ARTICLES

The Operatic Ear: Mediating Aurality

Megan Steigerwald Ille

During the final scene of Christopher Cerrone's opera *Invisible Cities,* protagonist Marco Polo reflects on the central role the listener plays in narrative forms: "I speak and I speak, but the listener retains only the words he is expecting. It is not the voice that commands the story: it is the ear."[1] Polo's words are (unintentionally) ironic: by this point in experimental opera company The Industry's 2013 production, the spectator hardly needs to be reminded of the importance of the ear. Rather than being sung out to audience members seated around a proscenium stage, Polo's line, and indeed, the entire opera, has been transmitted into the listening ears of audience members via wireless Sennheiser headphones.

Opera scholarship often begins with the voice then moves to the ear.[2]

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[1] Partially adapted from Italo Calvino, *Invisible Cities,* trans. William Weaver (New York: Harcourt Brace Jovanovich, 1974), 135

[2] In recent years, scholars in the field of voice studies such as Martha Feldman, Nina Eidsheim, Jelena Novak, Brian Kane, Ana María Ochoa Gautier, Steven Rings, James Q. Davies, and Emily Wilbourne, among many others, have done much-needed work to theorize and explore many capacities of the operatic voice, and in turn, the listening ear in operatic performance. Work by Carolyn Abbate and Michelle Duncan played a significant role in establishing this turn to the material properties of the voice and sounding voice-body. See Nina Sun Eidsheim and Katherine Meizel, eds. *The Oxford Handbook of Voice Studies* (New York: Oxford University Press, 2019); Martha Feldman, Emily Wilbourne, Steven Rings, Brian Kane, and James Q. Davies, "Colloquy: Why Voice Now?" *Journal of the American Musicological Society* 68, no. 3 (Fall 2015): 653–685; Jelena Novak, *Postopera: Reinventing the Voice-Body* (Farnham: Ashgate, 2015); Ana María Ochoa Gautier, *Aurality: Listening and Knowledge in Nineteenth-Century Colombia* (Durham, NC: Duke University Press, 2014); Michelle Dun-

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But what if we move in the opposite direction?[3] That is, what can we discover about operatic sounds—including voices—by focusing on how processes of listening are mediated by social and technological patterns of behavior?[4] While these questions have a precedent in studies of sound and voice, they also demonstrate how the operatic ear and operatic voice are co-constitutive elements in performance.[5] If, as interdependent parts, they are also—pace Polo—equally relevant, the technologically-mediated operatic ear that witnesses *Invisible Cities* offers much to studies of sound, digital media, and modes of narrative performance like opera. In this essay, privileging the biological and metaphorical ear *over* the voice allows us to consider the ways digital technologies create equivalent modes of understanding operatic *listening* as simultaneously fragmented, interstitial, and relational.

The radical, mediated staging of *Invisible Cities* was hailed by critics as "the opera of the future" and an "unprecedented, interactive dramatic expe-

can, "The Operatic Scandal of the Singing Body: Voice, Presence, Performativity," *Cambridge Opera Journal* 16, no. 3 (2004): 283–306; Carolyn Abbate, "Music—Drastic or Gnostic?" *Critical Inquiry* 30, no. 3 (Spring 2004): 505–536.

[3] This inverted formulation—ear to voice rather than voice to ear—is, in part, indebted to the scholarship of Ana María Ochoa Gautier. Ochoa Gautier suggests that by "[inverting] the emphasis on the relation between the *written text* and the *mouth* (implied by the idea of the oral)," it is possible to "[explore] how the uses of the *ear* in relation to the *voice* [imbue] the *technology of writing* with the traces and excesses of the acoustic." Ochoa Gautier, *Aurality*, 7. While Eidsheim approaches voice, text, and listening from a different perspective than Ochoa Gautier, she too suggests that "[voices are] located within [listeners]." Nina Sun Eidsheim, *The Race of Sound: Listening, Timbre, and Vocality in African American Music* (Durham, NC: Duke University Press, 2019), 13.

[4] This approach, which brings together scholarship on technology, performance, and sound cultures more broadly, is rooted in the work of Douglas Kahn, Benjamin Steege, Jonathan Sterne, and Emily Thompson, among others. See Douglas Kahn, *Noise, Water, Meat: A History of Sound in the Arts* (Cambridge, MA: MIT Press, 1999); Benjamin Steege, *Helmholtz and the Modern Listener* (Cambridge: Cambridge University Press, 2012); Jonathan Sterne, *The Audible Past: Cultural Origins of Sound Reproduction* (Durham, NC: Duke University Press, 2003); Emily Thompson, *The Soundscape of Modernity: Architectural Acoustics and the Culture of Listening in America, 1900–1933* (Cambridge, MA: MIT Press, 2002).

[5] Gautier Ochoa describes this shift as "the general auditory turn in critical scholarship," *Aurality*, 6. More specifically, Eidsheim has pointed to the way voices are co-constructed through socio-historic processes of expectation and feedback—or, in other words, modes of listening. See Eidsheim, *The Race of Sound,* 13. Clemens Risi describes the listening relationship between operatic performer and listener as "performative" and "erotic," thus implying another type of relationship between the two parts. Clemens Risi, "The Diva's Fans: Opera and Bodily Participation," *Performance Research* 16, no. 3 (2011): 49–54.

rience."[6] A key reason for the critical acclaim attributed to the performance was because of the way the opera used digital technologies to "reformulate" operatic listening, thus foregrounding the notion of the materially-enhanced ear. By asking spectators to listen to the entire opera through wireless headphones, the production foregrounded technological mediation. Simply put, the performance spotlighted the role of aural perception over other modes of spectatorship. Accompanied by the angular choreography of Danielle Agami and the efforts of the L.A. Dance Project company, the opera was performed twenty-two times in October and November 2013. Wireless headphones allowed audience members to spectate from any location as each individual wandered the "stage" of Los Angeles's Union Station while miked performers roamed the space. Far from the rooted experience of sitting in a theater, viewers drifted through the ticket concourses, waiting areas, and outdoor patios of the historic station while attempting to both locate and link the voices in their ears to the bodies in front of them. The performers began the opera in street clothes—every commuter within the station a potential artist—and gradually donned costumes as the work progressed. Following the opera's dramatic conclusion, ushers drew audience members into a common space for the final scene, applause concluded the performance, spectators returned their headphones to the stage managers, and left the station. Stage (and station) remained open, but the opera had ended.

Based upon several episodes from Italo Calvino's 1972 surrealist novel *Le città invisibili, Invisible Cities* recounts a series of conversations, memories, and elaborate stories exchanged between the explorer Marco Polo and the emperor Kublai Khan. As the Khan listens, Polo evokes the cities constellating the aging emperor's realm with visceral detail. The work's first inception, a concert staging at the New York City Opera's 2009 VOX Festival, revealed production and musical challenges. The Industry founder Yuval Sharon first encountered a version of the opera when working at VOX as a program director, and it was clear the work might need a different performance treatment to succeed.[7] The ambiguity of the narrative, lyric opacity

[6] Jeffrey Marlow, "Is This the Opera of the Future?" Wired Magazine, October 22, 2013, https://www.wired.com/2013/10/is-this-the-opera-of-the-future; Shari Barrett, "BWW Reviews: Invisible Cities Offers a Total Immersion Experience at Union Station," Broadway World, Los Angeles, https://www.broadwayworld.com/los-angeles/article/BWW-Reviews-INVISIBLE-CITIES-Offers-a-Total-Immersion-Experience-at-Union-Station-20131025.

[7] See Anthony Tommasini, "Sampling of New Dishes, Some Still Being Seasoned," The New York Times, May 9, 2009, https://www.nytimes.com/2009/05/05/arts/music/05vox.html?mcubz=3.

of the text, and elongated musical lines meant that the work seemed to lack dynamism on the traditional stage. Enter the mobile staging of the opera four years later, which fused Sennheiser wireless headphones with audience imaginations, and drew in patrons through the allure of immersive *and* site-specific performance.[8] The changes paid off: the 2014 Pulitzer Prize committee described the work as "a captivating opera … in which Marco Polo regales Kublai Khan with tales of fantastical cities, adapted into an imaginary sonic landscape."[9]

The Sennheiser wireless headphones, individual audio feeds, and earbud microphones for each singer, dancer, and orchestral musician might have seemingly indicated that the performance of *Invisible Cities* represented a new kind of work more akin to Janet Cardiff's mixed media installations than to historical operatic convention. As I have argued elsewhere, *Invisible Cities* actually capitalized upon historic tensions inherent to the operatic form.[10] This production structure, however, allows us to think about more than just the historic trajectories and iterations of the operatic genre.[11] To

[8] The question of what constitutes site-specific performance is a topic of much debate. For instance, Mike Pearson uses the work of designer Cliff McLucas to distinguish between the "host"—the established elements of a site—versus the "ghost"—"that which is temporarily brought to and emplaced at the site." The "host" of Union Station and "ghost" of *Invisible Cities* musicians, costumes, and staging would work together to constitute this performance as site-specific. However, visual artists such as Richard Serra read site-specificity as more particular to the art's impact upon and relationship with the site itself. Thus, Serra argues that site-specific works should be "inseparable from their [locations]." As an opera revised for the LA staging and made more meaningful within a space of transit, *Invisible Cities* fits uncomfortably within Serra's definition, but squarely within Pearson's. Following language surrounding the reception of the opera, the descriptions of performers and audience members, and the musical changes made to the work for the LA staging, I interpret *Invisible Cities* as site-specific opera. Richard Serra, "The Yale Lecture, in *Art in Theory, 1900-2000: An Anthology of Changing Ideas*, ed. Charles Harrison and Paul Wood (Oxford: Blackwell, 2003), 1096–1099; Mike Pearson, "Site-Specific Theatre," in *The Routledge Companion to Scenography,* ed. Arnold Aronson (Abingdon: Routledge, 2017), 295–301.

[9] "Finalist: *Invisible Cities,* by Christopher Cerrone," The 2014 Pulitzer Prize Finalist in Music, The Pulitzer Prizes, last updated 2021, https://www.pulitzer.org/finalists/christopher-cerrone.

[10] Megan Steigerwald Ille, "Live in the Limo: Remediating Voice and Performing Spectatorship in Twenty-First-Century Opera," *The Opera Quarterly* 36, no. 1 (2021), published ahead of print, January 7, 2021, https://doi.org/10.1093/oq/kbaa012; see also Megan Steigerwald Ille, "Bringing Down the House: Situating and Mediating Opera in the Twenty-First Century," (PhD diss., University of Rochester, 2018).

[11] While not the focus of this article, productions like *Invisible Cities* by necessity put pressure on the concept of "opera" as a fluid generic designation. See Steigerwald Ille, "Bringing

that end, as digital mediation becomes commonplace both in and out of the opera house, it is worth considering how technologically-enabled modes of narrative spectacle influence operatic performance, and vice-versa.[12] Rather than focusing on acoustic perception of sound as it relates to the concert hall, or the way the opera enacted forms of sonic gentrification, as other scholars such as Nina Eidsheim have productively explored, here I am interested in highlighting the material significance of the headphones themselves in the production.[13] I put interviews and public press reviews in dialogue with the body of rich scholarship around historical and contemporary modes of listening. I situate these headphones within a history of mobile listening and behaviors in order to understand what elements shape the twenty-first century operatic ear. In focusing on the headphones, I reveal the significance of material technologies in constituting operatic aurality.

What is the value of aurality as a critical framework?[14] Benjamin Steege

Down the House," PhD diss. For broader exploration of the ontological understandings of opera in the context of *Invisible Cities* and other productions by The Industry, see also the forthcoming monograph: Megan Steigerwald Ille, *Opera for Everyone: Experimenting with American Opera in the Digital Age* (Ann Arbor: University of Michigan Press).

[12] *Invisible Cities* is not the only twenty-first century opera production to engage with themes of aural mediation and spatial displacement. For instance, Cerise Lim Jacobs's *Alice in the Pandemic,* produced by White Snake Projects in late 2020, "enable[d] singers at remote locations to sing synchronously together as they [interacted] with each other and their 3D avatars who lip sync in real time to live performance." "Alice in the Pandemic," White Snake Projects, accessed December 10, 2020, https://www.whitesnakeprojects.org/projects/alice-in-the-pandemic-a-digital-opera/.

[13] For an alternate exploration of *Invisible Cities* and a thorough consideration of how the cultivated aesthetic of the opera can be thought of as another version of the designed acoustic of the opera house, see Nina Sun Eidsheim, *Sensing Sound: Singing and Listening as Vibrational Practice* (Durham, NC: Duke University Press, 2015), 80–94. Marianna Ritchey also briefly considers the opera in the context of urban gentrification, a topic that Eidsheim also explores through the context of voice studies in a second article. See Marianna Ritchey, *Composing Capital: Classical Music in the Neoliberal Era* (Chicago: University of Chicago Press, 2019), 90-113, and Eidsheim, "Acoustic Slits and Vocal Incongruences in Los Angeles Union Station," in *The Oxford Handbook of Voice Studies,* 301–313.

[14] While to my knowledge, aurality has not yet been used as a critical framework in opera studies specifically, the concept has been productively used in a range of disciplines within musicology, ethnomusicology, and the humanities more broadly. See Steege, *Helmholtz and the Modern Listener,* and Ochoa Gautier, *Aurality.* For a representative range of usages, see: Jairo Moreno, "Antenatal Aurality in Pacific Afro-Colombian Midwifery," in *Remapping Sound Studies*, ed. Gavin Steingo and Jim Sykes (Durham, NC: Duke University Press, 2019), 109–134; Lynne Kendrick, *Theatre Aurality* (London: Palgrave Macmillan, 2017); Kahn, *Noise, Water, Meat*; and Veit Erlmann, ed. *Hearing Cultures: Essays on Sound, Listening, and Modernity* (Oxford: Berg, 2004). For a helpful overview of how aurality has been used as a critical

defines aurality as "a network of experiences, practices, and discourses of hearing and the ear."[15] Similarly, Ana María Ochoa Gautier uses the framework of aurality as a mode of thinking through what she describes as "acoustic abundance" and "multiplicity," in which the "entities that listen and entities that produce sounds … mutually produce each other."[16] Correspondingly, a framework of aurality offers opera studies the opportunity to think through how modes of mediated spectatorship co-constitute audience perception. Operatic aurality is a set of material contexts, discourses, and patterns that encompasses operatic performance and spectatorship within the hybrid environments I describe above.

This article is concerned with the materiality of the 400 sets of headphones sitting on the station's old ticket counter, waiting to be washed and dried in a nearby Laundromat before the next evening's performance. Throughout the opera, these headphones had facilitated whispers, shouts, and highly trained operatic voices into the ears of those audience members paying for the performance. They had been shared with those passersby in Union Station who had no idea what musical event was interrupting their commute. They had translated arching phrases and rhythmic staccati into Calvino's landscapes as amazed onlookers listened and saw the train station from a new aesthetic perspective. And they had made it difficult for tenor Ashley Faatoalia's friends to locate him in the train station by obscuring the aural signals that would reveal his specific location.[17] (This was despite the fact that these individuals knew Faatoalia was playing one of the central characters in the opera, Marco Polo.)

The aforementioned advice from Polo ("It is not the voice that commands the story: it is the ear") is key to not only the narrative of the opera, but also the mode of spectatorship upon which it relies. In this example, the operatic text works in tandem with the physical realities of the production. Two analytic modes, hermeneutics and materiality, dialectically constitute the spectatorial experience in *Invisible Cities*. The libretto and open-ended compositional elements emphasize individual exploration and interpretation. At the same time, the headphones offer a singular experience of sound regardless of where the audience member or performer is in the station. On

"epistemic threshold", see David Trippet, "Sensations of Listening in Helmholtz's Laboratory," essay review of *Helmholtz and the Modern Listener*, by Benjamin Steege, *Studies in History and Philosophy of Science* 47 (2014): 124–132.

[15] Steege, *Helmholtz and the Modern Listener,* 7.

[16] Ochoa Gautier, *Aurality*, 4, 22.

[17] Ashley Faatoalia, interview with author, San Pedro, September 12, 2017.

the other hand, the headphones are also the gateway to a set of behaviors centered around individual interpretation and exploration. Thus, *Invisible Cities* offers an operatic opportunity to expand the ways we as listeners conceive of the relationship between mediated sound and narrative.

After providing an overview of the production, I situate the notion of operatic aurality within studies of sound and narrative. In so doing, I demonstrate how the operatic ear allows for a particular form of material and spatial listening. As a technologically-contingent work, *Invisible Cities* offers the opportunity to explore the implications of the operatic ear beyond voice. In analyzing the opera from the (aural) vantage point of the headphones, I argue that *Invisible Cities* catalyzed operatic spectacle by fusing mobile listening practices with live performance. Contextualizing *Invisible Cities* within other modes of mobile listening demonstrates how the operatic ear exists within a spectrum of recorded, live, mobile, and place-bound sound. In effect, the operatic ear shapes the context, and thus the perception, of the mediated voice. By foregrounding the material processes inherent to *Invisible Cities,* I highlight the ways technology mediates aesthetic and social performance, and in turn, how social processes inform our expectations and experiences of mediated performances.

Logistics of Invisible Cities

The Industry is a self-described "independent, artist-driven company creating experimental productions that expand the definition of opera."[18] Founded in 2012 by artistic director Yuval Sharon, the company has received national and international acclaim for their original, site-specific productions. The 2013 production of *Invisible Cities* played a large part in catalyzing the kinds of critical attention that have since become the norm for the company.

Invisible Cities begins with a short speech made by Sharon, in which spectators are told that each experience of the opera is meant to be determined by the individual choices of spectators. This speech is followed by an overture performed in the Harvey House restaurant, which has been closed since 1967. Following the overture, audience members begin meandering throughout the station.[19] The overture is followed by a prologue and seven

[18] "About," The Industry, accessed June 24, 2020, https://theindustryla.org/about/.

[19] See Eidsheim, *Sensing Sound,* 82–90 for a first-person account of the opera, and for a detailed walk-through of her individual experience of the work along with a diagram of the station in relation to the performance.

scenes which depict conversations between the two central characters of the opera, Marco Polo and Kublai Khan. The libretto's text, lifted almost directly from the 1974 William Weaver English translation of the novel, builds in complexity through layers of detail, sometimes paradoxical ambiguity, and suggestive dialogue. Along with the Khan and Polo, two sopranos, an SATB quartet, and a cast of eight dancers play a changing set of characters within the opera. Two shows are given a night, one at 7 PM, and another at 10 PM.

With a ticket, an audience member receives a set of Sennheiser wireless headphones through which is broadcast the live-mixed version of the opera. While this person may be in any part of Union Station (ushers keep spectators within the boundary lines of the space), all audience members hear the same operatic stream. The singers and dancers move throughout Union Station wearing lavalier microphones and in-ear monitors. Although there are no monitors for them to see conductor Marc Lowenstein, they hear a dry recording of the music being played by the orchestra dispersed into the in-ear monitors. As a result, they can hear the other singers, regardless of where they might be in the station. Tenor Ashley Faatoalia, who played Marco Polo, described the experience:

> You're singing for random people in a random space. Some people will know what's going on, some people won't. And so, every night was a little bit different. When we started the run, we had a little more leeway because people were following us [versus during rehearsals when performances were less of a distinct event]. So, then some people were like "ok, *something's* going on." But even that was chaos, because then the curiosity would peak to a certain point where people who were or weren't involved were cavorting around and following us in different crowds . . . Some people came multiple nights to find different parts of the story—so because of that, someone was always peeking and looking with anticipation, so even when you weren't ready to sing, you had to sit there, trying to be a character, or emote, or engage with the person on the other side of the entire campus that you couldn't see.[20]

Baritone Cedric Berry, who sang the role of the Kublai Khan, echoed Faatoalia in underscoring the challenges of the unconventional staging:

> We had rehearsed for months, we were finally becoming comfortable with the music, and then we went to the space. And I know we had talked about

[20] Faatoalia, interview with author.

> what we were going to do when we got to the space, and Marc announced that the orchestra not only would be in a different space in the train station no less, but that there wouldn't be a monitor and that it would all be aural—I thought "now he's really crazy" . . . I never thought I wouldn't be able to see a conductor *somewhere*, especially with music that really requires a conductor, but it worked![21]

There were a number of compositional techniques that anticipated the challenges in coordination Faatoalia and Berry describe, including ostinati, a strong sense of pulse used as varying types of signals throughout the entire opera, and overall a small number of vocal forces. The final scene, which was the most complex in terms of ensemble, also required all of the singers to be in one room together, although the orchestra was still in a separate space.

Audience experiences of non-aural elements within the performance were completely variable. In other words, the live audio mix being streamed into spectators' headphones was the only consistent element of the performance from night to night regardless of where those spectators were located in the station. Unless audience members removed these headphones—which some did for brief moments throughout the performance, sometimes to share with other people in the train station, or to listen to a nearby singer live—they all heard the same live-mixed recording of the opera. Thus, Sharon's production seemingly enfolded the role of visual spectacle in operatic production into the headphones worn by audience members. As I describe in greater detail throughout the rest of the article, this does not mean there was no aspect of visual spectacle throughout the production—far from it. Rather, the consistent aural elements of the work (in the headphones) suggested that everyday events in the station were spectacular, regardless of if actual performers could be seen or not. Because of the structure of the opera, the visual space of the proscenium stage that might be understood to be "controlled" by the director was not simply moved into the site-specific space of Union Station. Rather, this consistent element of onstage spectacle was relocated to the headphones, the imaginary space of which was controlled by sound design.[22]

While sound designer E. Martin Gimenez originated the idea of the headphones in the opera along with Sharon, Nick Tipp worked as lead sound

[21] The Industry, "The Industry Company – Cedric Berry," October 2, 2018, YouTube, 3:36, https://www.youtube.com/watch?v=TK-8Wfl3Dm4.

[22] Ryan Ebright briefly situates *Invisible Cities* within a history of operatic sound design. Ebright, "*Doctor Atomic* or: How John Adams Learned to Stop Worrying and Love Sound Design," *Cambridge Opera Journal* 31, no. 1 (2019): 85–117.

designer for the opera after Gimenez's relationship with The Industry ended suddenly. Tipp juggled three mixes during the performance: a dry mix intended for singers and dancers, a live-mixed stream meant for audience members with a significant number of atmospheric and spatial effects, and a third mix for the orchestra that had balance adjustments made for the instrumental musicians and Lowenstein to better hear one another. Lowenstein noted that in technical rehearsals "we kept fiddling with the balance of what we heard, especially because the orchestra was seated in an unusual distribution and the pianists couldn't hear each other very well acoustically."[23] The second of these three mixes (the live-mixed stream for audiences) was created with the goal of establishing a distinct "landscape" for listeners, one that was distinct from that of the train station where the action was taking place.[24]

Reflecting on the use of postproduction techniques drawn from other genres in the final mix audience members heard through the headphones, Cerrone felt that *Invisible Cities* was "as much a sort of studio album as it is a live piece" and described the influence of recorded and even compressed formats such as MP3s to the sound-identity of the opera. He said: "We wanted it to sound more like a pop record than a classical record. So it was sort of like bringing classical music into a more sonically connected pop music [sound] than your average classical recording."[25] Indeed, the use of sound design within the live performance of the piece along with the headphones themselves played a large role in cultivating the imagined aural space described by both audience members and performers. These elements together further intensified the likelihood that audience members would listen to the recording by drawing on behaviors of listening associated with mobile music, and not live performance.

Precedents and Opportunities of Aurality

What is the function of the operatic ear? How might we situate this concept within broader discourses around the dialectical construction of spectatorship? The operatic ear represents a biological and metaphoric node in

[23] Marc Lowenstein, email correspondence with author, June 25, 2020.

[24] See Eidsheim, *Sensing Sound,* 81 for more on the use of sound design to render the "acoustic landscape" (90) in *Invisible Cities.*

[25] Christopher Cerrone, phone interview by author, August 24, 2017. Notably, combining sound design with live performance (as was done in *Invisible Cities*) is a key part of live electronic music performance as well as in the performance of live popular music.

a broader network of listening practices and behaviors. As Steege notes, the "ear" as a historical concept can function in multiple ways: "physical, mechanical, organic, physiological, psychological, or cognitive."[26] The singular ear of an audience member takes on multiple roles within a performance. The operatic ear is actually a multiplicity of ears simultaneously enacting various responses within a performance. Moreover, the roles an "ear" might take on in one performance will be different in other performance contexts, thus constituting operatic aurality as a whole.

Operatic aurality creates a space for material technologies and somatic responses in listening. Just as text and headphones work together to constitute the spectatorial experience of *Invisible Cities,* so too does aurality encompass both spontaneous experience and dictated spectatorial response. To think through this dialectic, consider a listener wearing the headphones during *Invisible Cities.* As I illustrate in the next section, wearing the headphones may, for her, trigger a set of scripted behavioral responses that imitate her personal experiences listening to music on a mobile music device like her smartphone. At the same time, as she listens, she feels a rush of air around her, and turns to notice a dancer sprinting by. Turning to watch the dancer move away, she is distracted from the aural spectacle continuing to play on the headphones. In this hypothetical example, the spectator's experience of reality is fragmented and layered. Multiple ears, or modes of engagement, constitute her engagement with operatic aurality.

Moreover, the concept of operatic aurality foregrounds both historiographical and material approaches towards listening and space. In the twenty-first century, operatic performance is accessed through myriad spaces, modes, and practices of listening. The ear is likewise responsive to these shifts in space and mode of performance. Works as diverse as David Lang's *The Mile-Long Opera,* performed on New York City's High Line, Adam Taylor and Scott Joiner's online opera *Connection Lost: L'opera di Tinder,* and traditionally staged canonic works such as *Le Nozze di Figaro* at the Lyric Opera of Chicago or Metropolitan Opera House require a similarly broad range of listening behaviors, a multiplicity of ears.

The operatic ear is the product of concomitant practices of listening and/or spectating through multiple live and mediated forms. While here I am curious about the influence of material technological practices on the ear,

[26] Steege, *Helmholtz and the Modern Listener,* 50. While Steege is arguing for hybrid understandings of the historical ear, this conception, I believe, is helpful for contemporary analyses as well.

it is helpful to consider earlier conceptions of the operatic ear articulated by philosophers such as Theodor Adorno. Adorno famously describes the ability of the operatic listener to protect herself from the adverse effects of being "[cajoled]" by the totality of the operatic experience by relocating the opera to the ear:

> Shorn of phony hoopla, the LP simultaneously frees itself from the capriciousness of fake opera festivals. It allows for the optimal presentation of music, enabling it to recapture some of the force and intensity that had been worn threadbare in the opera houses. Objectification, that is, a concentration on music as the true object of opera, may be linked to a perception that is comparable to reading, to the immersion in a text.[27]

For Adorno, the operatic ear suggests a tantalizingly pure experience of operatic audition. The listening experience he idealizes, though, is divorced from the realities of space and materiality with which the listener should also be concerned. The LP might offer freedom from the stage, but with the LP comes a new set of material behaviors, a fact Adorno conveniently ignores. In fact, Fred Moten highlights the way in which Adorno's interpretation of the listening experience enables him to ignore rather than recognize the role of materiality in listening. In Moten's words, Adorno's structural listening is "a scene of auditory reading [… related] to the literary experience of the score," reinforcing the transcendental, autonomous object of the work.[28] Technically, structural listening *does* rely on a set of behaviors responsive to material technologies. Adorno's end goal of being immersed in the "work," however, valorizes the autonomous art object at the expense of actual technologies and modes of behavior that make the listening possible.

Later conceptions of spectatorship acknowledge the role of space in the

[27] Theodor W. Adorno, *Essays on Music,* ed Richard Leppert, trans. Susan H. Gillespie (Berkeley: University of California Press, 2002), 284–285.

[28] Interestingly, structural listening becomes a way of listening that relies on the visual: "Thus the phonographic *mise-en-scène*, because of and despite the structuring degradations of the culture industry, is revealed to be the most authentic site of a mode of 'structural listening' that approaches reading, one where development and the closed totality of the work become the objects of a kind of ocular-linguistic musical perception in which music's textual essence comes to light. As Rose Rosengard Subotnik puts it, this kind of structural listening 'makes more use of the eyes than of the ears.'" Fred Moten, "The Phonographic *mise-en-scène*," *Cambridge Opera Journal* 16, no. 3 (2004): 271. See also Stephen C. Meyer, "*Parsifal*'s Aura," *19th-Century Music* 33, no. 2 (Fall 2009): 151–172.

spectatorial experience but are broader with regards to how this space is controlled. Thinking about the experience of operatic attendance rather than the isolated listening with which Adorno is concerned, Joy Calico highlights the ambiguity of the terms "spectator" and "audience member," noting the ways these terms privilege certain sensorial modes and thus aural (and visual) expectations.[29] Admittedly, focusing specifically on the operatic ear does not allow me to sidestep the ontological mire of what the audience member is actually doing—watching, or looking. *Invisible Cities*, however, makes this choice for listeners by using aural spectacle as the main consistent element of the performance. In effect, the headphones in *Invisible Cities* mirror and miniaturize the experience of acoustic containment and manipulation Emily Thompson describes taking place in the first half of the twentieth century as concert halls and urban spaces were cultivated with architectural acoustics in mind.[30] *Invisible Cities* foregrounds the ear as the means by which the rest of the performance is perceived. In so doing, the opera offers the unique opportunity to "isolate" the ear in operatic performance, inasmuch as such a thing is possible. In so doing, we are able to explore a specific example of how heterogenous operatic ears constitute one form of operatic aurality.

The Operatic Ear in the Headphones: Performing Audile Technique

Audience members of *Invisible Cities* relied on specific sociocultural notions of listening—a multiplicity of operatic ears—to synthesize components of aural and visual alike within the work. This process of interpretation was premised upon each viewer's past experiences with modes of mobile-music consumption like smartphones and portable media players. Mobile music creates a narrative world around the listener that she herself controls. *Invisible Cities* was dramaturgically oriented around these notions of individual control and imagination borrowed from mobile-music practices. Just as listeners might create a narrative linking a specific song heard on their smartphone to a rainy day, crowd of apathetic commuters, or flock of birds, spectators at Union Station linked the sounds emanating from the headphones to the physical actions of the station, regardless of where the actual

[29] Joy H. Calico, *Brecht at the Opera* (Berkeley: University of California Press, 2008), 147–48.

[30] Thompson, *The Soundscape of Modernity.*

performers in the station were located. *Invisible Cities* was also designed around an assumed *fluency* with portable audio technology. Just as attending an operatic performance in an opera house has a set of audile techniques associated with it, so too does listening to a work using headphones.[31]

The ubiquity of personal mobile-music technologies such as car radios, portable media players, and smartphones in the twentieth and twenty-first century United States has drastically changed the way music and space are perceived in relation to these innovations.[32] Moreover, electroacoustic composition and sound art more broadly have shaped how mediated sound is both composed and heard.[33] Thus, the headphones were more than just a practicality of the performance. Rather, these devices initiated a specific set of spectatorial behaviors. Indeed, this responsive pattern to material culture has a long historical precedent. Jonathan Sterne's helpful term "audile technique" explains the ways in which listeners assimilate new ways of understanding and interacting with sound in tandem with these same technologies of mechanical reproduction. As Sterne makes clear, in the early twentieth century, audile techniques—like the ability to "construct an auditory field with 'interior' and 'exterior' sounds"—were learned through "media contexts" and "through sound-reproduction technologies like telephony, sound recording, and radio."[34] As technologies of mechanical reproduction—and corresponding audile techniques—developed, listeners began to

[31] Eidsheim refers to this set of sonic expectations as a two-dimensional figure of sound, in which sound is present both in front of and alongside a group of audience members, as in a proscenium-style opera house or traditional concert hall. *Sensing Sound,* 80–95.

[32] Miriama Young describes these modes of mobile listening as "pod music," which "engages with the creation and transmission of an aesthetic centered on internalized experience of the voice through the inner ear." Young, "Proximity/Infinity: The Mediated Voice in Mobile Music," in *The Oxford Handbook of Voice Studies,* 404. Sumanth Gopinath and Jason Stanyek emphasize that mobile sound culture is not new to the digital age, nor was sound "static" prior to the technological innovations of the late-nineteenth, twentieth, and twenty-first centuries. Rather, "technological developments and socialities" of these periods produced new relationships between capital, consumers, and consequently, new sociocultural patterns of listening. Sumanth Gopinath and Jason Stanyek, "Anytime, Anywhere? An Introduction to the Devices, Markets, and Theories of Mobile Music," in *The Oxford Handbook of Mobile Music Studies, Volume I*, ed. Sumanth Gopinath and Jason Sanyek (New York: Oxford University Press, 2014), 2.

[33] While beyond the scope of this article, examples that resound in particular with the listening experience of *Invisible Cities* include Max Neuhaus's sound installations like *Drive-In Music* (1967), Janet Cardiff's *Walks* (1991-2019), Christina Kubisch's *Electrical Walks* (2004-2017), and most especially, Salvatore Sciarrino's *Lohengrin II* (2004).

[34] Sterne, *The Audible Past,* 137–138.

understand auditory space as private and individually constructed. This emphasis on individual control has continued to dominate rhetoric surrounding mobile-music in the forms of commercial advertising and individual behaviors alike. The twenty-first century operatic ear is a product of these material technologies and well-practiced at incorporating these behaviors.

One of the greatest allures of the individual, portable music device is the way in which it allows the listener to control her experience of space. In the act of covering her ears with the soft leather of headphones, or inserting earbuds, a listener demarcates a private aural zone and shapes personal perception of the visual arena beyond this intimate aural space.[35] Michael Bull explains that those practitioners well-versed in the use of mobile music through hardware such as the portable cassette/CD player, MP3 player, smartphone, and even automobile use sound to control and aestheticize changing urban environments, often through what he terms a "filmic" experience.[36]

Cerrone also acknowledges the effects of these patterns of musical consumption; his compositional style is a byproduct of the dominant technologies of the late- twentieth and early twenty-first centuries. This aspect of individual control and private space contributed to his own listening practices and subsequently, those compositional practices at work in *Invisible Cities*:

[35] In Young's view, this process "produces … the auditory deceit of 'closeness." Young, "Proximity/Infinity," 405. Gopinath and Stanyek emphasize the intimacy of this experience of mobile listening: "Just as vital to the story is the use value of that relationship, one that vitally produces a number of different intimacies: the intimacy of *insertion* (earpiece in the ear); the intimacy of *enclosure* (the sonic bubble of the earphoned headspace and the womblike envelopment of the covers); the intimacy of the *human other* (the radio deejay, the voices of the singers); the intimacy of the *distributed collective* (listeners drawn together through the synchronic time engendered by radio technology). There is also, crucially, the intimacy of *the body with device*, that other entity beside and besides the listener." All of these intimacies produce a "network of interrelated bonds." Sumanth Gopinath and Jason Stanyek, "The Mobilization of Performance: An Introduction to the Aesthetics of Mobile Music," in *The Oxford Handbook of Mobile Music Studies, Volume 2,* ed. Sumanth Gopinath and Jason Stankyek (New York: Oxford University Press, 2014), 31–32. While not necessarily focused on the headphones as intimate mediator, Holger Schulze puts the question of intimacy into dialogue with other types of sound art that deal with similar staging concepts as those present in *Invisible Cities.* Holger Schulze, "Intruders Touching You. Intimate Encounters in Audio," in *The Bloomsbury Handbook of Sound Art,* ed. Sanne Krogh Groth and Holger Schulze (New York: Bloomsbury Academic, 2020), 221–234.

[36] Bull distinguishes between two types of filmic experiences: "specific recreations of filmic-type experience with personal narratives attached to them and more generalized descriptions of the world appearing to be like a film." Michael Bull, *Sounding out the City: Personal Stereos and the Management of Everyday Life* (Oxford: Berg, 2000), 86–87.

> For me, [listening on headphones] is a very immersive thing, and I think it's a more private experience. There's something very public about hearing or playing music live for people, and there's something very private about the idea that you're having this experience and maybe no one else is around you. That's very much a part of *Invisible Cities*, the sense of walking around in a world. It's a modality that is much more private.[37]

Cerrone's words demonstrate how *Invisible Cities* works to aestheticize mundane actions and spaces, a key part of the artistic mission of The Industry's early productions. Moreover, the experience of turning a private technology into a public spectacle allows for a dialogic exchange between public and private experience into operatic spectatorship. The headphones give the listener personal control over her auditory, and thus visual environment in a public space. At the same time, she loses the privacy associated with headphone listening in the process of participating in the spectacle of the opera as a listener.

Notably, scholars of mobile music emphasize the role of the individual within the listening environment. Shuhei Hosokawa describes the walkman's capacity to "[mobilize] the Self" and in that process of mobilization, what Hosokawa calls the "walk act," to indicate to others the presence of a *secret* as indicated by the appearance of the walkman.[38] In *Invisible Cities,* the control over the experience, the sense of individuation implied by the presence of "the secret," is paradoxical. The audience member does not control the soundscape of the opera as she would control the streaming content on her own personal device, but the success of the narrative relies on her ability to link visual with aural spectacle. Moreover, the opera broadens the notion of Hosokawa's individual secret to that of a communal secret. Audience member Ellen described her experience of seeing *Invisible Cities* through the headphones:

> Listening to music on my headphones is really an intimate experience I have with myself. For people of our generation, it's what you do—you listen to your headphones. And then there's an element of almost cinematic storytelling that happens. Where you're listening to this beautiful song, and then a but-

[37] Cerrone, interview.

[38] Shuhei Hosokawa, "The Walkman Effect," *Popular Music* 4 (1984): 175–177. Hosokowa's conception of the walk act in connection with the walkman relies upon Michel de Certeau's writing on urban geographies, also pertinent to *Invisible Cities.* Michel de Certeau, *The Practice of Everyday Life,* trans. Steven Rendall (Berkeley: University of California Press, 1984), 98.

> terfly floats by—and you feel like you're in a movie—kind of making up this story about the people around you, and the light on the grass… and when I was watching *Invisible Cities*, because I had on the headphones—for the first few split seconds, I felt like that's what was happening, and then I realized that every person around me was doing the same thing.[39]

Ellen's past experiences with mobile music not only allowed her to create synchronicity between audio and visual elements in *Invisible Cities,* but also heightened her sense of communal viewership. In fact, she explained that what she termed the "vernacular of the headphones" made *Invisible Cities* both more personal and communal than an experience in an opera house. She focuses on the communal experience of the opera, rather than on the sense of individuation. In this way, *Invisible Cities* mirrors similar headphone-based gatherings such as silent disco, in which participants choose one of several tracks to listen to in a large group. Reviewer Sarah Zabrodski, too, emphasized the sense of connection with other spectators from the perspective of a communal space: "The thrill of *Invisible Cities* lies in creating a shared focus within a space where we intuitively tend to keep to ourselves."[40]

Heterogeneous Accounts of Spectatorship

Crucially, the headphones scripted certain audile techniques only to those well-versed *in* these techniques. Correspondingly, the behavior of the operatic ear is dependent upon those materials and audile techniques to which it has been conditioned. To the listener trained in habits of mobile music, the visual spectacle of the opera could be choreographed in a number of ways among various audience members. Meanwhile, the spectacle of the production, as we have seen, is firmly situated in the headphones themselves. Ellen's description relies on previous experiences with mobile music: "For people of our generation it's what you do—you listen to your headphones." Audience members were primed for the experience of mobile listening thanks to the ways the piece built upon an established social dialectic of

[39] Ellen's language echoes the mode of narration and control described by Bull. Ellen A., interview with author, Los Angeles, August 22, 2016.

[40] Sarah Zabrodski, "The Public Spectacle of a Personal Opera in LA's Union Station," *Hyperallergic,* November 14, 2013, https://hyperallergic.com/92262/the-public-spectacle-of-a-personal-opera-in-los-angeles-union-station/.

mobile music consumption. The material agency of the headphones, however, was predicated on an assumption: that audience members would understand the implicit signal the technology communicated about how the opera should be watched.

Spectator accounts of the opera paralleled the hype of the press reviews. Audience member Andrew emphasized the individualized experience of the work, explaining that "you could follow someone, you could see where they go and sing, and then you could follow someone else, and then they would lead you to a totally different part of the train station."[41] Rita Santos, who managed the supertitles for the original run of the opera and assisted in the audio booth for the opera's performance extension, also emphasized individuality and ownership. She explained that "*Invisible Cities* is totally your own exploration—you can see *Invisible Cities* many times, and never really see every single thing that happened—Yuval [Sharon] didn't even see every single thing that happened, and he was walking around every night. The point is that you never really know what is going to happen."[42] As Zabrodski noted for *Hyperallergic:* "No one observes the show in the same way … making it a highly *personal,* not private, experience. It is this individualized element that provides the source for sharing different stories connected by a single, very public event."[43]

Many glowing reviews of the work also reveal this same fluency with modes of mobile listening and individual narrative creation. At the same time, these reports demonstrate how the visual experience of the opera did not add up to a consistent narrative. For instance, Alissa Walker wrote in *Gizmodo*: "I discovered that I didn't even have to follow the story to have a transcendent experience—it was more like I was stepping in and out of different conversations between the music, the public and the building."[44] Similarly, Lisa Napoli of National Public Radio member station KCRW explained that the opera "made you pay better attention to the random other humans who happened in on the experience, as they gazed with wonder or concern or even disinterest at those dancers writhing on the floor of the terminal."[45] Audience members described by Maane Khatchatourian seemed

[41] Andrew A., interview with author, Los Angeles, August 20, 2016.

[42] Rita Santos, interview with author, Los Angeles, August 18, 2016.

[43] Zabrodski, "The Public Spectacle of a Personal Opera."

[44] Alissa Walker, "A Secret Opera Erupts Inside California's Biggest Train Depot," *Gizmodo,* October 21, 2013, https://gizmodo.com/a-secret-opera-erupts-inside-californias-biggest-train-1447832488.

[45] Lisa Napoli, "The Drama of Humanity Unfolds in Union Station—oh, and an Opera,

to be even more removed from any sort of visual spectacle: "some [audience members] wandered aimlessly throughout the building, listening instead of watching."[46] Each of these people had a different experience of the work. At the same time, individual spectators were left to interpret their own experience as *the* visual staging of the opera.

By contrast, those individuals who came to the production with different expectations of the type of listening required by the show were seemingly frustrated with some parts of the structure. Reviewer Isaac Schankler reminds readers that although "Cerrone's music provides a powerful throughline for the entire duration [of the opera]," he nevertheless missed parts of the performance. "When we re-entered the station [from another scene], there were several audience members clustered around some chairs where two men were sitting. One looked bewildered, while one was sleeping or pretending to sleep. We had clearly just missed something, but what?"[47] Schankler seems to be disappointed with a lack of consistency in the visual narrative as compared to the aural spectacle provided by the headphones. His reaction exhibits the conflict between how certain material technologies shape audience perceptions of aurality and corresponding behaviors of spectatorship. Another reason this kind of confusion occurred had to do with the setting of the opera in crowded Union Station as well as the fact that all of the performers began the piece costumed in everyday, casual clothing. (Audience members were marked as audience members; however, performers were unmarked.) Andrew described the unexpected discovery that certain individuals in Union Station were actually performers. "There were moments where I was like 'oh, I'm standing right in front of someone who is singing,' and sometimes I didn't even realize the singer was actually a singer [because of the way sound was processed]."[48]

In other cases, spectators who came expecting to see a certain performer often had a difficult time finding that performer. The point was to engage with the aural experience as an audience member, not necessarily to actual-

Too," *KCRW,* October 18, 2013, https://www.kcrw.com/culture/articles/the-drama-of-humanity-unfolds-in-union-station-2014-oh-and-an-opera-too.

[46] Maane Khatchatourian, "*Invisible Cities* Opera Gets Immersive with Wireless Technology," *Variety*, November 16, 2013, https://variety.com/2013/legit/news/invisible-cities-immersive-opera-1200841486/.

[47] Isaac Schankler, "*Invisible Cities:* Choose Your Own Opera," *New Music Box,* November 27, 2013, http://www.newmusicbox.org/articles/invisible-cities-choose-your-own-opera/.

[48] Andrew A., interview.

ly see all of the performers heard in the headphones. That purpose, however, was implicit in the headphones themselves, not stated directly. Faatoalia explained that certain friends were disappointed when they couldn't find him or locate a specific scene they had heard about. "I tried to tell people: 'Don't feel bad if you missed different things. Just be immersed in the experience and find your own sort of show.'"[49] Faatoalia's advice to his friends—"find your own sort of show"—acknowledges the way in which *Invisible Cities* relied on singular, individual operatic ears that would ideally come together to constitute narrative.

Conclusions: From the Operatic Ear to the Operatic Voice

Invisible Cities inspires a definition of the operatic ear that is highly individuated and responsive to listener experience (or lack thereof) with various technological interfaces. Listening to sound simultaneously live and recorded demands a correspondingly hybrid form of spectatorship. Sound helps to define space and guides behaviors within this space. At the same time, an audience member has more control over the types of space she chooses to occupy as the sound moves with her. She is separate from the people at the station not wearing headphones and yet a clearly defined—even marked—member of a listening community.[50] Her experience of spectatorship is fragmented by her decisions in the moment, and yet contingent upon the behaviors of others.

As I have demonstrated, the operatic ear does not represent a monolithic set of behaviors, nor is it a singular concept. Rather, operatic ears are situated in networks of technologies, material practices, sounds, and patterns of listening. As such, they allow listeners to absorb the similarly hybrid phenomenon of the operatic voice. Relying on a variety of clues and behaviors, these listeners engage in ways both predetermined and spontaneous. Operatic ears are also shaped by a number of other dialectic tensions: public/private; encultured/unaware of listening practices, and agent/subject of aural production and control.

In the case of *Invisible Cities*, listener experiences with headphones

[49] Faatoalia, interview.

[50] Eidsheim has explored the way *Invisible Cities* created a form of sonic differentiation between audience members and commuters at Union Station. She describes this as a form of sonic gentrification through the lens of "air politics." "Acoustic Slits and Vocal Incongruences," 302–3.

shaped both spectating behaviors and the way voices were heard. As Young describes, music created for headphone distribution leads to specific types of composition, "in particular, vocalizations in *sotto voce* and hushed tones, articulated in close proximity to the microphone," techniques which in turn, lead to a "new aesthetic" of composition.[51] The intimate aesthetic Young describes certainly fits the bill for the production of *Invisible Cities,* in which performers drew on a range of pop-music techniques to sing in an appropriate way. As tenor Faatoalia explained to me, "I think my experience with mikes before on pop and contemporary projects helped for sure to learn how to balance and engage [in *Invisible Cities*]."[52] Young's words also reveal how the operatic ear might be understood as byproduct of the mediated ears of the twentieth- and twenty-first centuries. The "fabricated aesthetic" she describes is meant to encapsulate the intimacy of the headphones, and this is certainly true of the pop aesthetic so described by Cerrone when speaking of *Invisible Cities*. As such, the operatic ear indicates how operatic voices will be produced and subsequently heard. In turn, the notion of operatic aurality offers a new way to consider how practices of performance are inherently reliant upon other contexts. Just as ear produces voice and voice produces ear, so too is this relationship of mutual production an interstitial one.[53] By this I mean that spaces of possibility are produced in the context of aurality, and the mutually constitutive relationship I am describing will produce further heterogeneities of listening and spectatorship.

I began by putting hermeneutic analysis in conversation with new materialism, and this dialectic is, I believe, a helpful way to conclude. *Invisible Cities* ends with a dramatic scene in which the Kublai Khan, who has previously been dressed in contemporary clothes, emerges in a dramatic costume as the emperor at the height of his glory. He faces Marco Polo, who stands at the other end of the Historic Ticketing Hall of Union Station.[54] The pair is surrounded by the now fully-costumed cast, as well as the headphone-wearing audience members who have been ushered into the space by stage managers. As the two face one another, Polo and the quartet sing a repeating chorus: "Kublai Khan | seek and find | who and

[51] Young, "Proximity/Infinity," 406.

[52] Faatoalia, interview.

[53] See Ochoa Gautier, *Aurality,* 22.

[54] For a sense of the production locations as associated with specific scenes, see "Select a Scene at Union Station," Invisible Cities: Experience, accessed July 23, 2020, http://invisiblecitiesopera.com/experience/.

what, | in the midst of the inferno, | are not the inferno. | Make them endure, | give them space." This proscenium-like spectacle combines liveness, recorded sound, shared and fragmented-headphone space, voices, and ears. Aurality offers a similar sort of amalgamation of signifiers. The important thing is to discover what signifiers—material, hermeneutic, and otherwise—are present, and to give them space to sound and be heard by listening operatic ears.

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Abstract

Opera scholarship often begins with the voice then moves to the ear. But what if we move in the opposite direction? That is, what can we discover about operatic sounds by focusing on how processes of listening are mediated by social and technological patterns of behavior? I use The Industry's 2013 production of Christopher Cerrone's opera *Invisible Cities,* which relocated the audiovisual space of the opera house to a set of wireless headphones worn by each audience member, to think through these questions. In this article, privileging the ear *over* the voice allows us to consider the ways digital technologies create equivalent modes of understanding operatic *listening* as simultaneously fragmented, interstitial, and relational.

Rather than focusing on the acoustic perception of sound as it relates to the concert hall, here I am interested in highlighting the material significance of the headphones themselves in the production. I put interviews and public press reviews in dialogue with the body of rich scholarship around historical and contemporary modes of listening (Eidsheim, Sterne, Ochoa Gautier, Steege). I situate these headphones within a history of mobile listening and behaviors in order to understand what elements shape the twenty-first century operatic ear. I argue that the modes of spectatorship used in *Invisible Cities* built upon an established sociocultural tradition to show audience members *how* to successfully listen to the work. In focusing on the headphones, I demonstrate the significance of material technologies in constituting operatic aurality.

Keywords: Mediation, Aurality, Spectatorship, Opera, Headphones.

Megan Steigerwald Ille is an Assistant Professor of Musicology, Educator at the College-Conservatory of Music, University of Cincinnati. Her research focuses on the roles of place and digital mediation in the twenty-first century U.S. opera industry. She is currently working on a book on the Los Angeles-based opera company The Industry titled *Opera for Everyone: Experimenting with American Opera in the Digital Age*, that considers the impact of experimental spectatorship practices on contemporary operatic performance. She has published articles in the *Journal of the Society for American Music* and the *Opera Quarterly*.