Soundscaping Learning Spaces: Online Synchronicity and Composing Multiple Sonic Worlds

Kati Fargo Ahern¹

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Abstract

The Covid-19 pandemic has occasioned many epistemic shifts in our lives and work practices, not the least of which has changed the contours of the field of education and learning. While this special issue explores constructions of the postdigital in relation to learning spaces my focus will be exclusively on ‘soundscaping’ nonverbal sounds. Nonverbal sound may include any category of sound removed from speech or lyrics, such as the sound of a voice, instrumental music, or the beeps, buzzes, screams, and silences of human, animal, machine, object, or environmental sound. Soundscaping will refer to intentionally ‘planting,’ designing, or intervening within a landscape of sound. By returning to a framework for evaluating physical classroom spaces, I consider here how planting sound within synchronous video meetings for online learners can offer productive potentials. Furthermore, I argue that to overly rely on the ‘mute’ button or ignore those productive potentials is not only a missed opportunity, but could unintentionally do harm to learners. Finally, I offer some concrete suggestions for ‘planting’ nonverbal sound.

Keywords Soundscapes · Postdigital · Learning spaces · Nonverbal sound · Pedagogy · Inclusive teaching

When Theremin provided an instrument with genuinely new possibilities, Thereminists did their utmost to make the instrument sound like some old instrument . . . We are shielded from new sound experiences—Cage (2012: 4)

Bearing in mind the various ways that digital technologies have changed our relationship to sound, this cultural moment demands a listening pedagogy that takes into account the distinct sonic habits and experiences that have emerged during the twenty-first century—Ceraso (2018: 5)

✉ Kati Fargo Ahern
katherine.ahern@cortland.edu

¹ SUNY Cortland, English, Cortland, NY, USA

The Covid-19 pandemic has occasioned many epistemic shifts in our lives and work practices, not the least of which has changed the contours of the field of education and learning. While this special issue explores constructions of the postdigital in relation to learning spaces, my focus will be exclusively on ‘soundscaping’ non-verbal sounds¹ within those learning spaces. Additionally, while I consider a previous framework for evaluating learning spaces conceived solely as physical classroom spaces, here I will adapt the conception of learning spaces as postdigital through a fusion of digital environments and physical spaces in keeping with Gallagher et al. (2016) study on the learning spaces of online, distance learners. Finally, though I am framing my argument specifically within scholarship of writing and rhetoric, I argue that ‘soundscaping’ (designing, ‘planting’, and intervening with) nonverbal sounds within learning spaces presents possibilities that extend to other fields and disciplines, as well.

The concept of a ‘soundscape’ is one that is both widely recognized and open to critique. One of the earlier cited examples of the use of the term goes back to a master’s thesis by Michael Frank Southworth titled ‘The Sonic Environment of Cities’ (1967).² However, the concept of the soundscape is most frequently attributed to Schafer’s (1977) work, *The Tuning of the World*, and the founding of the World Soundscape Project. Schafer (1977) initially described soundscapes by saying ‘we can isolate an acoustic environment as a field of study just as we can study the characteristics of a given landscape’ (7). In so proposing soundscapes for study, Schafer not only helped to advance attention to sonic dimensions of space, but by focusing on listening and desirable sounds his work also served as an alternative to noise abatement narratives. Although the term ‘soundscape’ has also met with critique (Flügge 2011; Lacey 2016), some of which I will return to, it remains a common term in sound studies and in writing and rhetoric. In the field of writing and rhetoric, scholars such as Ceraso (2018) have studied the soundscape as it relates to pedagogy, composition, and teaching students how to listen to and design complex texts. Writing and rhetoric teachers are often concerned with the construction, intervention into, or performances of soundscapes in relation to multimodal texts (drawing on numerous semiotic resources from visual, verbal, and sonic modalities), multimodal or multisensory experience (sometimes in the form of embodied, off-the-screen assignments), and learning spaces (in the form of digital environments, physical classrooms, or media studios), among other contexts. In bringing together both an attention to digital learning spaces and soundscaping, Ceraso (2018) writes ‘I treat digital spaces *as* soundscapes—as ecologies of sound, bodies, materials, technologies, and aesthetics that are similar to, yet distinct from, the physical spaces we inhabit’ (22) (emphasis added). As was noted in the call for proposals for this special issue, the distinction between physical and networked, ‘digital’ spaces continues to blend and blur into a kind of postdigital configuration. Gallagher et al. (2016) consider this complexity

¹ Nonverbal sounds are considered here to be any sounds apart from speech or verbal components of music. They may include any number of categories, such as human, machine, or object-made sound, such as beeps, buzzes, screams, or sighs. Nonverbal sounds may also include the non-speech components of voice, such as speech or timbre of a speaker.

² Southworth uses the term repeatedly, but does not define it.

in the relative lack of research that considers the intersection of material, embodied space with digital environments of online learners. They draw on Flugge's (2011) concept of personal sound space in considering a postdigital environment for online learners such that there is no seam between the digital and physical in online learning spaces. This is an approach I will be adapting here as well, related to what is meant by the intertwining of digital environments or digital synchronous video meeting spaces, physical and embodied spaces for learners, and a postdigital learning experience that blends the digital and physical, particularly in a time of pandemic.

Previously, I have written about the need to soundscape, evaluate, and understand nonverbal sounds within learning spaces both in terms of genre knowledge (Ahern and Mehlenbacher 2018) and learning space design/intervention (Ahern 2018). However, in both of those pieces, I have only considered physical or brick-and-mortar classrooms. In the latter, I proposed a framework for understanding sound as capacious and productive in physical learning spaces design. In this framework, I considered spaces and their sound design in relation to the following criteria: as (1) flexible, (2) contextual, (3) accessible, and (4) sustainable. While none of these criteria precludes studying *online* learning spaces or a postdigital theory of learning spaces, my conceptualization was limited solely to physical, built environments of college classrooms. In recent months, as many learning spaces of higher education have become online, virtual, and 'remote' amid the pandemic, soundscaping of nonverbal sounds for postdigital learning experiences has become even more important. People have been sharing spaces, families have been sharing bandwidth (both figuratively and materially), and there have been increased pressures related to time. Within these new, complex, and cluttered configurations of learning spaces, a frequent response and attitude toward sound has been either to eliminate it altogether ('mute yourself, please!') or frustration at failing to achieve the crisp, uncluttered 'signal sound' of the human voice ('you're muted!') There has been very little space afforded for nonverbal sounds when they are unintentional, and perhaps even less to intentional nonverbal soundscaping, or the design and placement of nonverbal sounds into a synchronous video meeting for online learners. However, not only do pedagogical practices of ignoring student sound miss generative opportunities for soundscaping, but they also potentially harm students through 'silencing' related to ableism, racism, classism, and issues of accessibility. Therefore, in this article I will consider the need to counteract those narratives of learning spaces free from 'noise', as well as to modify my framework for learning space evaluation to more fully consider digital platforms and online learning spaces, and finally make some concrete recommendations for soundscaping learning spaces of the postdigital.

Learning Spaces: Noise and Silence

'Noise' and 'silence' have a long history in areas of study such as musicology, acoustic engineering, communication, and cultural studies. Although few teachers would likely support a passive, 'noise-free ideal' model of human communication akin to Shannon and Weaver's (1949) model of signal and receiver, unspoken assumptions or attitudes towards noise and silence are worth considering. Within sound studies, the ideologies and histories of theorizing silence and noise are frequently explored. In

his piece, *Silence*, Cage (2012) pushes against aesthetic assumptions about music, sound, and silence in his famous composition 4'33," and theorizes silence to be anything but truly silent.³ In *Noise, Water, Meat*, Kahn (1999) takes up some of the history of *Musique Concrète* and offers a counter reading of Cage and Schafer, both of whom are often credited with valuing (some) nonverbal sounds. Kahn (1999) claims that 'Cagean silence, we find, was dependent from the very beginning on silencing' and that subsuming nonverbal sound into music effects relies on 'a silencing of the social and ecological' (159-160). Flügge (2011) makes a similar point about the complexity of silence and noise by referencing Augoyard and Torgue in claiming that the term 'soundscape' does not productively capture the overlapping complexity of urban sonic environments. These are both critiques that Lacey (2016) in *Sonic Rupture* reviews. Lacey (2016) notes how 'soundscape', with its connection to landscape and bucolic 'nature' sounds can continue to devalue or misunderstand urban soundscapes and reaffirm notions of 'noise' as unproductive in relation to quiet (29). Finally, Hegarty (2021) most recently explores histories of noise/music/silence and previously reductive attitudes toward noise in a collection of essays titled *Annihilating Noise*. Hegarty (2021) begins by reminding the reader of the importance of theorizing noise not as a beginning, but 'as disruption and also of human relation to it, in defining it' (11). In his chapter on The 'Silence', Hegarty (2021) returns to the 'fable' of Cage entering the anechoic chamber at MIT and hearing the sounds of his own nervous and circulatory systems functioning: 'Even as he discovers there is no such thing as silence, he is putting silence into discourse, bringing it in as an unsound silence, one that will not be heard' and that '[i]nstead his bodily listening served as a moral exemplar, a sign of the world that awaited listening. The world would now be a giant body existing to be sounded'. (123) However, what Hegarty (2021) pushes against in this section is the attempt to universalize or generalize listening experience, noting that 'the universal experience inferred not only by Cage . . . is an actual silencing of difference because difference cannot be silent, it is too disruptive' (123). In the scholarship of music, cultural studies, and sound studies, this is just an extremely brief gesture to some of the research on silence and noise, the thorough review of which is beyond the scope of this piece.⁴

Learning spaces scholarship is also invested in the notions of silence and noise. In a book discussing decibel levels and equity, Keizer (2010) calls noise 'the unwanted sound of everything we want'. Keizer's (2010) argument is that modern transportation (such as airplanes) and industrial manufacturing produce a substantial amount of noise defined by decibel levels of sound and he questions how vulnerable populations have been forced to interact with the embodied experience of living near and with these sustained, high decibel levels of sound. While Keizer focuses nearly exclusively on the physiological foundations of noise as detrimental at a threshold for volume, nearly all learning space conversations that

³ In the piece 4'33", Cage instructs performers to not play their instruments for the duration of the piece, 4 minutes and 33 seconds, and the sonic quality of the piece becomes the generative space of rustles, coughs, claps, and other unplanned audience sound.

⁴ See also Jonathan Sterne (2012) *The Sound Studies Reader* for essays on noise and silence.

consider the built environment of physical classroom spaces, if they discuss sound at all, take on sound solely from the perspective of noise reduction. In a review of literature of about a dozen articles discussing frameworks for evaluating criteria of physical, built environments of learning spaces, most articles did not mention sound at all, and any references to sound were through the paradigm of silence, lecture acoustics, or minimizing noises of ‘things we want’, such as the sound of a heating, ventilation and air conditioning system, or HVAC (Ahern 2018: 26). This condition has perhaps been further exacerbated by the current Covid-19 pandemic, where ventilation systems and filters are not simply ‘things we want, but also related to our safety. Still, the *sound* of ventilation or air movement may still not be one that we typically want to maximize in learning spaces, if possible.

When sound is not simply noise to be reduced in a classroom space, other theories of learning spaces and sound can sometimes oppose nonverbal sounds of a classroom or city against a perceived positive affect for nature sounds in ways that harken back to the bucolic or pastoral. In *Geographies of Writing*, Nedra Reynolds (2004) begins with a recounting of Phaedrus and Socrates, who believing a walk outside the city walls will be refreshing, settle down by a stream to compose speeches. Although Reynolds uses this moment to make a call for material and metaphorical studies of writing instruction grounded in time, space, material conditions, and spatial practices, the scene also recalls the sounds of nature in ‘refreshing’ Phaedrus and Socrates from their habitual learning spaces. As Lacey (2016) points out in the critique of soundscapes above, when sound is considered novel or capacious in physical learning spaces it might still take the form of a babbling brook rather than the human, machine, or urban environmental sounds of learners.

So, what might a framework for evaluating soundscapes more capaciously within a physical classroom as a learning space include? I have previously argued for the following criteria: spaces that are (1) *flexible*, meaning that the space accounts for dynamic shifts within material configurations (such as desk arrangement) and activities (such as post-it note discussions or turn-taking around a circle); (2) *contextual*, such that the materials, sounds, and spatiality contribute to experiences and activities *specific* to the content and discipline of the learning experience; (3) *accessible*, through the tenets of universal design and inclusion of all students and participants in the soundscape; and (4) sustainable with attention to both ecological sustainability, economic issues, and embodied components of fatigue, energy, and persistence (Ahern 2018: 27–31). In addition to a learning space being open to these criteria, it is also important to not only ‘allow’ for sonic expression, but in some more directive ways to ‘plant’ sound within learning spaces. My argument for a more active form of soundscaping is derived from the potentials outlined within research in writing and rhetoric sonic pedagogy. For instance, Ceraso (2018) calls for ‘teachers and students to listen generously and expansively; to regard sound as a locus of inquiry as opposed to content to be mined for meaning; to embrace experimentation and unfamiliar sonic practices’ (12). Her concluding argument is that ‘multimodal listening allows students to figuratively and literally make sense of their own and others’ lived experiences’ (Ceraso 2018: 154). Additionally, I argue that to ignore soundscaping, learning spaces is not simply a missed opportunity, but that to silence

learning spaces is racist, classist, sexist, and ablest in ways that may be more pernicious because of the seemingly pragmatic value of reducing nonverbal sound.

Sonic Practices in New Contexts of Online Teaching

Before moving into what should be done to actively ‘plant’ nonverbal sound, it might be important to briefly consider the role of sound in pandemic-driven contexts of online teaching and learning. Prior to the pandemic, there may have been an assumption or belief that online learners would primarily need flexible schedules and/or class times that would not interfere with family or work obligations through self-paced, asynchronous activities. Sound in asynchronous, digital learning spaces, such as content management systems (CMS) might exist mostly in the form of videos, recorded lectures, and perhaps audio feedback. In *Small Teaching Online*, published just prior to the pandemic, the only mention of synchronous video meeting (and thus other possibilities for soundscaping these meeting spaces) was in the form of optional, virtual office hours (Darby and Lang 2019: 119–120).

However, during spring 2020 the Covid-19 pandemic required most schools and universities to suddenly suspend in-person classes and ‘pivot’ online. While this mandate was driven by the fear of infection and potential loss of human life, another competing consideration has been the economic consequences of online learning, particularly for college students, many of whom have stated that they do not prefer to learn online and who may be able to choose to take a gap year, not return to college, or defer admission. This new context for online learning spaces, particularly at the college level, where competition for student retention has been so much on the forefront of decision-making, has challenged the prevalence of online learning spaces as asynchronous. In fact, during fall 2020 there were numerous public discussions, blog posts, and magazine articles about the best practices of infusing students’ experience of compulsory online learning with a sense of dynamic presence, immediacy, and synchronicity. This had the practical result of college administrators offering choices in modes of student learning, such as hybrid learning (partly in-person or synchronous and partly asynchronous) or ‘hy-flex’, (where students could choose to attend in-person or else dial-in to a video meeting held at the same time as the in-person class). Sometimes students and instructors were able to select modes of teaching and learning, and sometimes course modes of delivery were mandated.

What has resulted is a spate of online classes being offered (either by choice or university mandate) through synchronous delivery systems such as Google Meet, Microsoft Teams video meetings, Webex, and Zoom. These systems have key differences in their interfaces, functionality, and settings, but all include some basic functions related to showing participants through video or not (camera-off or video-mute); use of microphone or a mute button, and a chat channel (whether enabled by the instructor or not).

Additionally, pandemic pedagogy has not simply occasioned a shift to increased levels of online teaching, particularly using a synchronous format, but there have also been changes to space, boundaries, the configurations of home and classroom, and the needs of users who must now connect using these technologies. While instructors

and students might have previously chosen to teach or learn through a Wi-Fi connection at home, in a dorm, in an office, or perhaps in a coffee shop, now participants in online learning might be vying for Wi-Fi within a large family home with several students co-learning in the same room, infants, elderly, pets, and spouses coming in and out of meetings, and some participants even resorting to connecting to synchronous video meetings from within closets or cars. In a pre-pandemic world, if a physical space did not meet the needs of a participant in online learning, it might be possible to travel to a new physical space. However, in response to quarantining, social distancing, disease spread, and family care, that is no longer a common or perhaps even possible occurrence.

In addition to the way pandemic-driven learning spaces mix the boundaries between work, family, and learning, they also very much reconfigure notions of bodies, technologies, and practices, that calls on the previously mentioned notion of the ‘postdigital’ as less clearly distinct from physical environments.⁵ For instance, whereas *flexibility* in a physical space might entail the ability to move chairs and tables (i.e., flexible seating arrangements) or else move rapidly between different sets of classroom activities, flexibility within a pandemic learning context might involve the flexibility to shift between channels of engagement with video/cameras-on, audio, or chat features and instructions. Flexibility could also have to do with adapting a space to readability or visibility through a screen such as accounting for changing sunlight, shifts in childcare, browser compatibility, tablet holders—for document cams or bodies, screen sharing, or use of breakout rooms. Flexibility of a synchronous video meeting could also have to do with other material constraints such as differing wi-fi connections, hardware or software availability, or battery capacities. Borrowing from the language of UX, flexibility could have more in common with a learning space being ‘agile’.

Similarly, while a physical classroom space would be *contextual* based on its sounds or things specific to the discipline of the class, contextual online learning spaces might develop their own materials (such as an egg shaker or water glass instrument for an online music class), but also through the context of each learner’s soundscape with the potential to contribute to the polyphony of the synchronous meeting. For example, the passing train or fire station alarm of one student’s soundscape becomes a potential in the shared video meeting sound space if/when that student unmutes to speak.

Finally, while the (pandemic) learning spaces of synchronous class video meetings seem to offer a myriad of potential opportunities speaking back to issues within the physical classroom related to *accessibility* and *sustainability*, other issues and complexities are introduced. For instance, proctoring or testing software that tracks eye contact as a surveillance feature to counteract cheating is inaccessible for learners whose eye contact practices are ‘non-normative’. Additionally, many popular

⁵ While I focus on pandemic experiences of online learning spaces, the pre-pandemic configurations of the postdigital are also complex—see Gallagher et al. (2016) for a study on material and sonic experiences for online learners.

online articles have circulated about the lack of sustainability of digital learning spaces in relation to so-called ‘Zoom fatigue’, (Fosslien and Duffy 2020) or what can be done for learners to make the physiological experience more sustainable (sit farther away from your camera, give yourself video breaks, turn your own camera off).⁶ However, even in an ecological sense of sustainability, the absence of printing and paper-copy materials is not without an offset in the form of electronic waste through upgrades, electricity usage, and faster-than-normal shipping requirements to outfit home offices and home workspaces. Also, in terms of material, economic sustainability pandemic learning spaces have caused students and instructors to confront issues of software compatibility, wear-and-tear on devices or sharing of Wi-Fi, and outdated or malfunctioning cameras or microphones.

How does this relate to sound and sonic practices? I argue that in addition to the complexity of new considerations within the four criteria above, there is also a burden on the constant requests for students and learners to mute their own voices and their soundscapes. While there has certainly been a tremendous variety of ways instructors may choose to conduct synchronous online learning sessions, and shared context in physical classrooms is also always different as students have different embodied experiences, the ability to block out sound (and image) in synchronous video meetings has also greatly shifted our notion of what it means to be ‘in’ an online learning space and what practically it would mean to soundscape one, shifting the predominant model from one of near-silence to one of *flexibility*, *context*, *accessibility*, and *sustainability*. If sonic practices in synchronous video meetings during the pandemic have heavily leaned on silence, ‘muting’, and *silencing* learners, who might only be invited to sparingly ‘unmute themselves’, in favor of occulocentric mechanisms such as reaction emojis, graphic or embodied hand raising or hand gestures, or use of the chat channel, then it might be time to consider what an alternate relationship to sound could afford us.

Potentials for Sound and Soundscaping in Learning Spaces

Silent (or near-silent) learning spaces, whether they are in-person or online, are of course at odds with research that explores the productive nature of sonic pedagogy within rhetoric, writing, and/or literacy studies. In *Mics, Cameras, Symbolic Action*, Halbritter (2013) discusses notions of sonic pedagogy related to Burke’s symbolic action, Dewey’s pedagogy of experience and inquiry, and Murray’s focus on writing process. Halbritter (2013) proposes the skills of multidimensional rhetoric (including the dimension of sound) involving a synthesis of the multimedia composition as a whole as well as an understanding of parsing and revising. His chapter specifically on ‘mics’ notes material technologies of different microphones as well as embodied, material choices in ‘matching listening systems to listening situations’ (Halbritter 2013:151). In her book, *Sounding Composition*, Ceraso (2018) also

⁶ The *Harvard Business Review* published an article with these tips as early as April 2020.

outlines a number of affordances and reasons for writing instructors to consider embodied, multimodal⁷ or multisensory experiences with sound in the classroom and curriculum. However, she pushes beyond video technology into assignments that resist concepts of a linear or bounded text and reconfigure students' relationships to sound.

Teaching students to listen multimodally involves undoing their usual sensory habits—which might include a dependence on the ears, eyes, or any singular sensory mode—and amplifying the multiple senses that they can use to attend to sonic interactions. Multimodal listening instruction requires a feedback loop of teaching students to develop new listening habits while also helping them unlearn old listening habits that have come to feel natural. (Ceraso 2018: 37)

One such example is Ceraso (2018) 'reverberation' interchapter on 'mapping sound' where students are asked to 'gain a critical awareness of how sound influences our sense of place' through field recordings, a digital interactive sound map, and recording as composing (91-104). Through assignments such as these, Ceraso proposes that sound offers students richly complex experiences with composing.

Similarly, in the field of early literacy, Jon Wargo has noted how sound shifts possibilities for students in thinking about their writing practices, 'witness' in writing, and ecologies of embodiment, posthumanism, and technologies. In 'Sounding the Garden, Wargo (2019) discusses 'Theo's' creation of a sonic installation involving QR codes with audio files for 8 bird songs posted to 8 trees in a garden to offer an example of a personal digital inquiry project 'designing for equity and advocating for change' by inviting listeners to hear the absence of bird songs 'messed up' by climate change (282). In 'Rhythmic Rituals', Wargo (2017) outlines a series of sonic activities meant to understand literacy worlds as unfolding and explorations of community and difference in connection to a project called '#hearmyhome'. In one activity, students first listed sounds of their morning routine, then wrote with these sounds, composing together and recording: 'the students created a circadian rhythm of the everyday that consisted of loud stomps across wooden floors, the rattle-rattle of keys, the whistle of a tea kettle and the ding-dong of a doorbell amplified by a tambourine' (Wargo 2017: 400). Wargo (2018) then builds upon this study of writing with sound through 'Writing *with* Wearables?' where students are given go-pros and compose soundwalks (based on a class book called *The Listening Walk*) that attune to configurations of bodies, technologies, and space. What all of these studies have in common is not only the use of sonic pedagogy or writing with sound as productive or capacious, but also a reconfiguring of digital and physical spaces exploring the postdigital through the use of sound. Additionally, Wargo (2018) notes the importance of the posthuman. As the postdigital turn has decentered clear demarcations between physical and digital spaces, the posthuman also calls on a

⁷ Ceraso (2018) largely uses the term multimodal to refer to experiences such as listening that are often assumed to be monomodal or only involve a single sense, but in reality are multisensory, embodied, and involve a range of practices and experiences.

different and ‘more partial’ understanding of the individual as having ‘agency and action’ in favor of a ‘becoming and relationality’ (Wargo 2018: 504). ‘Sound, as this article demonstrates, shows its relationships *with* action, *with* technologies, and *with* technique. Struggling to find a place to articulate itself, sound slides into the shape of the conjunction and lives in the *with*, *near*, and *toward* of emplaced invention. (Wargo 2018: 519) (emphasis original).

In addition to sonic pedagogy that focuses on sound and the hybridity of spaces of composing, writing and rhetoric scholars of sound have also noted how composing with sound draws on situated context and communities of practice, particularly regarding composing with Hip Hop. In *DJs, Playlists, and Community*, Hierro (2019) discusses DJs as technical communicators who are emplaced and respondent to the listening communities in which they perform. Castillo (2020) presents an ethnographic study of the sonic composing of sound engineers working within a Hip Hop studio, sharing intricate composing practices, iterative revision, and the affordances of sonic dimensions of mixing and production. Both these studies demonstrate how an attunement to sound composing within learning spaces could offer students opportunities to think rhetorically, focus on revision and process, expand literacy repertoires and reconfigure ecologies of bodies and technologies, and connected to technical communication and to established communities of practice.

The Harm of Silencing Nonverbal Sound

However, excluding nonverbal sound is not simply a missed opportunity for learning spaces. Making online learning spaces silent reinforces racism, ableism, and classism. It causes us to lose generative possibilities, and even more importantly excludes students from pursuing learning attuned to their own needs and embodiment. Similar to the extensive, multidisciplinary research on ‘noise,’ there has been a tremendous amount of important scholarship on sonic forms of white supremacy. In her book, *The Sonic Color Line*, Stoevers (2016) moves through numerous examples from a close reading of listening practices in slave narratives to the ‘so-called color blindness’ of broadcast radio in theorizing the sonic color line and the listening ear. She notes that:

The sonic color line describes the process of racializing sound—how and why certain bodies are expected to produce, desire, and live amongst particular sounds—and its product, the hierarchical division sounded between ‘whiteness’ and ‘blackness.’ The listening ear drives the sonic color line; it is a figure for how dominant listening practices accrue—and change—over time, as well as a descriptor for how the dominant culture exerts pressure on individual listening practices to conform to the sonic color line’s norms. (Stoevers 2016: 7)

What Stoevers’s argument contributes to this consideration of soundscaping within online learning spaces is that not only does the sonic color line perpetuate racism, but also the racism of sonic norms and the embodied, individual nature of listening practices are intertwined with emerging technologies. Such is the case of broadcast radio, where racism and discrimination could be denied due to the medium’s

ability to ‘make the optics of race disappear through omission’ (Stoever 2016: 234). I argue that while perhaps unintentional, the silencing of students repeatedly asked to ‘mute themselves’ also plays into the sonic color line and embodied listening ear that configures some sounds as ‘acceptable’, only if they affirm sonic white supremacy.

The problem with the dominant sonic paradigm of muting within synchronous video meetings is also one that reaffirms classism. In discussing ‘listening in and to everyday soundscapes,’ Ceraso (2018) cites Emily Thompson’s discussion of modern soundscaping through absorbent materials: ‘This newfound sense of control that acoustical technologies made possible affected people’s attitudes toward sound, particularly in terms of what was considered an ‘appropriate’ noise level in a building.’ (81). This orientation to listening is intertwined with assumptions and attitudes toward learning spaces as needing to be ‘quiet enough’, in the form of spacious suburban homes free from sirens, transportation sounds, and a large enough interior, and sound-absorbing furnishings to create appropriate zones of learning. However, this classist assumption of appropriate spatial configuration or appropriate separation and spaciousness of a learning space is not necessary. For instance, from a video game studies perspective, in her book, *Playing with Sound*, Collins (2013) notes the idea of emplacement within the home or gaming space as potentially contributing to a gaming experience, such that ‘being’ in the game or the ‘point of audition’ is not limited to the screen or an occularcentric notion of the ‘magic circle’ as visual, but an enfolding of sound creating a different, more porous sense of boundaries for the game. ‘Players are participants who generate sound in their own physical space: the visual response happens on the screen, but the sound happens in our own peripersonal space’ (Collins 2013: 58). The peripersonal space Collins (2013) notes is a similar concept to the one outlined by Flügge (2011) and used by Gallagher et al. (2016) to discuss personal sound space for online learners and sonic intrusion in experiences of postdigital learning spaces. To remove or mute all emplaced sound is to deny generative possibilities in embedded or intertwined soundscapes embodied by learners.

Finally, the lack of possibility or attention to soundscaping in synchronous video meetings for online learners reaffirms academic ableism. In his discussion of spatial ‘architectures of ableism’, Dolmage (2017) discusses the ‘steep steps’ as both a metaphor and literally a physical, structural element in many colleges. In this way physical barriers both exclude students within their material, embodied experiences and perpetuate an assumption of academic environments that erases disability. Similarly, the mute button, especially in its proximity to the ‘hang up’ button assumes a student user with manual dexterity, mechanisms of sustained/vigilant attention, and the ability to mute and unmute, quickly. And there is a kind of ‘gotcha’ aspect to calling on a student who fails to quickly unmute or repeatedly asking a student to ‘mute themselves’. There is also an aspect of the ‘defeat mechanism’ that Dolmage (2017) cites as one that means to operate in one way and really reinforces contradictory practices at work in the mute button. While the button seems to democratize sonic space by allowing for selective contributions, it is through the interface of an embodied speaker constantly performing micro-tasks of muting/unmuting, silencing the body and environment, and encouraging the minimizing of differences through

sonic erasure. This relationship of sonic erasure is even further amplified in the way muting asks students with autism to suppress verbal tics and stims, thereby presenting a ‘quiet body’ and ‘quiet’ learning space.

That being said, the mechanism and social practice of ‘muting’ as the assumed preference for learning spaces is complicated by other issues of access. While ‘muting’ might enact erasure for some students, it could be essential or beneficial to the needs of others. For instance, students with auditory processing issues, differences in attention, or neurodiversity may need to have a more consistent visual space that is not ever-changing in response to different speakers (though it is possible in some synchronous video spaces to change the speaker view, ‘pin’ speakers to prevent visual shifts, or turn off speaker views). In this way, muting may be thought of instead as an inclusive practice, similar to the use of ‘quiet rooms’ for those with sensory sensitivity. Additionally, there are potential cognitive tolls to unstructured polyphony (or the layering of multiple, simultaneous voices), which may require students to be more adept at filtering out certain sounds in favor of others. Also, as a reviewer noted, the mute button may have affordances in democratizing spaces by minimizing the voices of more dominant or self-assured students and allowing for further contribution from students who might feel otherwise ‘vocally-marginalized’. Finally, even in the absence of students with learning needs requiring relative quiet or potentials of engagement for muting, the inclusion of sound does not automatically operate in ways that promote equity, inclusion, or learning, either. For instance, Brownell (2019) discusses the use of audible alarms for two students with ‘pull-out’ classes and how these seemingly ambient school sounds coalesce within the ecology of the classroom, constructing identity, contributing to sonic surveillance, and marking difference. In an online learning space, alarms or nonverbal sounds can also function to create borders and boundaries for students leaving or entering a space that do not function in generative or capacious ways. Therefore, it is important to approach the intentional soundscaping of nonverbal sounds in synchronous video meetings with an attunement to how introducing sounds within those spaces invite, engage, and open up new possibilities rather than simply assuming that the introduction of sound will be inclusive.

Soundscaping Synchronous Video Meeting Spaces

So, how do instructors ‘plant’ nonverbal sounds in synchronous online learning in ways that promote rigor and inclusivity, but do not result in cacophony and confusion? Put another way, what do theories of sonic pedagogy offer to soundscaping synchronous, video meetings as online learning spaces? To answer this question, I outline several possibilities for ‘social soundscaping’ (Ahern and Frith 2013) that create learning spaces as flexible (with shifting sonic engagements), contextual (making specific nonverbal sounds and not others), accessible (doubling channels and possibilities), and sustainable (especially with regard to video meeting fatigue). These suggestions form a theory for soundscaping synchronous ‘possible worlds’ (Voegelin 2014) of video meetings as online learning spaces.

Social soundscaping is a term that indicates the shift from personal, individual soundscapes, such as listening through headphones to shared, collaborative contributions of sound through digital platforms (Ahern and Frith 2013). Social soundscaping uses technology to create maps and experiences for users to contribute sounds to an environment together. Creating a sound map, like the one that Ceraso (2018) notes in her assignment on sound mapping offers one example. While Ceraso used the Soundcities website for her assignment, she also points out issues of accessibility for this platform as well as other potential resources (96–97). Some other possibilities for creating social soundscaping through a synchronous video meeting could include working through the interface of Google My Maps (uploading video or links), Google Slides, or placing multiple QR codes or links within a document or page to indicate spatial arrangement, or using links to a sound database (like Freesound.org) in a CMS-threaded discussion or chat. While all of these approaches present different challenges to accessibility and different emphasis of dimensions of sound such as sequencing, spatiality, or simultaneity, unlike the one-at-a-time logic of visual screen sharing, synchronous video meetings often allow for multiple students to play sound files simultaneously (though there are some issues of clipping and noise canceling). With more attention to accessibility and inclusion, social soundscaping can also be more fully multi-modal or multisensory through having students sequentially play sound files with complex nonverbal sounds, while other students screen share to create dynamic sound maps, transcripts, or apply the gestural capacity of animated typography in PPT. Thus students would be socially soundscaping in multiple modes and channels of engagement, creating texts that resist traditional, linear boundaries.

Another possibility for intentionally and critically soundscaping synchronous learning spaces would be to return to the concepts of evaluating learning spaces (Ahern 2018) specifically with synchronous video meeting spaces in mind. As mentioned above, these four criteria for learning spaces as flexible, contextual, accessible, and sustainable, allow us to evaluate not only the structures of physical classroom spaces, but also the pedagogical decisions enacted within synchronous video meetings as learning spaces. For instance, flexibility in the sense of soundscaping might have to do with differing rhythms of speaking and turn-taking, of the invitation to students to vocalize, make nonverbal sounds, use chat features, or contribute sounds simultaneously. Furthermore, flexibility could indicate activities such as the suggestion above, in which students create sonic transcripts for an activity or design open or ‘integral captions’ (Butler 2018). Flexibility could also be built in through the use of breakout rooms. While these rooms are frequently used for breaking students into small groups or else for creating private spaces for students to move into individual conferences, many video meeting features also allow students to choose their own breakout rooms. Breakout rooms could then be named according to students’ preferences for engagement, many of which would involve different soundscapes. An example of this could be a social annotation activity where students could choose from the following breakout rooms: (1) individual, quiet room; (2) audio discussion; (3) Google doc discussion; (4) video-on discussion. Thus, to build flexibility into a video meeting as a synchronous online learning space would mean soundscaping different rhythms, alternations, choices,

and movements between activities and environments, which would also have different sonic enactments.

The criteria that a learning space be contextual would also have implications for soundscaping. In my previous framework, contextual sounds were those that marked a physical learning space and built environment in a way that was identifiable and distinct from others, such as the sound of calipers on snail shells in a trematode lab in a biology classroom (Ahern 2018). In a synchronous video meeting, contextuality in soundscaping could also have to do with teachers or students introducing sounds that make an online learning space sound distinct, such as the sounds of turntables or mixing in a writing classroom or a sonic ‘throwing the ball’ activity where students would call another student’s name (similar to the common pedagogical practice of ‘popcorn reading’), but instead of ‘throwing’ the baton of reading aloud visually, students could chain sounds connected to an activity, discussion, or reading. (They would not pantomime visually throwing a ball, but would play or making a new sound related to the concept or activity.) Another example would be creating a classroom soundscape for a reading, activity, or concept. For instance, when reading a piece on health communication, students could each select a sound to play at once in the video meeting space. Or the class could create a soundwalk through a reading or course concept, (which could be more sequential and based in turn-taking than in polyphony). Breakout rooms could also be used for students to design soundscapes or soundwalks together, and students could visit or move between multiple rooms. Additionally, some students could play sounds while another student screenshares a collaborative document with an accessible transcribing exercise. The idea behind these forms of contextual uses of sound would be to create sonic practices that are not only flexible, but also distinct. For instance, if I am discussing technical writing and sound, then the three different buzzer/alert sounds for microwaves that students played in our video meeting might become contextual sounds connected to the discussion and making our online learning space contextual as those sounds are distinct from many other ‘expected’ online learning sounds.

Additionally, the criteria that learning spaces be accessible are also connected to flexibility and contextuality in that students need spaces that are soundscaped with attention to universal design, inclusion, and choice. These criteria could play out in some of the ways discussed previously in this article, with relation to students with various learning needs, experiences of embodiment, and preferences for engagement. While not all uses of sound are inclusive, not all silent (or nearly-silent) spaces are either. In online learning, these criteria of accessibility in some ways are deeply connected to flexibility in that students need the flexibility to choose from among different sonic practices, different sonic experiences, and potentially spaces or times in a synchronous meeting to alternately choose to sound, vocalize, or be silent.

Finally, the criteria of sustainability in soundscaping synchronous online learning spaces need to consider some of the multiple meanings of sustainability. Sonic sustainability should consider wi-fi connections, managing resources, and environmental impacts, but should also consider sustainability in relation to ‘Zoom fatigue’ (Fosslien and Duffy 2020), energy, engagement, and digital presence. These criteria again present a complex need to balance establishing a rhythm or routine for practices within a learning space with a simultaneous need to shift between patterns and create movements of relief and

change. These practices could involve building dynamic alternation between a few established sonic practices, such as moving between calling on students to contribute, asking students to speak or sound simultaneously, using the chat to queue discussion, or having students map, trace, post, or ‘prune’ sounds (Ahern and Frith 2013) in a discussion. Additionally, options for engagement can take synchronous discussion and work with it asynchronously. For example a synchronous video meeting session could be recorded and replayed in subsequent class meetings, zeroing in on different points or movements of the discussion. Alternatively, the recorded synchronous video meeting could also be treated as a compositional material for new discussions—remixed into different versions of the discussion with captioning, including new sounds of ‘auditory imagination’ (Ihde 2007) or using screen sharing for transcripts or typography.

Seeds of Sound

What I have attempted to offer above are a few concrete examples for how sound could be ‘planted’ into synchronous video meetings as online learning spaces, and thus how those spaces could be soundscaped. I have focused more on students as the contributors of sound, and teachers as designing or curating sound through the space of certain activities; however, teachers could also participate more actively in sounding within online learning spaces, as well. Here, I conclude with a few complicating final notes. As we are all well aware of, the current Covid-19 pandemic has occasioned an even greater call for care and empathy for students and for teachers. Though much of this article has proposed critical points, particularly in calling out the lack of (auditory) imagination for synchronous online learning spaces in the time of Covid-19 learning, there are some caveats to be made, as well. First, any pandemic pedagogy needs to consider the additional pressure that a nearly uniform movement to online teaching has caused for contingent instructors and how labor issues have arisen where teachers are asked to not only teach themselves the functional and critical literacies involved in online learning, but they have also been asked to grapple with new pressures of time, material access to resources, and opportunities for professional development. Furthermore, contingent instructors may feel doubly vulnerable to risk-taking in online learning spaces in response to teaching evaluations, reduced enrollments, and hiring freezes.

Additionally, even for those instructors who do not feel that their employment is precarious, there is still an issue of re-imagining sonic practices online in the absence of pedagogical or theoretical resources. For instance, if it is not apparent what purpose soundscaping serves in a learning space to begin with, it could be very unlikely that instructors would devote time to such practices.

Therefore, as we potentially move out of ‘pandemic pedagogy’, and back into shared physical proximity, it is important to retain attention to soundscaping in both brick-and-mortar classrooms and online learning spaces. By continuing to call for fully multisensory engagement in learning, we can hope to counter practices of ‘muting’ that reinforce racism, classism, and ableism, while also arguing for ways in which sound invites distinct habits and new learning experiences.

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