping it,"[7] fans play a leading role in constructing Miku's personas—which ushers in a new wave of fan participation in popular media.

Importantly, Miku is not a persona of the Japanese voice actress who created her vocal samples, Saki Fujita, but a digital near-blank slate that her fanbase designs. For Ken McLeod, "Her fans are responsible for the entirety of her creative output—songs, videos, mythology, and personality—though Crypton controls her visual appearance and voice."[8] Yet Crypton does not own these in a legal sense—Miku is under a license similar to Creative Commons that permits non-commercial uses.[9] Giving fans permission to audiovisually remake Miku upends the typical industry-manufactured imagery of pop stars and even Hansen's model of transmedia personae. For fans can express Miku according to their desires, both aurally and visually. The more people remake her, the more alive she seems—and the more her songs rise to the top of karaoke lists.

The driving force of participatory culture around Miku was the video-sharing platform Niconico (formerly Nico Nico Douga), which launched in 2006 just before Miku's voice bank did. Niconico, coupled with the user-friendly freeware animation program MikuMikuDance, spurred a panoply of ways to visualize Miku's synthetic voice, especially in fan-made music videos. Like YouTube, Niconico includes user commentary on videos, but to a greater extent: Niconico users' comments scroll across the screen in real time and instill a collective experience of watching the video. Accordingly, Miku's fan community is intensely visual, so much so that visualization software has been developed to reveal the extent of Niconico users' collaborations. As Alyssa Michaud summarizes Miku's audiovisual spreadability, "Fans feel a sense of agency

[7] Kai Arne Hansen, "(Re)Reading Pop Personae: A Transmedial Approach to Studying the Multiple Construction of Artist Identities," *Twentieth-Century Music* 16, no. 3 (2019): 501-529, 505.
[8] Ken McLeod, "Living in the Immaterial World: Holograms and Spirituality in Recent Popular Music," *Popular Music and Society* 39, no. 5 (2016): 501–515, 505.
[9] Rafal Zaborowski, "Hatsune Miku and Japanese Virtual Idols," *The Oxford Handbook of Music and Virtuality*, eds. Sheila Whiteley and Shara Rambarran (Oxford: Oxford University Press, 2016), 111–128, 116.

and ownership in the bottom-up production process through which anyone can create and upload a song that expresses their feelings, and the way in which amateur works can be developed through the contributions of other amateurs who feel an emotional connection to the music and respond in an artistic way"—and, I would add, a highly visual one.[10] Miku's voice has been used in every genre from pop to opera and death metal,[11] and has spawned bands like Supercell, where visual artists outnumber the founding musician, Ryo (who began by using Miku's voice bank and then turned to human singers) by about 10:1. The synthetic pop star has become a thoroughly visual affair, from fan- and artist-made videos to concerts, which feature Miku in hologram form.

Miku gives tremendously popular live concerts as a rear-projected hologram. The Miku hologram has appeared in a 2009 Tokyo concert produced by SEGA and Crypton, ads for Toyota Corolla, a 2014 Lady Gaga tour (as her opener), and the *Late Show with David Letterman*. Miku has also been remixed by Pharrell Williams and featured on an album produced by SOPHIE for the Japanese artist Namie Amuro. In only a few years, Miku went from a voice in a box to a frequent collaborator with famous artists and a billboard for corporate interests. Her concerts showcase a participatory culture, as fans commune with the hologram by synchronizing their glowsticks (from the color to the direction they wave them), learning choreography from Miku videos, and even dressing up as her. These visual expressions of Miku's music playfully acknowledge the synthesized nature of both vocaloids and holograms, and the pleasure of co-constituting Miku by creating songs, music videos, looks, and choreography. Hologram concerts

[10] Alyssa Michaud, "After the Music Box: A History of Automation in Real-Time Musical Performance" (Ph.D. diss., McGill University, 2019), 198-9. See Michaud, Chapter 4, "Vocaloid's Online Culture: Community and Creativity" (177-206), for extensive discussion of the platforms and tools mentioned in this paragraph.
[11] Sarah A. Bell, "The dB in the .db: Vocaloid Software as Posthuman Instrument," *Popular Music & Society*, 39, no. 2 (2016): 222–240, 227.

collapse the distance between fan and star, reflecting the intimate interactions between fan and idol in Japan that contrast with the ways Western pop stars often are put on pedestals.

Visual platforms, whether Niconico or the concert hologram, fundamentally shape Miku's pop star image and reframe debates raised in the previous chapter about a pop star's authenticity and artificial constructedness. For example, critics often compare Miku to Lady Gaga. For McLeod, writing about her visuality, Miku looks "as 'real' as any other traditionally constructed pop star. (Indeed, how 'real' is Lady Gaga?)."[12] And as for Miku's voice, Louise H. Jackson and Mike Dines believe that "there is little difference between an external manipulator working with samples and what is employed on a recording of Lady Gaga, for example."[13] For these critics, Miku's voice and image lay bare pop industry conventions that construct ideal personas to market them. Like the women artists who use Auto-Tune to construct personas against pop industry ideals, Miku's makers—the fans—flaunt her synthetic voice to write their own version of what her story and songs should be. As Katherine Meizel explains, "Vocaloid voices capitalize on and tend not to disguise their technological manipulation; the transitions between phonemes, their onsets and offsets, can sound mechanical to listeners."[14] Like TATE's purposefully digital sound and imagery, vocaloid users celebrate the digital constructedness of their personas. Like Baudrillardian simulacra, Miku proliferates in digital spaces as a virtual image and voice that sings and dances in multiple places at once. But Miku's digital reproducibility in fan art and YouTube channels comes with creators' signatures, revealing the human effort behind them, from Fujita's vocal samples and Vocaloid software engineers to the

[12] McLeod, "Living in the Immaterial World," 508.
[13] Louise H. Jackson and Mike Dines, "Vocaloids and Japanese Virtual Vocal Performance: The Cultural Heritage and Technological Futures of Vocal Puppetry," in *The Oxford Handbook of Music and Virtuality*, eds. Sheila Whiteley and Shara Rambarran (Oxford: Oxford University Press, 2016), 107.
[14] Katherine Meizel, *Multivocality: Singing on the Borders of Identity* (New York: Oxford University Press, 2020), 160.

users who manipulate the voice and image. Their labor is what enables this digital, and particularly visual, spreadability: the iterability of the machinic voice samples and of portraying Miku in different art styles and venues allows users to customize her personas.

Miku accommodates a wider range of backstories than the average pop artist, who is saddled with the common Western philosophical belief that the voice is a unique sonic fingerprint of oneself. As Eidsheim shows, no voice is ever unique to one person but is conditioned by many different factors: listeners learn to associate the voices they hear over time with the cultural values and stereotypes of their own family and community. In other words, human instinct leads us to match a voice to a particular image of a body according to our learned expectations. But the thousands of different audio-visual iterations of Miku challenge that direct matching of voice to body, whether she's drawn in different styles or sings in unexpected genres. The case of Miku hyperbolizes the way in which a pop artist's voice is not singularly "authentic" to them but is created by collaborations between recording artists, producers, technicians, and fans. As Rafal Zaborowski observed at a Miku hologram concert, "Her dynamic, crowdsourced personality was what audiences used to evaluate the experiences in terms of authenticity and reality"—Miku felt real to fans because they'd imbued her with their fantasies across media.[15] While the blue-pigtail image prevails across different users' renditions of her, they vary considerably in depicting her personality, from babyish to pornographic, and from punk rock to traditional Japanese dress. A common conception of synthetic voices is that voice can be boiled down to 0s and 1s, abstracted data that becomes a person's essential expression of themselves. But like personas, voices can be tried on in different styles for different contexts. Miku, as the

[15] Rafal Zaborowski, "Fans Negotiating Performer Personas: 'Melt' by Ryo feat. Hatsune Miku," *Suomen Antropologi* 43, no. 2 (Summer 2018): 104–108, 107.

ultimate persona-producing machine, is an important visual aid for understanding the range of personas that a pop star can have.

Synthetic Waves

Software developments since 2003 introduced increasing ethical tensions into the simulation of singers' voices and likenesses. On the eve of Vocaloid's debut, a *New York Times* reviewer wondered if the software heralded "a time when anyone with a laptop will be able to repurpose any singer's voice or even bring long-gone virtuosos back to life."[16] In 2012, the latter came true not through Vocaloid software, but through a hologram at the Coachella Valley Music and Arts Festival. Tupac Shakur, who died in 1996, appeared as a virtual figure via the Musion Eyeliner projector system alongside Dr. Dre and Snoop Dogg. Samples from recordings and concert footage, as well as digital simulations, made up Tupac's voice. While Afeni Shakur, Tupac's mother, gave permission to Dr. Dre to use Tupac's likeness, the audiovisual illusion nevertheless elicited a response from audiences that recalls Freud's uncanny. As McLeod observes, "Audiences are paradoxically attracted to the familiarity of the hologram while simultaneously being repulsed by its seemingly artificial, trans- or post-human unfamiliarity."[17] This mixture of delight and disgust recalls the two-pronged aesthetic judgement involved in Ngai's theory of the gimmick. When faced with a celebrity's likeness that appears fully synthetic, audiences wonder whether they should revel in the resurrection's power to activate old memories, or whether technology should leave dead enough alone.

[16] Bill Werde, "Could I Get That Song in Elvis, Please," *New York Times*, November 23, 2003, http://www.nytimes.com/2003/11/23/arts/music/23WERD.html.
[17] McLeod, "Living in the Immaterial World," 510.

While 2012's technologies could not yet fully synthesize Tupac's voice, around 2017, deepfakes would make it possible to make a dead celebrity say anything technicians desired. As the electronic musician Holly Herndon puts it, "With AI, you could have a Tupac hologram and create an entirely new Tupac catalogue using his voice model, and it could be something he would've never opted for. What does it say about us as a society that we keep reanimating the dead for our entertainment?"[18] But deepfakes do not only use dead celebrities. Though technological resurrections are ethically dubious, so are deepfakes' current ability to make a politician or actor say and do things they never did.

The term deepfakes combines "deep learning" and "fakes." Hours of audio-visual recordings of the target subject are run through an algorithm that boils down the essence of how that person typically looks and sounds. Much of deepfakes' power comes from GANs (*Generative adversarial networks*), or two neural networks that generate fake footage: one that can identify real audio or video, and one that, as the name adversarial suggests, tries to create audio and video that will fool the other network.[19] GANs aid deepfake creators in mashing up video and audio clips into a video of a simulated person who can lip sync any audio one desires—in fact, researchers call these lip-syncing deepfakes. Sometimes, as in the case of Jordan Peele's 2018 deepfake of Obama as a PSA for Buzzfeed about disinformation threats, an impersonator (Peele) reads a script on camera, and his footage is composited into footage of the targeted subject.[20] Through compositing audiovisual footage from an impersonator or stock video onto a target subject, and GANs that synthesize the impersonating voice with an archive of

[18] McDermott, "In the Studio: Holly Herndon," 70.
[19] Will Knight, "Fake America Great Again," *MIT Technology Review* (August 17, 2018).
[20] BuzzFeed Video, "You Won't Believe What Obama Says In This Video! 😉," YouTube, April 17, 2018, https://www.youtube.com/watch?v=cQ54GDm1eL0.

the target subject's vocal samples, deepfakes aim to reproduce a person's truest voice and likeness.

Since deepfakes rely on training sets of data from the past, or an impersonator's knowledge of a celebrity, they employ prior, well-known instances of a celebrity's public appearances to convince audiences that the synthetic audiovisual manifestation is the person they know and love. In just the past few years, several celebrities and political figures, from Tom Cruise to the Queen of England, have been deepfaked. The glut of video and audio footage of celebrities and politicians online feeds the large data sets required for algorithms to accurately produce deepfaked images and voices.[21] At the time of this writing, however, this is nowhere near a fast or automated process. Countless hours are required for neural networks to run and synthesize footage, and significant human manipulation is needed to composite or edit footage to make the synthesized version as much of a celebrity look-alike—and sound-alike—as possible.[22] As with vocaloids, Auto-Tune, the Fairlight CMI, magnetic tape, and transistor radios, deepfakes still operate at the fulcrum of the human hand—in the labor involved in creating them and the ability to use them for commercial or creative purposes. Human biases, such as the will to see a person's public persona as their private self, shape how deepfakes produce not the spontaneous variability of expression, but the particular traits people exhibit during public or political performances. Deepfakes feign to know a person's one true face and voice intimately, yet they merely abstract the sum of a person's parts from official footage. The only "real" face and voice

[21] Jan Kietzmann, Linda W. Lee, Ian P. McCarthy, and Tim C. Kietzmann, "Deepfakes: Trick or Treat?" *Business Horizons* 63, no. 2 (January 1, 2020): 135–46, 139.

[22] Take, for example, the 2021 Tom Cruise deepfakes designed by Belgian visual effects artist Chris Ume. Ume took two months to train the open-source DeepFaceLab algorithm on footage of Cruise; Miles Fisher then impersonated Cruise based on hours of studying Cruise's mannerisms. Ume spent weeks editing the deepfakes frame-by-frame with CGI to address glitches. See James Vincent, "Tom Cruise deepfake creator says public shouldn't be worried about 'one-click fakes,'" *The Verge* (March 5, 2021), https://www.theverge.com/2021/3/5/22314980/tom-cruise-deepfake-tiktok-videos-ai-impersonator-chris-ume-miles-fisher.

audiences witness is a celebrity's put-on public persona, which is more often than not mobilized to bring singers back from the dead or to otherwise attribute music and actions to people who don't authorize them.

In their insistence on replicating a celebrity's "truest" persona, deepfakes parallel Auto-Tune's logic of pitch correction, which assumes that there is one correct way to sing—on key. Thus, the internal logic of deepfakes is at odds with vocaloids' multiple and flexible personas created by participatory culture. But there are interesting resonances between the two synthetic media: as Daniel Black points out, Vocaloid software and MikuMikuDance allow "all aspects of idol performance [to] be created by the fan—Miku can sing a song she has never before sung and do a dance she has never before performed at the behest of her *otaku* owner."[23] Miku becomes a puppet for other people's designs, but fundamentally she has been designed as a participatory product. Deepfaked people, however, often do not consent to being synthesized. And while the infrastructures of Miku's celebrity—Vocaloid, Niconico, concerts—openly celebrate fans' collaboration, deepfakes hide their authorship altogether to convince audiences that they really see that person in the flesh. Therefore, instead of Miku's overt multi-authorship, deepfakes boil down the supposed essence of a celebrity's voice and likeness to make them instantly believable to audiences as the "correct" and true form of that person. Like Auto-Tune's one true version of pitch, ideals of true and false voices are endemic to deepfake technology.

However, like the women artists who subverted Auto-Tune's internal logic for their own creativity instead of correction, deepfakes can be used in multiple ways: at one extreme, for disinformation; and on the other, for satire, PSAs, or new models of artistic expression. The

[23] Daniel Black, "The Virtual Idol: Producing and Consuming Digital Femininity," in *Idols and Celebrity in Japanese Media Culture*, eds. Patrick W. Galbraith and Jason G. Karlin (New York: Palgrave Macmillan, 2012), 224.

latter side is exemplified by Holly Herndon's 2021 AI "twin," a deepfake called Holly+, which offers a meditation on the ethics of deepfakes and their possible benefits for pop artists. Herndon is a laptop composer/performer with a PhD from Stanford University's Center for Computer Research in Music and Acoustics (CCRMA), where she studied machine learning models for the voice. She has long created music using AI, including an "AI baby" named Spawn that she and her husband, artist Mat Dryhurst, trained with their own and others' voices to sing with "an eerie, frayed, metallic quality, something like a swarm of bees."[24] Critic Hua Hsu's animal metaphor recalls the discourse of voice modulation technologies, as do his questions for deepfake music: "Do voices make us human? Do we own the sound of our own voice? And, as robot ethicists have begun wondering, is it possible to exploit a machine? Hatsune Miku, a holographic Japanese pop idol, makes hit records in Japan and tours the world, yet she isn't paid."[25] Hsu extends voice modulation debates about human-machine authorship up to Miku and deepfakes. It is in this landscape that Herndon endeavors to create ethical practices for singing with, and not against, AI.

Herndon's recent work navigates the rise of deepfakes in the music industry and the threats they pose to artists' autonomy to make music, since people can deepfake artists' voices for their own ends. She teamed up with Never Before Heard Sounds, an AI music startup, to create Holly+, an instrument and a website (https://holly.plus/) "to allow people to perform through my voice, reduce confusion by establishing official approval, and invite everyone to benefit from the proceeds generated from its use."[26] Users can upload any audio file under five minutes and then download a version of that audio sung by Holly—in her words, "audio from

[24] Hua Hsu, "Machine Yearning," *The New Yorker*, May 20, 2019, 83.
[25] Hsu, "Machine Yearning," 84.
[26] Holly Herndon, 2021 statement on artist's website, https://www.hollyherndon.com/holly.

one voice can be converted to resemble the target voice, a kind of vocal puppetry."[27] Holly's audio can be used in a panoply of ways, but licensing is regulated by a decentralized autonomous organization (DAO), a governance model associated with cryptocurrency. Herndon mobilizes this collective of token holders to protect the use of her vocal likeness, since they trace and approve derivative works created with her voice. In another move to make NFTs (non-fungible tokens) and cryptocurrency viable for independent artists, Herndon and Dryhurst started a digital auction house for buyers and sellers of Holly's vocal likeness in new artists' works—many of which are audiovisual.

Herndon's work is important for studying both aural and visual aspects of deepfakes and their ethical implications for popular music. Just as pop stars have become increasingly known as image-makers since the 1960s—as in J-Lo's transmedia success as an actor, dancer, and singer—singing deepfakes are now becoming increasingly audiovisual as technology improves. For example, Herndon has released one of her pieces, *Crossing the Interface (DAO) I (2021)*, with machine-generated images by Dryhurst and text by Iranian philosopher Reza Negarestani. The digital animations are created with the software Clip, which "generates images from text by scanning the internet for relevant images, chewing them up, and spitting them back out into a distorted landscape." The piece's audiovisual and machine-generated nature made it marketable as a NFT that sold for approximately $36,000 on the Foundation marketplace for crypto art.[28] In NFTs, digital art is the prized representation of a valued object—so much so that Eminem spent

[27] Holly Herndon, "Holly+," July 13, 2021, https://holly.mirror.xyz/54ds2IiOnvthjGFkokFCoaI4EabytH9xjAYy1irHy94.
[28] Will Gottsegen, "Experimental Composer Holly Herndon Sells 'DAO' NFT for $36,000, *Decrypt Media* (May 27, 2021), https://decrypt.co/72120/holly-herndon-nft.

about $450,000 in 2022 on a Bored Ape NFT that slightly resembles him.[29] An NFT can also become a digital avatar for one's social media presence.

The circulation and signification of NFTs, then, is highly visual. Much as robotic and animalistic imagery in music videos have conditioned the reception of Auto-Tune, music-related NFTs spread across the Internet have conditioned the reception of digital visuality. Is popular music's value today increasingly measured by images? This is an open question, since the benefits and drawbacks of NFTs, just one piece of this puzzle, are yet to be determined. Our era does seem to associate popular music with images more than ever, taking stock of Spotify streams that couple album art and artists' photographs with music playback more closely and rapidly than an LP cover, or the selfies of Charli XCX's Twitter feed. In this landscape, Herndon acknowledges NFT images' benefit for independent musicians as souvenirs of a work that can connect collectors to artists more directly than through industry middlemen. To this end, she shares artists' video imagery for music created from Holly+ on her Twitter feeds, @hollyherndon and @hollyplus (Fig. 5.2).

[29] Jonathan Jones, "The Bored Ape NFT Craze is All about Ego and Money, Not Art," *The Guardian* (January 4, 2022), https://www.theguardian.com/artanddesign/2022/jan/04/bored-ape-nft-art-eminem.

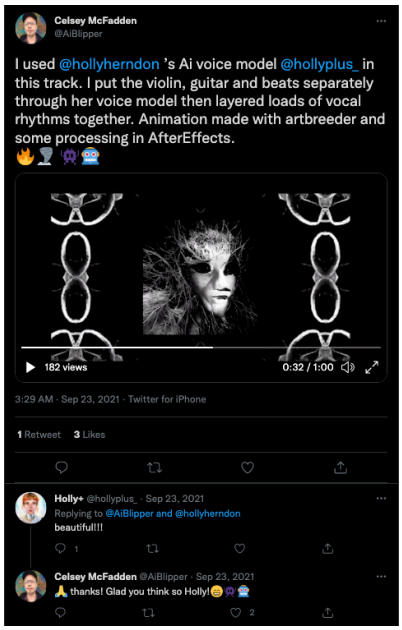

Figure 5.2 Screenshot of Celsey McFadden's untitled animated 2021 video on Twitter

From Miku and deepfakes to Bored Ape to Holly+, fans revel in consuming and remaking an artist's persona. The imagery associated with music and its digital circulation reminds users that a core element of art is communication between artists and fans. As much as deepfakes, AI, and internet culture can repurpose artists' voices without their consent, these technologies can also forge greater bonds between artist and user than ever before. Moreover, platforms like Holly+ continue to challenge the divisions forged between humans, animals, and machines in voice modulation debates. In Celsey McFadden's untitled animated 2021 video, created for a track with the Holly+ voice model, animals morph in and out of humanoid shapes within a background of kaleidoscopic glitches.[30] As with Auto-Tune and the Fairlight CMI before them, the imagery that accompanies musical deepfakes hinges on matters of glitch and surveillance—motifs long inspired by the synthetic voice. Over the past few decades, digital contexts have increasingly paired pop singers with imagery of mediation, disconnection, and new

[30] Celsey McFadden, @AiBlipper, September 23, 2021, Twitter, https://twitter.com/AiBlipper/status/1440956520531902464?s=20&t=naf0Up37H4thfGAntIu_DA.

possibilities for connection. After all, in Herndon's words, "The history of pop music is one of emulation. The voice isn't necessarily individual; it belongs to a community, to a culture, to a society."[31] With pop's increasing entanglement with online platforms, the voice has become ever more spreadable: the ownership of a voice has become more porous with DAOs but also with streaming platforms like Spotify that allow users to access decades' worth of music—and images—for very little money. Voices and music are increasingly distributed and visualized across humans and machines, more than early voice modulation artists could have ever dreamed.

Covid Waves

COVID-19, however, has posed a major challenge to the spreadability of pop music, as the May 2020 video for Charli XCX's "claws" illustrates. The greatest change in spreadability during this era can be witnessed in artists' music videos. While "experimental collaborative approaches [have been] enabled by new technologies, internet platforms, and converging media" in the past several years,[32] music videos have become limited to virtual collaboration when lockdowns prevented in-person activities, which led to a boom of animated music videos to illustrate music. Animation was practical—it provided a safer alternative to filming artists with multiple crew members—but it also was productive: it afforded new ways of seeing sound.

Crucially, animation also signals a return to prior waves of visualizing sound. As Chapter 3 argued, 1920s–1950s visual music films—abstract animation that developed forms and

[31] Herndon quoted in McDermott, "In the Studio: Holly Herndon," 70. A longer study of Herndon's work would delve into her 2019 music video for "Eternal" (https://www.youtube.com/watch?v=r4sROgbaeOs), which was shot in multimedia artist Trevor Paglen's basement with his Sight Machine cameras. These cameras were also used in his piece "Sight Machine," a collaboration with the Kronos Quartet where machine learning systems analyzed the musicians in real time. Paglen projected this data above the players to show audiences how computer vision is conflated with human vision and biases, such as the ML systems ascribing percentages of male and female to the musicians.

[32] Tomáš Jirsa and Mathias Bonde Korsgaard, "The Music Video in Transformation: Notes on a Hybrid Audiovisual Configuration," *Music, Sound, and the Moving Image* 13, no. 2 (2019): 117.

techniques for portraying music visually—were an early inspiration for music videos. From the rotoscoped video for A-ha's "Take on Me" (1985) to Peter Gabriel's "Sledgehammer" (1985), animated images set the tone for experimental videos on MTV by mainstream artists. Several artists have appeared as cartoon characters in their music videos, from the Beatles to Björk—signaling an excitement for animated avatars across multiple genres.[33] Perhaps the most famous of these is the British band Gorillaz, which since 2000 has existed in the form of animated avatars drawn by artist Jamie Hewlett (known for the comic book *Tank Girl*). The band's music videos juxtapose the trope of the live-action concert-style music video with animation as a pointed critique of boy bands; as founder and frontman Damon Albarn put it, "Everything is so manufactured these days […]. Gorillaz are different. They may only appear in cartoon form but, believe me, they are larger than life."[34] Gorillaz, with their artificially constructed image, lay bare the persona effect that is manufactured by the pop industry. Like Cher and other Auto-Tune artists, they reinvent themselves and their careers through new personas, thereby critiquing the homogeneity of the pop industry. Gorillaz play live concerts as holograms, with similar technology to Miku. Their virtual form has given them a chameleonic ability to collaborate with many featured artists, one of the most recent being Elton John on his COVID-inspired project, 2021's *The Lockdown Sessions* album.

The *Lockdown Sessions* generated a series of animated videos akin to Charli XCX's "claws," including "The Pink Phantom" (2020) with Elton John, Gorillaz, and the TATE voice of 6LACK. Yet it was Elton's duet with UK pop star Dua Lipa that fostered the most

[33] For a summary of bands' cartoon characters, see John Richardson, "The Digital Won't Let Me Go: Constructions of the Virtual and the Real in Gorillaz' 'Clint Eastwood,'" *Journal of Popular Music Studies*, 17, 1 (2005): 1–29.
[34] Damon Albern quoted in Nick Duerden, ''Gorillaz in Our Midst,'' *The Observer* (March 11, 2001), https://www.theguardian.com/theobserver/2001/mar/11/featuresreview.review2.

experimental animated video in *The Lockdown Sessions*.[35] Designed and directed by Raman Djafari, "Cold Heart" (PNAU Remix) mashes up 3D modeling and animated puppets with 2D animated avatars of John and Lipa.[36] Djafari's juxtaposition of visual styles complements PNAU's sonic blend of four Elton John hits: "Rocketman," "Kiss the Bride," "Where's the Shoorah?," and "Sacrifice." But the music and images are not the only mash-up elements. Just as the retro hits "Rocket Man" (1972) and "Sacrifice" (1989) are made new by PNAU's disco dance remix, Lipa, age 25, brings John, age 74, into the modern pop era, which is signaled by the 2D crispness of the singers' avatars. However, John also lends Lipa a retro quality, which is visually represented by the dancing Claymation-like puppets that have shades of the bad 3D memes that garner nostalgia in contemporary internet cultures (Fig. 5.3).[37]

Figure 5.3 Still from "Cold Heart" (PNAU Remix) that juxtaposes 2D/3D animation (Raman Djafari, 2021)

A fascination with retro aesthetics, both aural and visual, has infused 21st-century music videos. In today's music, analog artifacts like noise and distortion (e.g., the hiss made when

[35] *The Lockdown Sessions* was not the first time Elton John's videos were animated; in May 2017, the winner of the music video competition *The Cut*, an animated video for "Rocket Man" (Majid Adin and Stephen McNally), debuted at the Cannes Film Festival. For an extensive analysis of this video, see Lisa Perrott, "'Accented' Music Video: Animating Memories of Migration in 'Rocket Man,'" *Music, Sound and the Moving Image* 13, no. 2 (Autumn 2019): 123-146.

[36] Elton John, "Elton John, Dua Lipa - Cold Heart (PNAU Remix) (Official Video), August 13, 2021, https://www.youtube.com/watch?v=qod03PVTLqk.

[37] See *Know Your Meme*, https://knowyourmeme.com/memes/poorly-made-3d-animations.

recording a transistor radio hit onto a cassette tape) are often introduced into digital tracks. Some producers even bounce digital tracks to magnetic tape or use plug-ins to simulate tape hiss. Much as Auto-Tune wasn't intended to be used an overt effect, tape hiss and distortion have become retro sonic aesthetics. These have a visual correlate: quirky 2D and 3D artifacts are often introduced into photoreal digital animation to achieve aesthetically-pleasing imperfection. As with buying music on vinyl, consumers revel in a nostalgia that rebels against the commercial status quo of a high-definition slickness.[38] Analog-injected nostalgia can have a comforting or political edge aesthetically.

The juxtaposition of new and old, retro and cutting-edge, in "Cold Heart" draws attention to the mismatch between young and old artist, yet there is also a pleasure of seeing and hearing them together. The video's imagery embraces both incongruity and congruity, as it depicts "animated versions of Elton and Lipa entering a euphoric world before separating as their planets drift apart. The video draws a parallel to the last year and a half in lockdown."[39] These images and voices present two kinds of glamour as a metaphorical escape from Covid-era isolation: the classic disco glamour of Elton John and his 3D puppet dancers, and the edgy Europop glamour of Dua Lipa and the 2D cartoon imagery of eyes and flowers. As Ragnhild Brøvig-Hanssen observes, "experienced as being simultaneously incongruent and congruent, remixes have the potential to subvert or question authorial voices and narratives, or normative social order, by

[38] As Miriam Harris summarizes this aesthetic, "the incorporation – or simulation – of analogue elements can be linked with a backlash against the smooth slickness predominantly associated with commercial digital aesthetics. Variations upon the photoreal […] afford the potential to comment upon Hollywood and corporate-based aesthetics and narratives." "Digital Experimentation: Extending animation's expressive vocabulary," in *Experimental Animation: From Analogue to Digital*, eds. Miriam Harris, Lilly Husbands, and Paul Taberham (Abingdon, Oxon: Routledge, 2019), 120.
[39] "Dua Lipa Opens Up about Collaborating with Elton John, Says it's an 'Absolute Honour,'" *Asian News International,* New Delhi (August 14, 2021).

representing an (absurd) alternative."[40] At the core—the chorus—of "Cold Heart" are the lyrics of "Rocket Man," which provide an allegory for how music circulates and changes after a long trip through time and space. Yet postmillennial media, with a dual penchant for innovation and nostalgia in its analog injections, show that not all musical pasts are irretrievable—indeed, they guide the music of the present. Lipa's and John's collaboration exemplifies how music videos can mash up the old and new in both sonic and visual registers to allow both to coexist and even influence one another. Lipa and John, for example, unite quite disparate fanbases in terms of musical taste and age.[41] Animation allows these pop stars to create personas that are cut from the same cloth, animated in similar styles, which effects visual congruity of the pair as a harmonious duo in the video.

Animated videos alter the ways in which audiences judge, and feel they have access to, stars' personas. In particular, animated avatars excite audiences because they guide fans as to how to interpret the song. The centrality of the star in music videos can be traced back to the promotional impetus of '80s MTV. Emma Kumer puts it this way: "COVID-19 proposed an important question: In our current image-obsessed age, how does a music artist continue projecting an iconic image when they can't go on tour? The answer: They hire an animator."[42] The animator is charged with creating a lookalike avatar; as Universal Music Group marketing director Daniel Dinsenbacher pointed out in 2020, "We always see more engagement [with music videos] when the content has the artist included in it. Even if it's an animated version of

[40] Ragnhild Brøvig-Hanssen, "Humor's Role in Mashups and Remixes," in *On Popular Music and Its Unruly Entanglements*, eds. Nick Brae and Kai Arne Hansen (Cham, Switzerland: Palgrave Macmillan, 2019), 189–207, 200–201.
[41] A common cross-section between Dua and Elton is their queer fandom, as one Reddit comment points out: "Dua Lipa is really consolidating her power over the gays." (Octopuscheese, "DUA LIPA on Instagram," August 2021, Reddit, https://www.reddit.com/r/popheads/comments/p2g1te/dua_lipa_on_instagram_my_new_single_with/.)
[42] Emma Kumer, "No Set, No Problem: How Billie Eilish, BENEE and More Made 2020 the Year of the Animated Music Video," December 16, 2020, *Variety*, https://variety.com/2020/music/news/billie-eilish-benee-animated-music-videos-2020-1234854520/.

the artist."[43] Dinsenbacher also notes that in the age of quarantine, when stars can no longer tour, streaming numbers are key. To capitalize on these, producers release multiple videos for a single song: the official music video, a lyric video, and a visualizer. Of these, the animated videos take the most labor and time to create produce. For example, the music video for Billie Eilish's 2020 single "my future" (Andrew Onorato) took lead animator Onorato and Chop Studio five weeks, which involved the concept, character, and background design; hiring animators; compositing; and editing after receiving feedback from Eilish.[44]

The resulting video has not only the star's avatar but also a particular aesthetic that both matches and adds to the emotions and images conjured by the song. Eilish had a specific vision for the "my future" video, inspired by a rainy March 2020 that was also the start of quarantine. She wanted the video to be animated, and as she told her creative team, "I know the style of rain I want, and I want this to start out rainy."[45] Building on her vision, Onorato and his team set the largely blue-toned video in a moonlit garden, with backgrounds hand-painted onto the paper used by Studio Ghibli and cartoon figures of Eilish and a glum frog—which resemble John's and Lipa's 2D avatars. This fantasy setting is particularly expressive of the first half of the song, a down-tempo, rhapsodic reflection on a breakup that Eilish only briefly mourns because she would rather pursue her own future. In the second half of the video, her introspective lyrics become more assured, and the tempo doubles in a persistent forward-leaning groove with drums and guitar that signal the optimism of moving forward to pursue that future. In tandem, maximally expressive 2D flowers and trees bloom around Eilish (Fig. 5.4). Drawn in similar style to the flowers that surround Lipa in "Cold Heart," these colorful shapes with sharp outlines

[43] Dinsenbacher quoted in Kumer, "No Set, No Problem."
[44] Billie Eilish, "Billie Eilish – my future," YouTube, July 30, 2020, https://www.youtube.com/watch?v=Dm9Zf1WYQ_A.
[45] Billie Eilish quoted by Chelsea Dodson in Emma Kumer, "No Set, No Problem."

stand out amid the garden's blurred, dreamy setting and hasten the sunshine and bursts of color in the garden by the end of the video.

Figure 5.4 Still of 2D Billie Eilish amid tree roots and flowers in "my future" (Andrew Onorato, 2020)

Multiple styles of animation in the Eilish video, clearly made by different animators, continue the ways in which visual incongruity created a pleasing, analog-injected nostalgia in "Cold Heart." These videos' art styles—and in "Cold Heart," expansive end credits—make evident the work of many artists and editors. In this way, animated videos signpost the labor and aesthetic contributions of other artists besides the pop star, thus upstaging the star's dominant position in commercial videos. Besides having gone mainstream since the fewer experimental animated videos in the '80s, COVID-era animated music videos spark fans' interests in pop artists' collaborators, evidenced by YouTube and Reddit comments. The 2020s music video, then, is seen less as a reflection of the pop star's life—as MTV live-action, artist-centered videos so often espoused—but rather of their vision shaped by other artists. While the star is still the main character audiences identify with, increasing attention is paid to the backgrounds, the other figures present (e.g., Eilish's frog), and the creators that make the video possible. The avatars also allow stars to express themselves and the ways others see them anew. Animated videos

epitomize Hansen's concept of the pop persona multiply-constructed by the star, creative teams, and fans. To visualize music in animated videos is to put collaboration front and center.

From vocaloids and deepfakes to animated lockdown videos, visualizing music in the 21st century has become increasingly digital and synthetic, seemingly alienated from human production. However, given the multiple people involved in the creation of imagery for digital voices, one might argue that audiovisual media are now shaped more than ever by collaborators and users. Synthetic media like vocaloids and deepfakes give fans a chance to depict their own versions of stars and songs. And animated music videos help fans to see just how much a star's persona is shaped by artists and producers of many different stylistic proclivities, that the vision for a song's expression is not singularly created by the artist but carried out by multiple people.

Coda: Popular Music's Visual Shockwaves

This study has argued that, since the era of transistor radios, popular music has become increasingly visual. Especially around the time of 1980s MTV, pop stars evolved into image-makers and have had to contend with the ways their persona is represented, sometimes to ethical violations of consent when their audiovisual likeness is co-opted by deepfakes for nefarious ends. But the array of far-flung images that pop music inspires has had earlier roots in technology and in cinema. Transistor radios were instrumental to making pop songs in general spark a wide set of screened images for audiences. By making music more portable, taking it out of the home and into cars and myriad social gatherings, transistor radios connected music to youth culture and consumers more than the radio and public concerts before it. Soon after, magnetic tape made it possible to record and remix sounds on the go. Armed with these two

mobile music technologies, filmmakers, singers, and music producers could set pre-existing music to images like never before.

The 1980s continued this wave. The Fairlight CMI's digital sampling allowed music and the sounds of everyday life to be cut up into newly intertextualized songs that changed both the production and reception of popular music in particularly visual ways. As Paul Théberge puts it,

> When confronted with [a sampled] work, the listener is immediately struck by a feeling of a fluctuating, multiple temporality; a difference in the perceived relationship between past and present; the nature of one's own subject position as a listener; and the apparent dispersal of the unified subject, or persona, of the composer/songwriter embodied in the work itself (see Cone 1974). The artistic practices of collage, assemblage, and montage used in popular music virtually destroy the organic integrity of "the work" (i.e., the "song"), and are not unlike the strategies of various avant-garde movements described by Andreas Huyssen (1986: 9-15).[46]

Théberge makes clear that the cut-and-paste aesthetic of pop music perpetuated by the technology of sampling replicates avant-garde tendencies and also holds up an acoustic mirror to society. We witness a similar mirroring of avant-garde vocality and social expectations of voices in women artists' experiments with Auto-Tune. When technologies from transistors and magnetic tape to samplers and Auto-Tune enabled artists to create new sonic expressions, new visual expressions in turn became possible that also reflected a blend of temporalities and subjects.

Music's visual waves of multiple temporalities and subjects arose from artists' increasing collaborations with technology. When artists used technology to manipulate their voices, they stirred up critics' complaints about transgressions against the "natural" voice, complaints levied against Karen Carpenter, Yoko Ono, and T-Pain. Yet these artists and many more have used technology to alter voice and music in ways that break the binaries between art and pop music

[46] Paul Théberge, *Any Sound You Can Imagine: Making Music/Consuming Technology*, (Hanover: Wesleyan University Press, 1997), 186–213, 206.

and humans and machines. The modern ontology of the pop voice is entwined with technology, and not just because artists use technology in their musical process. The imagery that accompanies their music often incorporates new visions of that technology, whether those are the youth culture images that sprung from transistor radio hits onscreen or the animal or robotic associations elicited by Auto-Tune, vocaloids, and deepfakes. These images show and will continue to show us the extent of pop music's competing visions in media—the shifting relationships between humans and nonhumans, amateurs and celebrities, creators and consumers, avant-garde and pop, and, not least, sound and images. Visual waves of music in our current age may yet bring more entanglement between these continually dissolving binaries. Pop music's visual shockwaves will persist, carving out new spaces for audiovisual artifacts of individual and social memory.

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