

Shocking Intimacy: Techniques, Technologies, and Aesthetics of Amplification in Clara Iannotta's *Intent on Resurrection**

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*The bones I feel inside my skin
are scaffolding that holds me in.
Earth will glean them when I'm chaff,
and wafted off.
Those bones will be an implement,
an ornament or instrument.
Fingers will wrap themselves around
the hollow sound.
They'll play the bones fortissimo,
disturb me when I'm lying low.
Intent on resurrection—spring,
or some such thing.*

(Dorothy Molloy, "Playing the Bones," *Hare Soup*)

Bring your hand to your ear and gently brush a finger from the earlobe up to the cartilage, before spiraling down towards the canal. What do you hear?

Michel Chion would call these "small sounds."¹ Small sounds can reveal themselves in a broad palette of textures: rub a fingernail on the pad of your thumb, close to the ear, and the sound will transform into something

* I started thinking about this topic back in the Fall 2017 when I had the fortune to take Carolyn Abbate's class *Aurality, Listening, Hearing* at Harvard. I am grateful for her encouragement and her revisions on an earlier version of this article. I also want to thank James Bean and Julio Zuñiga for our stimulating conversations about amplification technologies, Christopher Danforth (Harvard Sound Lab) for indulging my request to purchase a megaphone I could experiment with, the anonymous reviewers of this journal for their generous and constructive comments, and Daniel Walden and Megan Steigerwald Ille for their precious suggestions on the final draft.

¹ "Certain sounds, even when they are loud or heard from close by, conjure small sources." Michel Chion, *Sound: An Acoulogical Treatise*, trans. James A. Steintrager (Durham, NC: Duke University Press, 2016), 7.

“crisper.” Their “small” quality however endures in their “weight-image”—that is, the perceived “strength of the cause in relation to our own scale,” regardless of what that cause is and whether or not we identify it.²

While Chion’s definition focuses on the small scale of their source of emission, I want to draw attention to the feeling of intimacy these sounds generally convey. They may bring to mind the image of a child’s room resounding with the whispered words of a bedtime story. Or we might imagine the soothing sounds of a hairbrush running through our hair; or even the smack of a kiss that reddens our skin, embracing for an instant the whole of our face. In the epigraph above, the Irish poet Dorothy Molloy envisions yet another world of small sounds deep underground. She can hear the “hollow sound” of her bones pounding “*fortissimo*,” damped by the deafening silence of the earth.³

Molloy’s poem also serves as the epigraph to Clara Iannotta’s *Intent on Resurrection – Spring or Some Such Thing* (2014), a work which invites us to question: what would happen if one attempted to listen to small sounds outside of these intimate, contained spheres? In a concert hall, for example? What happens to small sounds when they are transplanted in a public, larger space of interaction, possibly crowded with people, breathing, yawning, whispering, and brushing their arms against the velvet of their armchairs?

In this article I explore how Italian composer Clara Iannotta (b. 1983) brings small sounds to the public in the first minute of *Intent on Resurrection* (measures 1-13).⁴ What are the instruments, techniques, and processes

2 Chion, *Sound*, 7–8.

3 Dorothy Molloy, *Hare Soup* (London: Faber & Faber, 2004), 50. See the epigraph at the beginning of this article.

4 The premiere of *Intent on Resurrection* took place on October 17, 2014, at the Concert Hall of the Cité de la Musique, Paris. It was given by Ensemble intercontemporain as part of the Festival d’Automne. The attached recording of the first minute of Iannotta’s *Intent on Resurrection* is from track no. 1 of Clara Iannotta, *A Failed Entertainment: Werke 2009–2014*, performed by Ensemble intercontemporain, conducted by Matthias Pintscher, Edition RZ 10023, 2015. The score will be published soon by Edition Peters in a revised version (2021). Clara Iannotta’s entire oeuvre, however, is riddled with small sounds. Iannotta was asked to comment on this fact in a 2016 interview for the Chicago Symphony Orchestra blog: “[Sam Adams]: There’s an incredible intimacy in your music, particularly in this piece. Not just a metaphorical intimacy, but we are quite literally hearing the most intimate sounds that you can make. It’s like you’re sucking on a Popsicle, these types of sounds. Is that something that you’re really interested in and amplifying in your music, those small gestures? [Clara Iannotta]: Yes. It’s been a few years, like four years, that [I’ve noticed] my sounds have become weaker and weaker—really, really small.” Sam Adams, “*Intent on Resurrection* Composer Believes ‘Music Should Be Seen as Well as Heard,’” *CSO Sounds & Stories* (blog), May 3, 2016, <https://csosoundsandstories.org/intent-on-resurrection-composer-believes-music-should-be-seen-as-well-as-heard/>.

that occasion or allow for small sounds? How does our listening craft small sounds, and vice versa? In answering these questions, I will look closely at the relationships between their modes of production, materialities, and aesthetics, paying particular attention to how the affordances of the actors involved exercise technological agency.⁵ The more closely we examine small sounds, try to define them, or pin down their acoustic or perceived origin, the more they resemble a moving target, revealing the limits of Chion's static definition. Reconsidering small sounds also leads me to shed new light on music-theoretical elements, such as dynamic signs, and the role of techniques and technologies in generating a sound quality that exists only at the intersection of the acoustic and the perceived worlds.⁶ By articulating the technological means harnessed to allow for such a quality to emerge, we reveal the conditions that are necessary for a sound to be recognized as intimate—even when it is experienced in a large public venue.⁷

First, a few words about my approach. The discursive frameworks commonly associated with the construct of New Music—the field in which Iannotta locates herself—could potentially have provided a predetermined

5 Musicological literature has surveyed many technologies of acoustic and spatial illusions. See, for example: Thomas L. Hankins and Robert J. Silverman, *Instruments and the Imagination* (Princeton: Princeton University Press, 1995); Alastair Williams, "Technology of the Archaic: Wish Images and Phantasmagoria in Wagner," *Cambridge Opera Journal* 9, no. 1 (1997): 73–87; Carolyn Abbate, *In Search of Opera* (Princeton: Princeton University Press, 2001); Emily I. Dolan, "E. T. A. Hoffmann and the Ethereal Technologies of 'Nature Music,'" *Eighteenth-Century Music* 5, no. 1 (2008): 7–26; Francesca Brittan, "On Microscopic Hearing: Fairy Magic, Natural Science, and the Scherzo Fantastique," *Journal of the American Musicological Society* 64, no. 3 (2011): 527–600; Douglas Kahn, *Earth Sound Earth Signal: Energies and Earth Magnitude in the Arts* (Berkeley: University of California Press, 2013); Abbate, "Sound Object Lessons," *Journal of the American Musicological Society* 69, no. 3 (2016): 793–829; Deirdre Loughridge, *Haydn's Sunrise, Beethoven's Shadow: Audiovisual Culture and the Emergence of Musical Romanticism* (Chicago: University of Chicago Press, 2016).

6 I am using "acoustic" versus "perceived" sound in reference to Cornelia Fales's distinction: "the acoustic world is the physical environment where sound as acoustic signal is produced and dispersed; the perceived world is the subjective, sonic world created by listeners as a result of their translation of signals from the acoustic world." Cornelia Fales, "The Paradox of Timbre," *Ethnomusicology* 46, no. 1 (2002): 61.

7 If we are learning through sound what to recognize as intimate, we are engaging in what could be called an "acoustemology of intimacy." Coined by anthropologist Steven Feld in 1992, "acoustemology conjoins 'acoustics' and 'epistemology' to theorize sound as a way of knowing. In doing so it inquires into what is knowable and how it becomes known, through sounding and listening." Steven Feld, "Acoustemology," in *Keywords in Sound*, ed. David Novak and Matt Sakakeeny (Durham, NC: Duke University Press, 2015), 12.

context for my investigations of her work.⁸ I will nevertheless keep them at a critical distance. I want to eschew the implicit historiographical discourse of “New Music,” which posits a unified trajectory in which individual composers, acting in their capacity as rational minds, mark the progress of Western art music—minds that, as if guided by “immobile forms that precede the external world of accident and succession,”⁹ ensure a unified trajectory in the history of music creation.¹⁰ I also want to avoid the temptation of this discourse to turn materials and mediators into black boxes—opaque devices that unidirectionally transform ideally determined inputs into ideally forecasted outputs.¹¹

I am interested instead in what we might gain if we shift our focus from the rational agency of human actors, and towards an alternative perspective that construes the composer as simply one actor in a network among others, thereby privileging an understanding of agency as distributive.¹² This leads me to follow Bruno Latour in decoupling action from consciousness, treating the composer instead as a “node, a knot, and a conglomerate of many surprising sets of agencies that have to be slowly disentangled.”¹³

8 On how Iannotta identifies as a New Music composer, see Giulia Accornero, “Clara Iannotta: Bludenz and the Business of Responsible Curation,” *National Sawdust Log*, November 7, 2017, <https://nationalsawdust.org/thelog/2017/11/07/clara-iannotta-bludenz-and-the-business-of-responsible-curation/>.

9 Michel Foucault, “Nietzsche, Genealogy, History,” in *Language, Counter-Memory, Practice. Selected Essays and Interviews*, ed. and trans. Donald F. Bouchard (Ithaca: Cornell University Press, 1977), 142.

10 Other recurrent tropes of the New Music litany are: the idea of the musical composition as investigation, often in explicit contradistinction to *other* musics created for public entertainment, which justifies commercial failure and the receipt of institutional support; the construal of “Art Music” as a mode of progress and innovation, which generally results in strenuous research for the “new” and the “original,” and is coupled by a more or less implicit valorization of New Music above any other music.

11 My effort is inspired by previous works in this direction such as Georgina Born and Andrew Barry, “Music, Mediation Theories and Actor-Network Theory,” *Contemporary Music Review* 37, no. 5–6 (2018): 443–87.

12 Authors like Tim Rutherford-Johnson and Seth Brodsky have recently attempted to renovate our understanding of the “histories of contemporary Western art music” by moving away from the “precepts on which the post-1945 narrative is based” and giving them a new beginning: 1989, the date of the fall of the Berlin Wall, the triumph of a “neoliberal political and economic orthodoxy” and the design of the World Wide Web (launched shortly after in 1991). See Tim Rutherford-Johnson, *Music After the Fall: Modern Composition and Culture Since 1989* (Oakland: University of California Press, 2017), 5–7; Seth Brodsky, *From 1989, or European Music and the Modernist Unconscious* (Oakland: University of California Press, 2017).

13 Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (New

It also allows me to draw attention to how mediators “transform, translate, distort, and modify the meaning or the elements they are supposed to carry,”¹⁴ and can thus be understood as part of an actor-network. And finally it compels me to jettison normative *a priori* understandings of this or that entity and their causal relations—be it an instrument and a performer, a composer and an architecture, or an affect and a new technology—in favor of a close observation of how action is distributed and translated between them.¹⁵ Thus, in this article, I explain *Intent on Resurrection*’s small sounds not in conjunction with the course of New Music, but rather in relation to the emergence and withdrawal of the affordances of the sonic techniques and technologies of the past century.

The focus on mediators also leads me to lend the concept of affordance significant weight. In *Music at Hand: Instruments, Bodies, and Cognition*, Jonathan De Souza provides a useful point of reference for how the notion of affordance could be productive for the field of music studies, in particular when it comes to the interactions between humans and objects. Relying on psychologist James J. Gibson’s definition of affordances as “possibilities for action by a particular agent,” De Souza reminds us that Gibson thought of them “independently of an agent’s need or skills,” and thus independently of human intentionality.¹⁶ In the next sections, therefore, I will guide you through an exploration of the affordances of megaphonic and microphonic amplification as they emerge from the first measures of *Intent on Resurrection*. These affordances, I will show, are part of scientific and artistic discourses that have been around since the invention of megaphones and microphones—and even

York: Oxford University Press, 2005), 44.

¹⁴ Latour, *Reassembling the Social*, 39.

¹⁵ I follow Benjamin Piekut’s understanding of Latour’s “Actor-Network Theory” as a heuristic methodological tool, rather than a theoretical statement in support of technological determinism. For bibliographical reference of ANT theory in music history and sociology see Benjamin Piekut, “Actor-Networks in Music History: Clarifications and Critiques,” *Twentieth-Century Music* 11, no. 2 (2014): 191–215; Born and Barry, “Music, Mediation Theories and Actor-Network Theory.” The New Organology approach proposed by John Tresch and Emily Dolan, which treats musical instruments as “actors or tools with variable ranges of activity” is another important background reference to the present work. See John Tresch and Emily I. Dolan, “Toward a New Organology: Instruments of Music and Science,” *Osiris* 28, no. 1 (2013): 281.

¹⁶ Jonathan De Souza, *Music at Hand: Instruments, Bodies, and Cognition* (New York: Oxford University Press, 2017), 12, 52. James Gibson coined the term, which was made famous through his work *The Ecological Approach to Visual Perception* (Boston: Houghton Mifflin, 1979).

earlier, when the microphone was just an imagined device—showing how the distribution of compositional agency is not just a synchronic phenomenon but also a diachronic one: it cuts through history.

This exploration will also lead me to the discovery of unexpected forms of interplay between affordances and abilities. On the one hand, I will reveal how the affordances of small sounds as acoustical objects shock the listener, setting out parameters for action. Small sounds invite us to focus our attention into their qualities, amplify them in our awareness, and perceive the sensation that is coupled with such a change in focus—the sensation of entering a zone of intimacy. On the other hand, we, as listeners, also bring into the network bodily and cognitive affordances that shape how we might perceive and identify small sounds.¹⁷

While following *Intent on Resurrection*'s small sounds at the intersection of the acoustic and the perceived worlds, between human and instrumental technologies, we will necessarily follow the linear trajectory imposed by the means of writing. I hope, however, to disrupt the idea that such a trajectory reflects a specific line of causation. As listening is always at the boundary between nature and culture, we should expect that our affordances craft small sounds just as much as small sounds (and the network of techniques and technologies involved in their production) craft our abilities.

The Enormous Voice of a Pianississimo

Now imagine that you are holding an electric megaphone. Bring your mouth as close as possible to its mouthpiece, turn it on, and move your lips and tongue “slowly and irregularly,” as if you were sucking a piece of candy.¹⁸ Actually, you already have part of this technology at hand—or better, at face—as the sound of your mouth can provide you with an approximation if you are in a silent enough room. *Intent on Resurrection* begins with the notation of these actions, entrusted to the flutist, the clarinetist, and bassoonist (see fig. 1). The sounds obtained from these prescribed bodily movements are imme-

¹⁷ To say that one's body has affordances means to recognize its “constitutive technicity,” as Carolyn Abbate and Michael Gallope (after Vladimir Jankélévitch) have recognized in “The Ineffable (and Beyond),” in *The Oxford Handbook of Western Music and Philosophy*, ed. Tomás McAuley, Nanette Nielsen, and Jerrold Levinson (New York: Oxford University Press, 2021), 748.

¹⁸ Clara Iannotta, *Intent on Resurrection – Spring or Some Such Thing*, score (self-pub., 2014), vi.

pour 17 musiciens

Clara Iannotta
(2014)

Partition en UT

The score is for 17 instruments: Flute, Clarinet, Bassoon, Cor Anglais, Trompette, Trombone, Percussion 1 & 2, Piano, Harpe, Violon 1 & 2, Alto 1 & 2, Violoncelle 1 & 2, and Contrebasse. The score is in 2/4 time and features various dynamics like ppp, mp, and pp. It includes performance instructions in French such as "Mélisma / Bascule attaché au rythme. (Dessus très doucement et intelligiblement l'intonation de la bouche, comme pour jouer un langage)" and "Préparer l'attaque et intelligiblement le souffle d'admission. Un grain 3 la fin." The score is divided into measures with time signatures like (-5"), (-10"), (-15"), (-20"), (-25"), and (-30")²/₄.

Fig. 1 First page of Clara Iannotta's *Intent on Resurrection – Spring or Some Such Thing*.

diately mediated by electric megaphones placed on stands in front of each performer. The megaphone conceals within it a microphone located at the mouthpiece, which receives the acoustic sound and transforms it into an electric signal; a transistor, which amplifies the input electrical current into a more powerful output; and a loudspeaker, which transduces the electric signal into acoustic waves, amplified further by travel through the exponentially widening concentric ducts of the reentrant horn.

On the score, Iannotta indicates the sound quality these bodily actions should produce: a *pianississimo* (*ppp*). Are these meant to be small sounds? What that *ppp* stands for is unclear, as the megaphone amplifies the mouth sound. If this sign is supposed to apply to the sound of the mouth *before* it is mediated by the megaphone, it would require the performers to focus and nuance their own mouth sounds. This interpretation however proves problematic because the closeness of the megaphone's mouthpiece—"almost touching [it]"—makes it impossible for the performers to listen to their mouth sounds before mediation. They can sense and control their own mouth sounds only through the megaphone's voice.

Perhaps, then, the *pianississimo* applies to an ideal mouth sound that the performers do not actually hear but convert in their imagination from the magnified sound of the horn. The performers then control their mouth sounds based on the feedback they hear from the megaphone. But the megaphone's auditory feedback is complicated further by the presence of "audio feedback"—also known as the Larsen effect—that is created by a positive loop gain between the megaphone and the mouth, which acts as both a sounding board and a *locus* of production. As Iannotta explains in the performance notes:

NB: opening the mouth slightly, one can cause feedback with a very strong dynamic. The effect itself is very pleasant, and it can be integrated into the texture as long as one moves away from the mouthpiece as soon as one hears the feedback emerging in order to maintain a quiet dynamic.¹⁹

The performers must therefore also modulate their closeness to the microphone in order to obtain and control the faint growl of the Larsen effect, coupled with the magnified sound of their mouth, while maintaining the "quiet dynamic" Iannotta prescribes. Thus, the mouth sound is from the beginning a megaphonic sound, produced in network with the megaphone.

¹⁹ Iannotta, v–vi.

The *pianississimo* the performers must strive for thus quickly loses any quantitative connotation. The level of the constantly changing acoustic mouth sound has an average of 40 decibels (dBA), with peaks of 60 when the tongue strikes the hard palate. However, a 50-Watt megaphone amplifies that sound to 90 dBA near the source—with peaks of 100 when, for example, the tongue is striking the hard palate—and has the potential to cover over 700 meters. (According to the American agency for the Occupational Safety and Health Administration, a construction site produces circa 100 dBA.)²⁰ The *pianississimo* must therefore be a qualitative descriptor, rather than a measure of loudness quantifiable in decibels. Preserving a *ppp* despite amplification means preserving the quality of Chion’s “small sounds”—ensuring that no matter how loud, the small sound conjures small sources. Dynamic signs thus begin to assume a different depth.

So far, we have observed that small sources are one of the defining features of small sounds, just as Chion suggested. The following exploration of the technologies harnessed in *Intent on Resurrection* will show, however, that focusing on small sources is not enough.

Megaphone: Technologies of Public Intimacy

Having scrutinized how performers, the megaphone, and the notation interact in producing small sounds, I now want to locate the activity of the megaphone within a constellation of historical uses—thereby highlighting what I earlier called the “diachronic” distribution of compositional agency. These uses feed into the affordances of amplification that Iannotta’s composition allows to emerge or withdraw to produce an aural-affective experience of intimacy in a large public venue such as a concert hall.

What here is called a megaphone is the combination of a microphone and a horn.²¹ The history of sound amplification and its cultural meanings

20 See figure 3 “Typical Sound Levels (dBA)” of the *OSHA Technical Manual (OTM)*. Section III: Chapter 5, Occupational Safety and Health Administration, United States Department of Labor, updated August 15, 2013, <https://www.osha.gov/otm/section-3-health-hazards/chapter-5>. Moreover, it is important to remember that the dBA scale works logarithmically—that is, the level of perceived loudness doubles for every 10 dBA of difference.

21 The horn’s reentrant design has the same effect on the sound as a correspondent unfolded version but has the advantage of being more manageable. The amplifying power of the horn, while minimal with respect to that of the transistor, is made possible by increasing acoustic impedance (i.e., the lack of dispersion of soundwaves at both the mouthpiece

have already been thoroughly examined,²² but I now want to take a closer look at the horn's basic affordance—the power to project sound across space—by considering the ways in which Thomas Edison's *aerophone* (1878) was advertised. The aerophone, which today we might understand as a kind of megaphone, was exalted for its power to *cover* space and reach large gatherings of people, a power enacted in settings “from suffrage protests to the English admiralty.”²³ Through it, Edison believed, “the Declaration of Independence may be read so that every citizen in any one of our large cities may hear it.” But coverage was only one of the possible social constructions of the aerophone's projective power. Edison also imagined that his invention could be used to reduce distance in communication, so that for instance “steamships [could] converse at sea.”²⁴ In this case, the projective power of the megaphone was directed towards *cutting* through space and generate a sense of proximity, acting as a sort of (unprivate) telephone. Intriguingly, the aerophone was designed to work in tandem with yet another piece of technology called the *megaphone*, as shown in figure 2, which at that time was an ear trumpet shaped to enhance the sound, but only at the receiver's end. In Edison's imagination, not a crowd, but “two persons provided with this instrument, [were] enabled to converse in the ordinary tones of voice some miles apart.”²⁵ In other words, the projection power of the aerophone could afford to spread the loud word of its user to a public (i.e., to cover space), as well as to serve as the bridge for an intimate conversation between two users at a distance (i.e., to cut space).

and the space of the reentrant horn). This allows the sound waves to accumulate resonance before their dispersal into an open space. Moreover, by conveying the sound in a specific direction, the horn makes it louder for those in the line of its projection and softer for those off axis, just as a laser focuses a light beam.

22 For reference, see Jonathan Sterne, *The Audible Past: Cultural Origins of Sound Reproduction* (Durham, NC: Duke University Press, 2003).

23 Gyllian Phillips, “‘Vociferating through the Megaphone’: Theatre, Consciousness, and the Voice from the Bushes in Virginia Woolf's *Between the Acts*,” *Journal of Modern Literature* 40, no. 3 (2017): 40–41.

24 J. B. McClure, *Edison and His Inventions: Including the Many Incidents, Anecdotes, and Interesting Particulars Connected with the Life of the Great Inventor* (Chicago: Rhodes & McClure, 1879), 141.

25 McClure, 122. The aerophone paired the horn to a source of power (compressed air) that would magnify the sound waves produced by two vibrating diaphragms. This avoided, for example, the need to modify one's dynamic by shouting or vocal projection, involving the mouth, larynx, vocal fold, and trachea—two main shapes known as “megaphone” and “inverted megaphone.” See Ingo R. Titze, “The Human Instrument,” *Scientific American* 298, no. 1 (2008): 94–101.

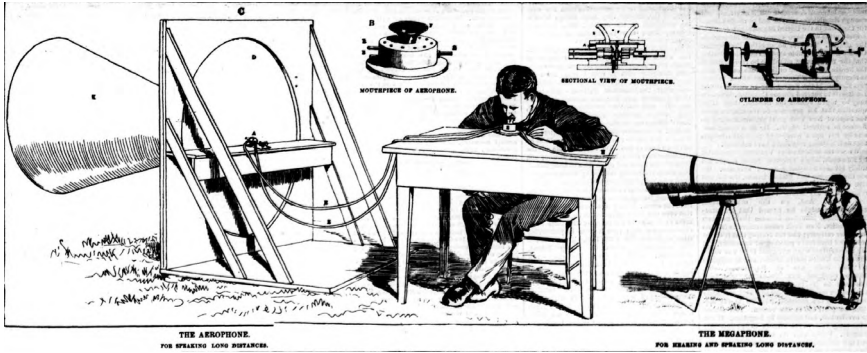


Fig. 2 "The Latest of Mr. Edison's Inventions," *Daily Graphic*, July 19, 1878.

Iannotta's megaphone displays a similar dual functionality. In the first measures of *Intent on Resurrection*, the megaphone participates in an actor-network constituted by sounds that are characterized by low air pressure, and a concert hall, which is generally optimized for orchestral sounds and imposes predetermined distances between performers and public. Thus, in this environment, the megaphone becomes a prosthesis that establishes contact between the small movements of the performer's mouth, and you, sitting multiple rows away in the audience. It thus generates a sense of closeness and intimacy that is customarily associated with the soundscape of the private sphere, *despite* concert-hall distances.²⁶ What could otherwise be heard only at close proximity now *cuts* through space to touch you.²⁷ This touch is also enhanced by the fact that the horn seems to be unmediated: unlike a normal microphone, there are no cables or loudspeakers dislocated from the sound source.

At the same time, the megaphone's power to *cover* space serves the public nature of a concert hall. While small sounds are usually heard at close range,

26 As De Souza (following Gibson) acutely reminds us, "the environment is both natural and cultural, so these aspects of affordances should not be opposed. Indeed, they are combined in musical instruments." De Souza, *Music at Hand*, 13. I understand the concept of affordances as merging natural, social, and semiotic agencies. Under what De Souza names the "cultural," I distinguish between "social" and "semiotic," following Latour's insight that these three sources of agencies cannot be clearly differentiated in the definition of an object.

27 It is worth noting that such prosthesis not only allows for small sounds to cut through space, but also preserves their clarity relatively well. In acoustic settings characterized by high reverberation time (e.g., historical cathedrals), small sounds would also be "amplified," but at the expense of clarity.

giving the impression that they are reserved for you alone, the megaphone generates a sense of proximity for an entire concert hall. Thus, an aural and affective oxymoron comes into being: an intimacy meant for public consumption, a proximity within imposed distance. Through its affordances, the megaphone becomes a technology of public intimacy—that is, a technology that can mass-generate a feeling we are meant to experience alone.

There are other ways in which the megaphone reinforces this oxymoron, distorting sound on both a material and a semantic level. As it is designed to magnify mid-high frequencies the most, in order to enhance the clarity of the articulated speech, it inevitably colors the intimacy of mouth sounds with a metallic overtone: “the anonymous bray of the infernal megaphone,” in Virginia Woolf’s notorious words.²⁸ Moreover, the megaphone can be detached from the sound source to create an acousmatic setting. This is a feature that has been variously exploited towards artistic effect.²⁹ The megaphone of *Intent of Resurrection* is clearly visible on stage, but the audience entertains an indirect relation with the actual sound source—i.e., the performer’s mouth—because the megaphone also covers it. When we hear someone speaking through a megaphone, we might easily identify the sound source as the whole speaking body. But in the case of Iannotta’s small sounds, the source is the mouth alone, and more specifically the inner cavity. Looking at the megaphone “in action,” one is confronted with a disturbing ambiguity: does the megaphone simply cut out of our view the sound source it puts us in aural touch with, or does it instead become part of the performer’s face, revealing the actual sound source—i.e., the new megaphonic *persona*?³⁰ In the first case, by covering the sound source, the megaphone might “amplify” for the audience the feeling of an “unnatural” or “artificial” contact.³¹ But in the second case, by witnessing the megaphone

28 Virginia Woolf, *Between the Acts*, ed. Mark Hussey (Cambridge: Cambridge University Press, 2011), 135.

29 Megaphones have been used to set a “demonic” atmosphere by amplifying off-stage choruses. Think of Meyerbeer’s *Robert le Diable* (1831), or the pre-recorded voices of Luigi Nono’s *Intolleranza 1960* (1961), which exploit the horn’s ability to dominate spectators through the power of acousmatic voices.

30 *Person* and *persona* are related to the “classical Latin *persōna*,” (i.e., the “mask used by a player, character in a play, dramatic role, the part played by a person in life,” etc.) Latin writers used the word to indicate the wood mask through which the voice of the Greek theater actor resonated. *Oxford English Dictionary (OED) Online*, s.v. “person,” last modified September 2021, www.oed.com/view/Entry/141476.

31 A similar effect was reported by the audiences of some crooners. According to Simon Frith, “Legitimate’ music hall or opera singers reached their concert hall audiences with the

as an integral part of the performer's body, we are reminded that bodies are mediators themselves. From this perspective, the dualism of natural and artificial starts to dissolve, and the various mediators (bodies included) are co-defined by the affordances and abilities revealed in a certain activity—in this case, through the production of small sounds.

A close reading of this actor-network has shown how the megaphone transforms both the acoustic sound it brings forth and its meaning in ways that are ultimately independent from the composer's intention—or, at the very least, that shape the composer's intention. Megaphones never simply serve as prostheses, understood in the narrow sense of “devices that extend the body's ‘natural’ sound-producing capacities.”³² Rather, this amplification technology, by “mak[ing] sounds that do not already exist,” acquires the poietic function that Johnathan De Souza attributes to musical instruments.³³ According to De Souza, we can salvage the word *prosthesis* (and rehabilitate the prosthetic qualities of instruments) insofar as we understand the term in accordance with philosopher Bernard Stiegler: “a ‘prosthesis’ does not supplement something, does not replace what would have been there before it and would have been lost: it is added.”³⁴ We can say that the megaphone as *prosthesis* does not represent the boundary between the “natural” human being and an artificial apparatus, but rather rearticulates what we thought of as the performer's body in a new uncanny *persona*.

Microphone: Technologies of Close-Up Intimacy

Let us now shift our focus to the microphonic component of the electric megaphone. Electric megaphones combine the technology of the horn with a microphone, which has the power to gain, magnify, and transmit the faintest sounds through either the horn or loudspeakers. Considering the microphonic component of the megaphone will further enrich our under-

power of their voices alone; the sound of the crooners, by contrast, was artificial. Microphones enabled intimate sounds to take on a pseudo-public presence, and, for the crooner's critics, technical dishonesty meant emotional dishonesty.” Frith, “Art Versus Technology: The Strange Case of Popular Music,” *Media, Culture & Society* 8, no. 3 (1986): 264.

³² De Souza, *Music at Hand*, 25–26.

³³ De Souza, 23.

³⁴ Bernard Stiegler, *Technics and Time, 1: The Fault of Epimetheus*, trans. Richard Beardsworth and George Collins (Stanford: Stanford University Press, 1998), 152. Quoted in De Souza, 26.

standing of how the public/intimate oxymoron plays out through *Intent on Resurrection*'s small sounds.

At first, the integration of a microphone's affordances with those of the megaphone might simply be understood as a *potentiation* of the horn's power to cut distances between the transmitter and the receiver.³⁵ This is a function exploited in technologies for speech transmission, such as the telephone or hearing aid, which are driven by what Mara Mills calls the concerns of "noise reduction, focused transmission, listener control, selective amplification ... This is the history of speech becoming 'signal': a *thing* that could be isolated, amplified and otherwise processed or 'improved.'"³⁶

But in addition to the regular "signal" (i.e., the speech), the microphone magnifies another world of acoustic nuance that might go unnoticed by the unassisted ear, *even* at close range. This affordance has been observed many times throughout history—and even was before the technology was invented. In a seventeenth-century treatise, the English clergyman Narcissus Marsh described an imaginary device called the "microphone" that could "render the most minute sound in nature distinctly audible, by magnifying it to unconceivable loudness," as "microscopes or magnifying glasses help the eye to see near objects, that by reason of their smallness were invisible before."³⁷ In the nineteenth century, D.E. Hughes isolated the ability of Alexander Graham Bell's telephone to "magnify weak sounds" into a prototype of the microphone, an independent tool capable of rendering "the movement of the softest camel hairbrush on any part of the board" as "distinctly audible."³⁸ And, as Douglas Kahn has observed, the same fascination eventually fed "into the arts, forming the krill in the baleen of musical and artistic experimentalism from John Cage to the sonocytological and nano arts."³⁹

35 This is the case of the aerophone, in which an additional source of power in the form of air pressure made it possible "to increase the loudness of spoken words, without impairing the distinctness of articulation." McClure, *Edison and His Inventions*, 140.

36 Mara Mills, "When Mobile Communication Technologies Were New," *Endeavour* 33, no. 4 (2009): 146.

37 Narcissus Marsh, "An Introductory Essay to the Doctrine of Sounds, Containing Some Proposals for the Improvement of Acousticks; As It Was Presented to the Dublin Society Nov. 12. 1683. by the Right Reverend Father in God Narcissus Lord Bishop of Ferns and Leighlin," *Philosophical Transactions* 14, no. 156 (February 20, 1684): 482.

38 D. E. Hughes, "On the Action of Sonorous Vibrations in Varying the Force of an Electric Current," *Proceedings of the Royal Society of London* 27, no. 185–89 (1878): 365.

39 Kahn, *Earth Sound Earth Signal*, 34. Kahn has written extensively on Cage's aesthetics and techniques for amplifying small sounds. See his *Noise, Water, Meat: A History of Sound in*

Iannotta is also fascinated by the microcosmic. In an interview for the Chicago Symphony Orchestra, she describes the vision that guided *Intent on Resurrection*:

I had this image of being in a room completely full of dust in which you do not see anything. ... Then, little by little, your eyes get used to this dust, and you can see the little particles of dust, each tiny cell. ... The piece, for me, is that image. At the beginning, with all the megaphones, etc., what you hear is basically my dust.⁴⁰

The microphone in Iannotta's megaphone picks up the vibrational components of the mouth sounds that would otherwise be inaudible; in doing so, it turns their spectral micro-properties into an essential textural and timbral component. To return to De Souza's notion of prosthesis, I would argue that the poietic function of the microphone operates on both an acoustical and a semantic level: vibrations that previously fell outside the limits of human hearing are now made perceptible because, first and foremost, they have been gained and pre-amplified *as signal* by the microphone. The amplification system thus functions as a discourse network, defined by Sybille Krämer as "the networks of techniques and institutions that preprocess what will even be considered data in a given epoch."⁴¹ The more sophisticated the amplification system, the more vibrations once considered irrelevant or inaudible will be gained and consequently processed as data, and thus the more richly detailed the perceivable microcosm. By making microscopic sounds audible, when they are usually detectable only at close proximity (if at all), microphones are turned into technologies of close-up intimacy. The sense of intimacy they produce is enacted by the microscopic world of sounds that, without mediation, would unfold as undetected noise.

the Arts (Cambridge, MA: MIT Press, 1999), especially ch. 6 "John Cage: Silence and Silencing." Nanotechnology allows us to turn the inaudible vibrations of yeasts cells into sound by heightening their amplitude level. See Sophia Roosth, "Screaming Yeast: Sonocytology, Cytoplasmic Milieus, and Cellular Subjectivities," *Critical Inquiry* 35, no. 2 (2009): 332–50. Carolyn Abbate has also shown that the fascination for capturing inaudible sound persisted in the work of film composers and sound engineers who gave sounds to inaudible gestures in what she calls a "microphonic techno-fantasy." See Abbate, "Sound Object Lessons," 819.

⁴⁰ Adams, "Intent on Resurrection."

⁴¹ Sybille Krämer, "The Cultural Techniques of Time Axis Manipulation: On Friedrich Kittler's Conception of Media," *Theory, Culture & Society* 23, no. 7–8 (2006): 98.

From this perspective, however, the microphonic affordance of the megaphone seems rather unsophisticated. Indeed, why wouldn't a modern cardioid microphone, to take just one example, render a more detailed acoustical world? I have already partly answered this question by highlighting how the megaphone's horn exercises its agency on an aural as well as on a visual level, in ways that a simple microphone could not substitute. But the issue of genre should also be taken into consideration. Despite the methodological disclaimer I offered earlier, it is undeniable that the field of New Music acts as a genre.⁴² And recognizing oneself as a composer within a certain genre imposes the principles, behaviors, and expectations of a specific assemblage of social and institutional settings. In certain European New Music circles, amplification systems that remain visually and sonically transparent—i.e., whose tools are not explicitly raised to the status of musical instruments through the compositional process—are still viewed with suspicion.⁴³ The instrumental nature and dramaturgic presence of Iannotta's megaphone complies with these expectations.

Nevertheless, during the first rehearsal of *Intent on Resurrection* at the concert hall of the Cité de la Musique in Paris—a space that hosts up to 1600 people—Iannotta discovered that the smallest sounds of her ensemble acoustic instruments were being lost. She thus decided to partially amplify the music box machines, harp, piano, and string instruments with cardioid microphones.⁴⁴ Although this is the kind of amplification that could be considered visually and sonically transparent, it acts on small sounds in ways

42 Following Eric Drott's Latourian definition of the concept, I understand genre as a "dynamic ensemble of correlations, linking together a variety of material, institutional, social, and symbolic resources ... [that] give rise to an array of assumptions, behaviors, and competences, which taken together orient the (individual) actions and (social) interactions of different 'art world' participants." Drott, "The End(s) of Genre," *Journal of Music Theory* 57, no. 1 (2013): 9.

43 Cathy van Eck has recently dedicated a book to microphones and loudspeakers used in New Music for explicitly artistic purposes, from Karlheinz Stockhausen's *Mikrophonie I* (1964) to her own composition. However, she never mentions the status of microphone and loudspeaker in New Music when they are not manipulated towards unconventional results. See Cathy van Eck, *Between Air and Electricity: Microphones and Loudspeakers as Musical Instruments* (New York: Bloomsbury Academic, 2017).

44 It may also be worth reflecting on the fact that this extremely important part of the sound design is generally handed off entirely to the sound engineer. The score, beyond recommending amplification, does not specify which kind of microphones are required, or where they should be positioned. The discretion is left to the sound engineer who, like actual performers, "can give a stylistically appropriate account of a piece" in accordance with the conventions of New Music. See Drott, "The End(s) of Genre," 10.

that no bare instrumental technique would make up for. For cardioid microphones, placed extremely close to the sound source in the technique known as “close miking,” allow for the hyper-amplification of peripheral spectral components and enhance the intimacy of the soundscape in several ways.

First, close miking (especially with cardioids) produces what is known as the “proximity effect,” which is characterized by an increase in low frequency response that grants the sound a “warmer” quality. This effect was artistically deployed in crooning—the technical name of a vocal style popular from the 1920s onward, which paired the amplification technology of the microphone with softer voices, delivering (first by radio and then live) a recognizably “intimate singing aesthetic.”⁴⁵ Second, close miking catches the direct sound and excludes many of the collateral reflections, providing the “subjective impression of listening to music in a large room and its sounding as though the room were small [, which] is one definition of intimacy.”⁴⁶ Finally, increasingly sophisticated microphones have perfected the gain and fidelity of frequencies in the higher range as well, providing the listener with what is often described as a brighter and richly detailed sound. That sound is also associated with a lack of reflections from the environment, and thus suggests closeness to the sound source.

Since the premiere of *Intent on Resurrection*, amplification has been “highly recommended” on the score. Iannotta’s decision to place it there confronts the stigma that associates amplification with poor orchestration, shaped by the humanistic fear of spoiling the ear with the artificiality of live amplification. In her next work, *Troglodyte Angels Clank By* (2016)—which she thinks of as a continued exploration of the same material from *Intent on Resurrection*—the amplification takes on a structural role in the compositional process, and the piece is explicitly written for “amplified ensemble.”⁴⁷ Iannotta not only fully acknowledges the poetic potential of “amplification” as part of the compositional process—she also introduces contact microphones in line with her interest in “creating and hearing the internal sound of each object.”⁴⁸

45 See Allison McCracken, *Real Men Don’t Sing: Crooning in American Culture* (Durham, NC: Duke University Press, 2015), ch. 2 “Crooning Goes Electric: Microphone Crooning and the Invention of the Intimate Singing Aesthetic, 1921–1928.”

46 Leo Beranek, *Concert Halls and Opera Houses: Music, Acoustics, and Architecture*, 2nd ed. (New York: Springer, 2004), 513.

47 Clara Iannotta, *Troglodyte Angels Clank By, for Amplified Ensemble* (Leipzig: Peters, 2018).

48 Adams, “*Intent on Resurrection*.”

To allow for small sounds to emerge in the concert room, however, the amplification of megaphones and microphones is still not enough. These affordances act within the “small sounds” network only thanks to the combination of a specific set of compositional and instrumental techniques. If we consider the initial texture of the piece, which lasts around a minute, we observe that Iannotta excludes the production of any louder instrumental sound or the presence of an articulated speech that would lead to an energetical and informational auditory masking effect.⁴⁹ Moreover, the specific texture the instruments produce reinforces the haptic perception of a sound heard close-up, as if the matter generating those very sounds could enter in contact with our skin. For this reason, I will call these techniques of haptic intimacy.

The Instruments’ Grain: Techniques of Haptic Intimacy

Media theorists demonstrated decades ago already that no technology operates as a transparent medium for a transcendental theoretical sound. (Adorno showed us for instance what it would mean to listen to a Beethoven sonata over the radio rather than live.)⁵⁰ But this phenomenon proves even truer in this case—or at least, true on a different level—given that the medium takes on an additional poietic function. Media theorist Wolfgang Ernst has clarified that “musical theory in the occidental tradition continued the Pythagorean epistemology of harmonic calculations. Sound is thus not perceived as the sonic event in itself but becomes a phenomenon of mathematics in the widest sense of the symbolic regime.”⁵¹ But the unstable, unpredictable, and inharmonic events of *Intent of Resurrection* invite us to listen quite differently. Musical instruments, including megaphones and microphones, do not simply convey a transcendental sound; their materiality does not simply “allow” sounds vibrations to be, but has a hand in the creation of their specific spectral texture that emerges in our acoustic foreground. The material of this piece is thus self-referential, in the sense

49 Masking indicates “how sensitivity for one sound is affected by the presence of another sound.” Stanley A. Gelfand, *Hearing: An Introduction to Psychological and Physiological Acoustics*, 6th ed. (Boca Raton: CRC Press, 2018), 251.

50 Theodor W. Adorno, *Current of Music: Elements of a Radio Theory*, ed. Robert Hullot-Kentor (Cambridge: Polity, 2009).

51 Wolfgang Ernst, *Sonic Time Machines: Explicit Sound, Sirenical Voices, and Implicit Sonicity* (Amsterdam: Amsterdam University Press, 2016), 22.

that it stages the agency of the media that produced it.⁵² What saturates our attention is the moist flesh of the mouth before the megaphone, the metallic distortion of the horn, the sensitivity of the diaphragm of the microphone to low frequencies, the stickiness of the rosined bow against the metal string—what I call the the *grain of the instrument*.

With the word *grain*, I intend to evoke two different discourses, both quite well known in music studies. The first is Roland Barthes' concept of the "grain of the voice," which indexes the bodies of singing humans through the sonorous materiality of their voice.⁵³ My own understanding of the word grain is however distinct from his in two respects. First, unlike Barthes, who deems certain voices as "without grain," I assume that the material conditions of sound production are inescapable, and thus that the grain of the instrument is always present. What changes is its level of emergence, or its centrality in the awareness of the audience. Second, the voice we hear in Iannotta's work is that of the classical instruments, megaphones, and microphones played by trained musicians—not only human bodies, but instrumental bodies as well.

To better explain what is at stake in this definition, I find it useful to draw on Brian Kane's model, which "diagnoses" how the voice (*phoné*) can be articulated: through *logos* (i.e., as conveyer of semantic meaning), *echos* (i.e., *phoné*'s "purely sonorous aspect, capable of subjection to all the standard forms of phonetic and acoustic analysis"), and *topos* (i.e., the voice's "site of emission," its "source.")⁵⁴ According to Kane, Barthes aims with the "grain of the voice" to shift the focus toward *topos* and *echos*: the sonorous materiality of the voice produced by a given body. But, as he reminds us, the voice is never essentially just one of these things (*logos*, *echos*, *topos*), but is rather the "perpetual displacement" between these poles, a displacement—and here comes the most important point—"modified by *techné*," which is to be understood both as technologies and bodily techniques.⁵⁵ Applying Kane's

52 In Pierre Schaeffer's terminology, the above-mentioned "self-referentiality" of the material would possibly translate as a prevalence of the "range of concrete sounds" (*possibilités concrètes*) of the instrument. See Michel Chion, *Guide to Sound Objects. Pierre Schaeffer and Musical Research*, trans. John Dack and Christine North (self-pub., EARS, 2009), 54, <http://ears.huma-num.fr/onlinePublications.html>.

53 Roland Barthes, "The Grain of the Voice," in *Image, Music, Text*, trans. Stephen Heath (New York: Hill and Wang, 1978), 179–89.

54 Brian Kane, "The Model Voice," *Journal of the American Musicological Society* 68, no. 3 (2015): 673.

55 Kane, "The Model Voice," 675.

model to the grain of the instrument, we observe that the source of the voice we hear, the *topos*, is that of *technê* in the action of displacing *phoné*. Hearing the grain of the instrument is hearing the voice of *technê*. Furthermore, in this specific instance, as a product of the overlap of *topos* and *technê*, what emerges in the listener's attention is not a body *per se* as the site of sound emission, but its materiality. Rather than an acousmatic question, this condition stimulates a haptic perception of the material friction produced by the matter of both human and instrumental bodies involved in the kinetic act of playing. The *echos* of the sounds I am dealing with is characterized by what Chion would call high "materializing sound indices," or qualities that cause one "to 'feel' the material conditions of the sound source."⁵⁶

The second discourse about the grain that I am invoking here is the one developed by Pierre Schaeffer in his typology of sound objects. For Schaeffer,

grain is a microstructure of the matter of sound, which is more or less fine or coarse and which evokes by analogy the tactile texture of a cloth or a mineral, or the visible grain in a photograph or a surface. . . . every time it is the "overall qualitative perception of a large number of small irregularities of detail affecting the 'surface' of the object."⁵⁷

What interests me about Schaeffer's definition is the experience of a microstructure of discrete components rather than a continuum—an experience afforded, in his reflection, by a slowed-down tape recording. The shift from continuum to discrete—that is, from a sustained pitched sound to a sound composed of recognizable microstructures of sonic "grain"—is, I argue, what allows for the emergence of an experience of sound as *echos* (in particular, its material indices) rather than *logos* (e.g., an A440 heard within a specific harmonic system).⁵⁸

Let's return to the first texture of Iannotta's piece and examine the performance techniques that allow for the grain of the instruments to emerge. On the score (see figure 1), the composer asks the horn, trumpet, and trom-

⁵⁶ Michel Chion, *Audio-Vision: Sound on Screen*, 2nd ed., trans. Claudia Gorbman (New York: Columbia University Press, 2019), 112.

⁵⁷ Chion, *Guide to Sound Objects*, 171.

⁵⁸ Martin Scherzinger, in this same journal, also notes in passing how "Barthes' famous notion of the voice's *grain* . . . actually echoes Schaeffer's notion of the grain." See his "Event or Ephemeron? Music's Sound, Performance, and Media (A Critical Reflection on the Thought of Carolyn Abbate)," *Sound Stage Screen* 1, no. 1 (2021): 152.

bone players to crinkle (*froisser*) aluminum foil gently and irregularly, “one grain at a time.”⁵⁹ “One grain at a time” also appears in the instructions to the percussion player, who must rub (*frotter*) a damped low gong with the edge of a small *dobachi*, or singing bowl. The violins and violas are also damped and instructed to move a heavily rosined bow on the strings with the highest degree of pressure (*écraser*) but extremely slowly. This gives rise to a shattered (*brisé*) sound, cracked by small silences, that must be maintained between a nearly inaudible *dal niente* and *pp*. The texture is further enriched by the sounds that come from a music box machine, which allows the performer to control twelve different music boxes simultaneously. Four of these are activated in sequence six seconds apart, set to rotate so slowly that the pins of the drum pluck the teeth of the comb against it one at a time, complementing the granularities obtained by the other instruments with a short crackling sound.⁶⁰ By renouncing periodic vibrations—the defining feature of the “musical tone” of Western classical tradition—this texture encourages listeners to discard their propensity to listen for pitch, and direct their attention towards the exploration of sonic events unfolding in an unmeasured microtime. Thanks to its high materializing sound indices, this texture can be perceived haptically, as if unfolding against our skin.⁶¹

Tuning into the Small Sounds: Techniques of Hyper-Intimacy

Iannotta’s metaphor generates yet another reflection. She asserts that the illuminated dust is defined by the clarity of our attention. Taking her idea seriously means accepting that the dust, her microcosmos of sounds, cannot actually be perceived clearly (as she would wish) without our attention tuning into them. Our attention is not a set of given and unchangeable cognitive abilities; instead, we, as listeners, can be “shocked” into attun-

59 Iannotta, *Intent on Resurrection*, vi.

60 Iannotta, viii. Machine A and B were designed by the Berlin artist collective Quadrature. Each consists of a six-track sequencer that can put into action through a button as many music boxes, each producing a “carillon-like” tune. The performer can also regulate the speed of each box independently with a knob. For info about the collective see <https://quadrature.co/>.

61 As Iannotta decides to provide the performers with notation, she requires a writing technology that does not presume a unity of rhythmic measure or stable pitch identities—two basic assumptions of Western classical notation. Chronometric notation is thus interpolated as an alternative in various segments of the piece. I suggest that Iannotta’s notion of grain relies on Pierre Schaeffer’s and that the techniques she employs to obtain it are akin to those we find in Helmut Lachenmann’s *musique concrète instrumentale*.

ing to new ones. According to Vladimir Jankélévitch, tools such as musical instruments impact the performer's cognition in unpredictable ways through "reverse shock"—i.e., through the way "they work, their material possibilities and the gestures they enable, and what they feel like under one's hands."⁶² Similarly, I argue that small sounds, bearing the material traces of the instruments and amplifying apparatus that generated them, are the instruments that shock the listener into generating new cognitive abilities. Hearing small sounds is, first and foremost, hearing our own senses tuning in to a different perceptual wavelength as their affordances define our abilities. They shape our sense of hearing, touch, scale, and spatial distance.

But at the same time, our bodily and cognitive affordances shape the way we turn small sounds into a perceptual object, into what might become an aural-affective feeling of intimacy.⁶³ I choose the word intimacy because it encompasses both spatial features (it etymologically refers to the innermost, the deepest) and the affective world—in fact, despite being a spatial indicator, we have learned to use the word intimacy mostly in a figurative sense, in reference to a range of affections and feelings.⁶⁴ In this sense, we as listeners could be thought of as microphones, transducing sound to our consciousness through more or less vibrating, more or less receptive membranes. Unlike actual microphones, however, our affordances are constantly changing. The level of vibration and receptivity is affected by our own story; and, unlike objects which are constantly changing according to the law of decay, our affordances can follow unpredictable patterns. Only if we are disposed to receive closeness and touch, can we then indulge in the pleasure of tuning into a heightened sense of emotional or haptic connectedness, turning anything else into background noise.

If we can afford such an attunement, then small sounds could be turned into hyper-intimate objects, heralds of intimacy despite the reality of a public concert hall with its imposed distances. The prefix "hyper" can be

62 Abbate, "Sound Object Lessons," 803. The reference is to Vladimir Jankélévitch, *Music and the Ineffable*, trans. Carolyn Abbate (Princeton: Princeton University Press, 2003), 27.

63 See De Souza, *Music at Hand*, 13.

64 Etymologically, the word "intimate" from Latin *intimus* "inmost, deepest, profound" (adj.) has first and foremost a "spatial" connotation. However, we generally use it "figuratively" in reference to "inmost thoughts or feelings." See *Oxford English Dictionary (OED) Online*, s.v. "intimate, adj. and n.," last modified September 2021, www.oed.com/view/Entry/98506.



Fig. 3 Marilyn Minter, *Blue Poles*, 2007, enamel on metal, 60 x 72 inches. Courtesy of the artist and Salon 94, New York. © Marilyn Minter

understood in reference to the artistic genre of Hyperrealism.⁶⁵ In a Hyperrealist portrait, the artist confronts us with a saturation of details that goes beyond the photographic—beyond what we might notice in something physically present, close-up, erasing the visual appearance of the whole. It involves pictorial techniques that seem to augment or shock our senses. In Marilyn Minter’s *Blue Poles*, shown in figure 3, the grain of the skin overwhelms us with its details: its innumerable pores and freckles, infinitesimally small folds and wrinkles, the glistening points of sweat or grease, the sparkling makeup surrounded by thousands of thin hairs—all this, despite the distances a museum environment typically imposes, with its velvet ropes and museum guards.

65 “Photorealist art refers to images of reality rendered in extreme detail, often with aid of photographs.” Hyperrealism, is “a term once synonymous with Photorealism, but which came to suggest an enhanced reality with heightened details, color, light and shading.” See Anne K. Swartz, “Photorealism,” in *The Grove Encyclopedia of American Art* (Oxford University Press, 2011), <https://www.oxfordreference.com/view/10.1093/acref/9780195335798.001.0001/acref-9780195335798-e-1600>.

Conclusions

In *Intent on Resurrection*, we see how the multiple affordances of the megaphone emerge as technologies of public intimacy, and those of the microphones as technologies of close-up intimacy. We also witness the combination of compositional and performance techniques that enable the emergence of what I have called the grain of the instrument, leading the audience in turn to experience a haptic sense of intimacy. I have furthermore shown that we as listeners can craft small sounds as hyper-intimate objects, or turn them into undesired noise, as much as small sounds shock our perceptual abilities.

The locution “small sounds” has served in this recognition as a sort of place holder. I asked you to experience them through a brief exercise—“bring your hand to your ear...” — as well as through your imagination. You heard them in the first minute of *Intent on Resurrection*. We also searched for them with the performer, between the score and the movement of their megaphonic mouth; in the microphones and the loudspeaker; and finally, in the interplay between amplified material traces and our bodily and cognitive abilities. Small sounds, in other words, are best understood as relational, located neither in the “acoustic” nor in the “perceived” world, and always at the intersection between ourselves and the materialities of the sound source, sound waves, and space of resonation.⁶⁶

Departing from Chion’s static definition, we observed how small sounds are constantly dislocated throughout the actor-network I have here unraveled, and how their identity is each time constituted through provisional assemblages of specific mediators. My hope is that the necessary linearity of my descriptions was disrupted by the detailed acknowledgment of a continuous feedback loop that involves an actor-network of small sounds, and that this undermines the temptation to search for unidirectional vectors of agency that originate with the composer, or any of the other actors involved.

The play of affordances I have so far retraced, in my last section, reflects back at us, as we realize how the right sort of microphones, real and metaphorical, can allow for the amplification of the smallest of sounds—not only those close to our bodies, but even within it. Dorothy Molloy’s ep-

66 This provides us with a concrete example of what Isabella Van Elferen has defined “timbrality.” See “Timbrality: The Vibrant Aesthetics of Tone Color,” in *The Oxford Handbook of Timbre*, ed. Emily I. Dolan and Alexander Rehding (New York: Oxford University Press, 2021), 69–91.

igraph witnesses the achievement of such an attunement: she can hear the microscopic sounds of her bones inside her body, behind the skin, out of sight, buried and damped in the earth playing *fortissimo*. Even microscopic sounds can become *fortissimo*—and “*vicinissimo*” (“very close”), I would add—once we have tuned into them. Could Molloy’s internal sound be brought into a concert hall? The answer might be yes, as long as your ears had the right microphonic prosthesis.

Perhaps scientists have provided the means. Towards the end of the nineteenth century, researchers in the field of surgical diagnosis—particularly one of its pioneers, a certain Professor Hueter—envisioned that possibility...

The introduction of the microphone for the purposes of surgical diagnosis ... has led Professor Hueter of Greifswald to try whether it would not be possible by its means to detect certain sounds, whose existence might be a priori asserted, but which are inaudible by ordinary means. ... He has proved that we can not only hear the rush of blood through the capillaries of the skin (dermatophony), but also the sounds of muscular contraction (myophony), of tendinous extension (tendophony), and of the vibration of the long bones when percussed (osteophony).⁶⁷

67 “Dermatophony,” *The Medical Times and Gazette*, February 15, 1879, 179.

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Abstract

"Certain sounds, even when they are loud or heard from close by, conjure small sources." Small sounds, as Chion (2016) describes them in this quote, usually appear in intimate or contained settings, where their relatively low strength will not be spoiled by the masking effects of a noisy public sphere. What happens, however, when they are shared with an audience in a concert venue? Privileging a distributive understanding of agency, I explore the interactions of instruments, techniques, and processes through which the composer Clara Iannotta (b. 1983) brings small sounds to the public space of the concert hall in the first minute of her composition *Intent on Resurrection – Spring or Some Such Thing* (2014). By

articulating the technological means harnessed to allow for the qualities of small sounds to emerge, I reveal the conditions that are required for sound to be recognized and experienced as intimate. Along the way, I draw connections between the amplification aesthetics of Iannotta's work and Hyperrealist art, and theorize the concept of the "grain of the instrument" drawing on ideas from Roland Barthes, Pierre Schaeffer, and Brian Kane.

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