

7

SILENCE AND NOISE

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John Cage made this observation after visiting an anechoic chamber at Harvard University: “Try as we may to make a silence, we cannot” (Cage, 1961: 8). Inside, where he would find silence if ever he could anywhere, he heard his nervous system and the circulation of his blood for the first time. The experience of sensory deprivation is so disturbingly loud inside that the Central Intelligence Agency of the United States uses it as a method of torture (Benjamin, n.d.). Sound, it seems, is an unavoidable part of life. Cage’s experience in the anechoic chamber was one of the inspirations for his famous composition *4’33”*. In it, Cage sets the listener the task of hearing the music in the constructed silence, which turns out to be the noise of coughs and the rustling of programs. Silence, it seems, is what we make of it. Coming at the subject digitally, Raven Chacon, a composer and member of the artist collective Postcommodity, recorded silence at some of the quietest places in North America (Window Rock, Arizona, the Sandia Mountains, New Mexico, and Canyon de Chelly, Arizona). When edited to maximum volume, each has its own noise signature that can be clearly heard as different from the others (Chacon, 1999). Beneath silence, it seems, lies noise in its infinite variety.

Noise can be defined in many ways: as the non-signal component of information, as that which is outside of sound, as dissonant but valued music, as an integral component of timbre, as any unwanted, distracting thing, or sound that has not or is incapable of taking on meaning – yet. It seems to have an intrinsic tendency toward unresolved failure because as soon as it becomes valued or meaningful in itself, it ceases to be noise (Hegarty, 2007: 147, 181, 191–192). Intriguingly, noise can be soothing, and by blocking out more identifiable sounds, it can create the conditions for approaching something like silence, as when urban sleepers put on wave machines to block out traffic noise. And in perhaps the greatest irony, noise can be set against itself as in the case of noise-canceling headphones, to create something approaching silence. Noise is an integral part of many musics, and a powerful metaphor that can be deployed both positively and negatively. What all of these have in common is that they are socially, culturally, and historically defined. One person’s noise can be another person’s music or silence.

I am thus presently essaying an impossible task. Silence does not seem to actually exist in any empirical sense, and noise is merely what an assemblage of soundways situated in a particular place and time determines it to be (Hegarty, 2007: 5; on soundways, see Rath, 2000: 100–102, 2003: 2). Silence and noise exist in a curious orthogonal relationship with each other. At first they might seem like opposites, in an inverse relation where silence is attained by removing

noise and vice versa. This makes common sense, but in Cage's and Chacon's work, when the silence occurs what emerges when we attend to it closely enough is noise.

Not exactly opposites then, silence and noise are more like "frenemies": where the one is sought, the other is nearby, waiting to undermine. Beneath silence, noise. Beneath noise, the specter of the silence. Alternately, noise is transformed through attention to it into the realm of sound or music, à la Cage in *Silence* and at a more structural level, in Jacques Attali's *Noise*, where "music is inscribed between noise and silence, in the space of the social codification it reveals" (Attali, 1985: 19). For our purposes we can expand this hypothesis beyond music to all sound. Attali considers noise to be "violence: it disturbs. To make noise is to interrupt a transmission, to disconnect, to kill." Attali's notion of downright murderous noise perhaps reflects more of the violence inherent to Western practices of sovereignty, capitalism, and social order than to any universal characteristic that may be attributed to it. Indeed, a moment later, he observes that noise "does not exist in itself, but only in relation to the system within which it is inscribed" (Attali, 1985: 26). Paul Hegarty goes a little further, arguing that noise is a negativity that only exists in relation to what it is not (Hegarty, 2007: 5). Although Attali and Hegarty reject it, scientists and scholars of communication have particular ideas about the objective nature of noise, so it makes sense to see if these ideas can be socially situated rather than to presume them out of existence.

Hillel Schwartz splits the long history of noise into three overlapping historical shifts. The first emerged in sixteenth-century Europe with the interiorization of noise that coincided with the beginnings of the middle- and upper-class valuation of an increasingly private domestic sphere, along with the rise of silent reading. The second shift emerged from nineteenth-century urban life, where noise came to be experienced as an inescapable, intrinsic part of life. This all-pervasiveness allowed it to escape the purely sonic realm and become a metaphor for the bustling twenty-four-hour cacophony of the nineteenth-century city. The third shift, which we are still in the midst of, witnessed the generative engagement of noise with modernity. The nineteenth-century babble blossomed into the twentieth-century's discourses and technologies of not only banishing or limiting, but of generating and using noise (Schwartz, 2011).

At first, noise seems to be mostly unwanted but has nonetheless found welcome in the hands of digital signal processing (DSP) engineers. The modern "objective" notions of noise they employ can trace their origin to Claude Shannon and Warren Weaver's *The Mathematical Theory of Communication*, which divided the world into sender, signal (namely that which was being communicated), channel, noise (that which hampered or competed with the signal, obscuring it and preventing it from being communicated clearly), and receiver (Shannon and Weaver, 1949). Here noise served as interference, as unwanted interfering sound in a sonic communication circuit. It was something to be reduced if not removed so that the good stuff, the signal, could get through. This is evidenced in magnetic recording by noise reduction schemes like Dolby and dbx. The shift to the digital moved away from this negative formulation of noise as something to get rid of or minimize.

With the emergence of DSP from the 1990s onward – though as Jonathan Sterne has shown, (Sterne, 2012: 3) with much deeper roots – noise began to be reformulated as part of the total information in communication. In DSP – and to a certain extent in music – noise is any unpitched sound. Melodic instruments produce these pitches and their multiples (called harmonics) along with some residual noise (like the breathiness of flutes or the reediness of the saxophone) or non-harmonic resonances (as in the dissonances of bells). While melodic instruments all have differing levels of harmonics and noise that shape their timbre and make them identifiable, drums, cymbals, and percussion – the non-pitched instruments – have no clear fundamental pitch in many cases and are defined almost solely by their noise. The voice combines a set pitch and its harmonics (which linguists call formants) with the rattling of the vocal chords,

all shaped by the tongue, teeth, and the inside of the mouth. Musicians have known about this character of noise shaping timbre perhaps forever, but DSP formalized and successfully quantified its use. The point here is that noise is fundamental to the timbre of almost all sounds.

A crucial DSP example of how noise came to be revalued in the digital era is the breaking apart of any sound using what is known as a Fourier transform. Fourier had shown in 1807 that any complex waveform, like sound waves, could be broken into an infinite number of sine waves at different frequencies that were allowed to fluctuate by volume through time. The mathematical function for doing this is called the Fourier transform. It is reversible through its inverse transform, in which the component sine waves are combined to reconstruct a sound.

The Fourier transform helps us understand the odd nature of the relationship between noise and silence. Given an infinite number of sine waves, any sound could be reproduced exactly. In practice, however, an infinite number of sine waves is impossible, so the computation is simplified by giving a set number of “bands” – the sine waves, each at a different pitch – combined with a small amount of broadband noise. In this way, the noise in the reconstruction serves as a sort of glue that holds together the sound. This quality of smoothing out is also part of the way digital audio gets produced in practice through the introduction of small amounts of noise to the ones and zeros, a process called dithering, which smooths digital signals in the same way as for the Fourier transform. In fact, one sound engineering trick is to add a small amount of digitally simulated analog tape noise back into the mix to make it sound less digital. Much of the nostalgic fervor for vinyl revolves around its hiss, rumbles, and scratches. Noise, it seems, adds warmth and atmosphere to digital sounds that are so clean and noise-free as to seem brittle and cold. This kind of noise has as much to do with the medium as it does with the content (Hainge, 2013). While it is easy to think of noise as the opposite of silence, the idea that there is a floor of noise that only emerges as silence is approached seems to be at the base of any empirical approach to thinking about the subject. Objectively then, silence simply does not exist, at least as long as life is going on.

If we turn to the subjective realm, noise has a longer historical arc than its treatment in DSP. The early modern European notion of noise was as loud, unwanted, and often dangerous sound. For example, Puritan Bostonian Samuel Sewall wrote that “the Noise of Yale-College came to me gradually,” starting as a rumbling noise and resolving finally into “Thunder-Claps” that came as “an extraordinary and unexpected Alarm” when the college was founded in 1722 (Letter of October 15, 1722, Samuel Sewall to Gov. Gurdon Saltonstall of Connecticut, in 1886: 2:143–144). Over the course of nineteenth-century American history and literature, the “machine in the garden” – exemplified by the steam locomotive plowing noisily through rural quietude – served as a touchstone for the downside of industrial progress (Marx, 1964). As Mark Smith points out, what was the horrible noise of northern factories to southern planters was the hum of industry to the northern capitalist (Smith, 2001).

The subjective meaning and value of noise shifted in the twentieth century, and it is here that the relationship of noise and silence becomes most interesting. Luigi Russolo’s *The Art of Noises* began the process of revaluing noise, calling for a futurist music that moved beyond traditional instrumentation to include what he called *intonarumori*, mechanical noisemakers modeled on the sounds of the modern world (Kahn, 1999; Russolo, 1967). Cage, as discussed at the outset, sought to expand the notion of music to include all the sounds of the world, calling music into being from what would usually be considered background noise, not unlike Marcel Du Champ’s concepts of the “ready-made,” an everyday object that becomes art by dint of it being viewed as such (Kahn, 1999: 178–179; Voegelin, 2010: 80).

Voegelin experiences noise as that which cannot be shut out; it takes over the body (Voegelin, 2010: 44). This conflates ideas of noise and loudness though. While they overlap, noise can

sometimes be tuned out. A softer noise can be disturbing and attention-grabbing in context, like a slow irregular drip from a faucet when one is trying to sleep or get silence, but even there, the sound of the faucet does not become apparent until it is *relatively* loud. It is only in the expectation of quiet or silence that the drip can even be heard without selectively attending to it. Unambiguously loud sounds like cyclones or the concerts of the Japanese noise musician Merzbow forcefully grab the attention and cannot be ignored, but here it is the loudness as much if not more than the noisiness at play, a difference overlooked by Voegelin (2010: 47–60). Take for example the British colonist William Strachey, who was caught in a hurricane off Bermuda in 1609. He heard it as a constant din that “worketh upon the whole frame of the body, and most loathsomely affecteth all the powers thereof. And the manner of the sickness it lays upon the body, being so unsufferable, gives not the mind any free and quiet time to use her judgment and empire” (Strachey, 1964: 4, 5). *Loud* noise grabs us and our attention forcefully; it breaks down the ability to form coherent meanings and collapses the distinction between subject and object (Derrida, 1973; Voegelin, 2010: 20).

Nick Smith uses noise artist Masonna to offer then to withdraw the hope of noise as an emancipatory force. Noise is regarded – naively, in his opinion – as freeing us in its incoherence and unclassifiability, in its failure to become meaningful without ceasing to be noise. Although it may seem that way, he counters, capitalism can absorb even the noisiest music because art in the age of global capitalism is the creation of a commodity with no functional or use value, and noise fits right into this – as have a long line of other supposedly disruptive artistic practices (Smith, 2005).

Silence too has many everyday meanings that are produced subjectively rather than objectively. It also has a long history, though not one so carefully charted as noise’s. An individual or community can be silent, find silence, fear silence, or be silenced in myriad ways without any kind of objective silence existing. Its meanings multiply once time and place are considered. Silence, it seems, has no inherent moral valence. It can be good or bad, productive or destructive, godly or murderous, created, imposed, or sought out. Sometimes the same silence can be valued differently by different historical actors. In short, silence is a moving target.

When placed in time, silence plays a tremendously important role. Sounds obtain much of their meaning from the punctuated silences interspersed within and between them. Rhythms are as much about absence as the presence of sound, whether in polyrhythmic drum patterns, a Miles Davis solo, a paragraph (for spaces, commas, semicolons, colons, periods, parentheses, and dashes are nothing if not silences). In speech the perceived silences allow us to form words and syllables even when phonetically there are none. Davis, a master in the contrapuntal use of sound and silence, remarked that “I always listen to what I can leave out” (Baraka, 1985: 45; Mowitt, 2002; Prochnik, 2011: 11–12; Rosenthal, 1992: 49). Cage observed that “of all the aspects of sound including frequency, amplitude, and timbre, duration, alone, was also a characteristic of silence” (1961: 19). This is a much more specific and useful set of information about time than vast generalizations about circular or linear time that are often used to frame the subject.

The study of temporal shifts and cultural differences in the use of punctuated silences can tell us much for instance about the differing uses of sound in African American history and its significance for the history of the Americas and the world. At the micro level, for example, one can find meaning in the sounds and silences of Sea Island boatmen rowing white masters while singing rowing songs. In some ways, this was the stereotypical scene of putatively happy enslaved workmen under the guise – and gaze – of white paternalism. Masters and mistresses knew that the tempo of the rowing determined the speed of the work and could demand the rowers to speed up. Here, the silences and sounds that made up the rhythms become important. Through the use of polymeter, found in many of the rowing songs, the rowers could speed up the song

yet slow down the rowing by switching from one meter to another, changing the meaning of the silences, the gaps, the rhythms, on the fly. This remains speculative, for in order to be effective it needed to be kept off the horizon of white understanding, and thus is not easily found in the historical record left by planters. The circumstantial evidence, namely the polymeter, can be found in the songs themselves, even when written down long after slavery times (Epstein, 1977; Kemble, 1961; Parrish, 1992).

Longer historical silences tell much as well. Winthrop Jordan reconstructed the planned slave uprising that took shape in Adams County Mississippi in 1861 at least in part by listening to his sources as well as just looking at them. He was able to listen through a thirteen-decade long silence that white Southerners had imposed on the historical record to tease out some of how African Americans and planters viewed and heard each other (Jordan, 1993). In an essay on time and slave revolts, Walter Johnson notes that the planning of slave uprisings needed to take place “off the grid” and in the “interstices of weeks, days, and even hours”: that is, in the punctuated silences of the rhythms of everyday life (Johnson, 2002). It is probably not coincidental that Mark Smith, one of the historians who makes the most historical silence, wrote his first book about time on the slave plantation (Smith, 1997). While much has been written on Black and White conceptions of time on the plantation, and on the musicology of African American music, a focus on the soundscapes – including the silences – of African American life opens up these seemingly disparate subjects as being integrally connected and ripe for further research.

Smith has carefully documented the meanings of slave silences to planters in the antebellum U.S. South, who feared the silence of their supposed property as much as any sounds they might make (Smith, 2001: 68). If the enslaved could be heard, by this logic, their whereabouts and activities could be known. Silence meant the loss of predictability, a key to the control of other human beings. While much has been made of the powerful nature of the sounds of slavery, and to good effect (Rath, 1993, 2000; White and White, 2005), the silences could be a potent tactic for the enslaved as well. Lest we think of silence as capable only of calling unpredictability into being, anthropologist Keith Basso has found – in a foundational essay for those studying silences – that for Western Apaches, keeping silent is often “a *response* to uncertainty and unpredictability in social relations,” a pattern he found held among other nearby nations as well (Basso, 1970). Thus, refusing to engage in speech can communicate as much as speech itself and has different meanings in different cultures and contexts.

Silences can take on accusatory meanings. For AIDS activists in the 1980s and beyond, silence rather than Attali’s noise was murderous. In the famous formula of Silence=Death, silence in conversation and public media about AIDS because of homophobia was slowing research, with the result of lives lost, tantamount to murder by neglect. Interestingly, this seemingly dramatic claim is the one closest to what we could objectively arrive at for a definition of silence above.

From a different angle, but still contrary to Attali’s conception of murderous noise, several recent books have taken up silence from the premises that today’s world is too noisy and that silence is something to be sought outside oneself. In this decidedly middle-class preoccupation, the noise of everyday – particularly urban – life is deafening and quite literally killing us all. Hearing loss and heart attacks serve as the bogeys in this story, announcing loudly the perils of the loss of silence in urban spaces from New York to Kolkata. Hearing loss is undoubtedly a part of life as well as an occupational hazard, but the heart attack figures are stridently and uncritically quoted as authoritative from offhand remarks and dubious research (Chakrabarty et al., 1997; Chowdhury et al., 2012: 114; Picker, 2003; Thompson, 2002: 116–168; West Bengal Pollution Control Board, n.d.: 4–7).

Often the narrative follows some sort of quest, with the more nuanced authors discovering along the way silence’s residence within. This prescriptive quest for silence is rooted in bourgeois

privilege for the most part, and would no doubt dissipate in the back of a cab stuck in traffic if the knight-errant were late for a meeting. Logically, it would seem that if these authors wanted silence so badly they would embrace the onset of hearing loss rather than decrying it! These oftentimes querulous accounts attribute the noise to modern life and assume quite mistakenly that in some golden past, the world was quieter and silence was available (Foy, 2010; LeClaire, 2010; Prochnik, 2011; Sardello, 2008).

In addition, silencing as an activity is often construed as erasure, as in the silencing of the experience of Africans in the Americas through the selection of what counts as an archive (Trouillot, 1995). Tillie Olsen called such imposed silences, especially in the experiences of women, “unnatural silences.” These included censorship, abandoned media, purposeful deletions, and repression – sometimes direct (such as a publisher’s decision that a work is not marketable) and others indirect (by filling a housewife’s or working-class person’s days to the brim with other work for example) (Olsen, 1978). As Tara Rodgers notes, invoking poet Adrienne Rich,

Feminists have often located empowerment within acts of breaking silences, by foregrounding aspects of identity. As Adrienne Rich said, “The impulse to create begins – often terribly and fearfully – in a tunnel of silence. Every real poem is the breaking of an existing silence, and the first question we might ask any poem is, What kind of voice is breaking silence, and what kind of silence is being broken?”

(Rich, 2001: 150; Rodgers, 2010: 10–11)

Rodgers posits a sort of “noise gate” – an audio device that silences sounds below a threshold volume as being in effect in sound studies, effectively silencing the voices of women in the literature on experimental music. The complement to these imposed silencings was a natural silence, such as writer’s block, or a period of inactivity Olsen likened to a field lying fallow. While Olsen’s aim was literature, it is easy to shift the focus from the visual to the audible realm in applying her categories.

Other silences were prescriptively performed rather than imposed, a sometimes fine distinction. Seventeenth-century maxim writer François de La Rochefoucauld categorized personal silence into the silence of eloquence, the silence of mockery, and the silence of respect, while his younger peer, Morvan de Bellegarde, “listed no fewer than eight varieties; prudent, artful, complaisant, mocking, witty, stupid, approving and contemptuous” according to Peter Burke (1993: 129). The people in the higher positions in the hierarchical societies that defined European social structures from antiquity onward – even into the present – relied on the silence of inferiors to keep society running smoothly. Renaissance and early modern silence was a sign of deference and respect, a way of listening upwards. The foremost practitioners of silence were monastics and the clergy, listening upward to the supernatural. The practice of silencing women in Western culture has a long history, but it was also a prescription that women were supposed to aspire to as much as a forced imposition. In formulating his etiquette rules, Aristotle quoted Sophocles’s use of an even older Greek proverb, “silence gives grace to woman.” This custom continued through the early modern period and on into the twentieth century, with some vestiges no doubt remaining today. Similar prescriptions were applied to children and other dependents and presumed social inferiors. Those at the front of the Western pecking order had reason for silence as well, such as in not showing their hand in matters relating to other communities and social groups: silences that Spanish writer Baltasar Gracian regarded as “the dissimulation of princes and the discretion of the wise” (Burke, 1993: 125–141).

Many religious practices equated – and still equate – silence with the ability to tune sounds out to achieve an inner stillness. Silence can also be a decision, a silencing of oneself that is

prerequisite for listening. Such silence creates an opening for communication with the spiritual world in many belief systems. Hesychasm, the practice of withdrawing from the senses to achieve an inner quietude, has a long history in Christian mysticism (Burke, 1993: 127–128). Quakers, as the Society of Friends are called, have long held meetings where the people sit in silence until someone is inspired to speak by an “inner light” (Bauman, 1983). Trappist monks take a vow of silence, and in Hinduism, *Mauna* is the inner silence of the sage. The achievement of it is central to Yogic meditation practices. One of the Buddha’s most famous sermons consisted of him wordlessly holding up a flower. One follower simply smiled. The follower, according to the Buddha, had received everything in that silent moment. This inner silence is the punchline of the wiser varieties of books on the pursuit of silence in modern life as well.

Perhaps the relation between noise, sound, and silence is best captured by Voegelin’s explanation of silence as “not the absence of sound but the beginning of listening” (Voegelin, 2010: 83). Noise, then, is the unsculpted marble waiting to be then formed through our listening into the experience of our own idiosyncratic but culturally and historically shaped soundscapes. The two are inextricably entwined with how we hear our worlds.

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