

**The Emancipation of Urban Noise: John Cage's Music as Acoustic Ecology**

Jocelyn Beausire

Architecture BA, Music BA

5/15/2017

Pure silence is a powerful rarity in the urban soundscape. Silence has been positively correlated to many quality of life indicators, such as mental acuity, lowered anxiety, and better sleep. In an interactive context, silence has an important role in conveying thoughts and enhancing communication between individuals. These conclusions have led to the current veneration of silence by urban policymakers across the Western world. Yet, much of the nuance of the situation is lost in the translation, or application, of these principles. The responsibility of dictating the soundscape, (or “holistic interaction of sounds in a given environment in relation to the occupants”), falls on the shoulders of acousticians, planners, policymakers, and designers.<sup>1</sup> By building to create and enforce an absolute ideal of silence, a hierarchy of sounds in the soundscape has also been instated, the social repercussions of which are not fully acknowledged by the architects and planners designing public spaces, the acousticians dictating the soundscapes, or the policymakers who enforce acoustic guidelines.

Acousticians play an especially prominent role in the prescriptive part of the process, however, they do not follow a singular, generally-accepted approach. The three primary approaches, all originating in mid-20<sup>th</sup> century, are acoustic science, psychoacoustics, and acoustic ecology. These all paint slightly different pictures of the urban sonic situation, and thus inform different reactions on the parts of planners, policymakers, and designers. The study that paints with the broadest societal strokes, and thus has the most applicability on the neighborhood or city scale (rather than to a single building) is acoustic ecology. Psychoacoustic ecology was an outgrowth of theorist James Gibson’s ideas which challenged the idea that the nervous system constructs perception, and instead proposed the idea that perception is the mind’s reaction to

---

<sup>1</sup> Richard Oddie, “Other Voices: Acoustic Ecology and Urban Soundscapes,” in *The Natural City: Re-envisioning the Built Environment*, by Stephen B. Scharper, ed. by Ingrid Leman Stefanovic (Toronto, ON: University of Toronto Press, 2011), 163.

stimuli within the environment, and is thus impacted by both the external stimuli and the internal reactor.<sup>2</sup> Psychoacoustic ecology, or the rearticulation of Gibson's research within the auditory realm, is defined as the "interaction of the listener with the environment," taking into account their social context as well as that "detecting and recognizing a sound are the result of a complex interaction of physics, physiology, sensation, perception, and cognition."<sup>3</sup>

Psychoacoustic ecology also frequently incorporates musical concepts. Musical ideas of sound (and silence) contribute valuable insights to study, including "into other areas in which perception and the planning and execution of complex motor behaviors are intricately linked."<sup>4</sup> Raymond Murray Schafer, preeminent acoustic ecologist, composer, and social scientist, took a particularly critical look at authorship and ownership of the acoustic environment, stating that the soundscape is a "musical composition to which we necessarily contribute and must take responsibility."<sup>5</sup> Guided by Schafer's similitude, music theorists and composers can be consulting authorities on the urban soundscape.

Musical conceptions offer a different view of silence from those present in existing urban planning, often-scientific approaches to noise policy. They suggest a much more personal, nuanced, and inclusive theoretical basis of understanding, and prioritize the listener as an active participant in shaping their sonic environment, possibly even usurping the role of the producer of sound. They also acknowledge different qualitative aspects of sound, with volume and duration being only two of many variables involved, with the others – timbre, pitch, intensity, and

---

<sup>2</sup> James J. Gibson, *The Ecological Approach to Visual Perception*. Resources for Ecological Psychology. (Hillsdale, New Jersey: Lawrence Erlbaum Associates, Publishers, 1986), 3.

<sup>3</sup> John G. Neuhoff, "Introduction and History," in *Ecological Psychoacoustics* (Cambridge, MA: Elsevier Science, 2004): 1.

<sup>4</sup> *Ibid*, 2.

<sup>5</sup> Oddie, "Other Voices: Acoustic Ecology," 163.

articulation – acknowledged as equally impactful.<sup>6</sup> In particular, midcentury experimental composer John Cage focused on silence for much of his musical career, advocating a view of “silence as a type of music and a kind of “emancipated noise.”<sup>7</sup> Furthermore, music emphasizes a critical delineation between “relative” and “acoustic” silences. In accordance with the ideas put forth by the music and acoustic ecological communities, “silence,” when referenced in this paper, refers to “a relative lack of noise” or a kind of “background noise,” which is perceived as silence. Absolute silence, or an acoustic silence of 0 decibels (or dB(A)) is not the definition being used, unless otherwise indicated.

John Cage’s approach to music, when applied to critique urban planners’ approaches to silence in public spaces, helps explore how building and policy decisions affect members of society. Musical notions of silence can also suggest alternative approaches, incorporating acoustic ecology, which serve society in a more conscientious, egalitarian, cooperative, and inclusive way.

## **Foundational Research**

A growing body of literature analyzing the interactions of sound and space has been split between scientific and experiential perspectives. These bodies of research provide insights into small-scale interactions between specific buildings and listeners, but investigation on the large, societal scale was lacking prior to the mid-20<sup>th</sup> century. With the introduction of acoustic (or psychoacoustic) ecology came an increased focus on the interactions of sound, space and humanity on a larger scale, placing each individual within their geographic, cultural, economic

---

<sup>6</sup> Elizabeth Hellmuth Margulis, “Moved by Nothing: Listening to Musical Silence,” *Journal of Music Theory* 51, no.2 (2007): 246.

<sup>7</sup> John Cage, *Silence: Lectures and Writings*, (Middletown, CT: Wesleyan University Press, 1961).

and demographic context. This applicability to larger human situations eased the jump applying psychoacoustic ecological theory to urban practice.

The highly technical, quantifiable focus of acoustic science has long been at the forefront of 20<sup>th</sup> century analytics of sounds and spaces. One of the leading figures in this field was physicist and acoustician Leo Beranek. Beranek wrote and published *Music, Acoustics & Architecture* (1962) which became a reference text for acousticians over the following half-century. The comprehensive book outlines his scientific principles and applies them to the design of large-scale music halls, many of which Beranek played an integral role in designing.<sup>8</sup>

On a city scale, acoustic science has been applied to design and defend the implementation of noise-abatement technology. This has helped protect certain neighborhoods from traffic, industrial, and other urban “noise.” Much of the research into abatement technology is founded in engineering research, and focused on conglomerating almost all urban sounds as “noise,” which requires elimination. The government, in response to the movement, started the Office of Noise Abatement and Control (ONAC) under the Environmental Protection Agency in 1970. The focus was on the use of quantitative measures (primarily duration and volume) to regulate noise levels and enforce noise policy in urban neighborhoods. The proceedings of the first meeting on *Evaluating the Noise of Transportation* (1970) provide context for the argument and its implementation.<sup>9</sup>

In response to acoustic science, and forming the basis for acoustic ecological counterarguments to ONAC policies, psychoacoustic analysis studies individual perceptions of

---

<sup>8</sup> Leo Beranek. *Music, Acoustics & Architecture* (New York, NY: John Wiley & Sons, Inc, 1962).

<sup>9</sup> James D Chalupnik, and United States Office of Noise Abatement, *Evaluating the Noises of Transportation : Proceedings*. (Washington: Dept. of Transportation, Office of Noise Abatement, 1970).

sound. The study originated in the 1960s by Georg von Békésy, an early 20<sup>th</sup> century Nobel-Prize winning Hungarian scientist. His book *Sensory Inhibition* (1967) details his investigations into the inner ear listening mechanism and its relationship to the brain.<sup>10</sup> Psychoacoustics are based more on qualitative than quantitative data, originating in the individual and their subjective experience of sound. Békésy's psychological and biological approach to sound from within the listener has formed the basis of modern psychoacoustic analysis.

Similarly to how acoustic science was expanded to society-level applications through the noise-abatement movement, psychoacoustic ecology applies psychoacoustic principles to a larger space or population. R. Murray Schafer led the psychoacoustic (also known simply as acoustic) ecology movement and published his thoughts in *The Tuning of the World* (1977). The book outlines a methodology for critiquing the ecology of existing urban spaces and their inhabitants, and suggests a few methods to incorporate theories into future urban planning.<sup>11</sup> Many theorists have since built on Schafer's work, including John G. Neuhoff, whose book *Ecological Psychoacoustics* (2004), includes more recent interpretations of Schafer's arguments, particularly focusing on the role of collective consciousness, or society-wide psychology, in experiencing noise-space interactions.<sup>12</sup> Burgeoning studies into soundscape ecology have applied these principles to analyze the existing situation in the urban realm, and to enhance understanding of correlations between public-realm sound and urban human behaviors. However, there is still a disjunction when it comes to encapsulating and tangibly applying these theories to practice.

---

<sup>10</sup> Georg von Békésy, *Sensory Inhibition* (Princeton, NJ: Princeton University Press, 1967).

<sup>11</sup> Murray Schafer, *The Soundscape: Our Sonic Environment and the Tuning of the World*, (Rochester, NY: Destiny Books, 1977).

<sup>12</sup> John G Neuhoff, *Ecological Psychoacoustics*, (Cambridge, MA: Elsevier Science, 2004).

## Existing Situation

Exterior sound level limits

District of Sound Source	District of Receiving Property		
	Residential (dB(A)) (Leq)	Commercial (dB(A)) (Leq)	Industrial (dB(A)) (Leq)
Residential	55	57	60
Commercial	57	60	65
Industrial	60	65	70

Figure 1: Courtesy of City of Seattle, Municipal Code Chapter 25.08

Current efforts at designing for and policing sound in public spaces has fallen short of fully serving societal needs, neglecting empirical evidence which supports a more qualitative approach. In the case of Seattle, policies are oriented specifically around restricting “unreasonable noise,” with the aim of “minimize the exposure of citizens to the physiological and psychological dangers of excessive noise and to protect, promote and preserve the public health, safety and welfare...to control the level of noise in a manner which promotes commerce; the use, value and enjoyment of property; sleep and repose; and the quality of the environment.”<sup>13</sup> The law goes on to describe noise level allowances in industrial source or recipient areas, measured and quantified as higher decibel (dB(A)) levels, and noise level allowances in residential source or recipient areas (smaller dB(A)) (fig 1). It defines “unreasonable noise,” in terms of a variety of qualitative and quantitative indicators. Generally it describes it as “loud and raucous, and frequent, repetitive or continuous sounds,” and then goes on to derive it as coming from an animal, a horn or siren, an engine, a musical instrument, or an “amplified or unamplified human voice between the hours of 10 pm and 7 am.” Additionally, in focusing on public space ordinances, more stipulations rise to the surface

<sup>13</sup> City of Seattle, *Seattle Municipal Code*, (May 3, 2017), Chapter 25.08.

which disallow musical sounds from an event which exceed 95 dB(A) for one minute. These regulations are not as much problematic in theory as they are in practice. Their priorities homogenize and regulate engine noises, sirens and natural and human sounds with single quantifications (volume and duration) and neglect to acknowledge other qualifiers such as timbre, frequency, pitch, articulation, and source association. This blatantly goes against many of the tenants of scientifically and experimentally-proven acoustic ecological thought which suggest quality of sound is as equally impactful as quantity. Instead, by aiming at achieving absolute silence (which is perceptually impossible), these policies reduce sounds which may not be pollutants, but which instead may be welcome additions to the urban soundscape for listeners.

New policies and frameworks outlining a more qualitative, prescriptive, sensitive, and listener-centered approach to design are needed to replace these existing regulations. However, there is a distinct break between acoustic ecological thought, and tangible actions taken by urban planners. This break can be bridged by music, an area of study well-versed in making theoretical abstraction tangible in the physical realm, and an area suggested as a useful tool by Raymond Murray Schafer in his initial conceptions of acoustic ecology.<sup>14</sup> By integrating Cage's further ideas into acoustic ecology it is possible to amend urban planning, policymaking, and design practice, and establish a framework linking Schafer's acoustic ecological theory to real inhabitants of public spaces in a way that has yet to be achieved by participants on either side of the theoretical/practical divide.

---

<sup>14</sup> Neuhoff, "Introduction and History," 2.

## Framework

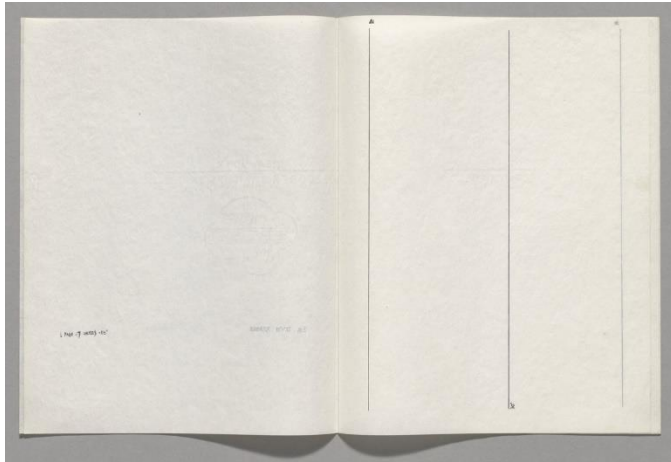
At one point when asked to name a great music teacher, John Cage stated “Murray Schafer of Canada.”<sup>15</sup> This single statement suggests that, not only are many of Cage’s works in-keeping with Schafer’s theories, but that they also extend them further. Cage was born 1912 and died in 1992. He had a life that spanned the 20<sup>th</sup> century, and stands as one of the century’s most famous (or infamous) experimental music composers. He began his experimental period with prepared piano pieces, where he inserted bolts, screws, pieces of rubber, and other paraphernalia into the body of the piano instrument to alter its sound. He moved on later to embrace “chance music”, or compositions he created by randomly flipping a coin, a dice, or picking a page from the Chinese *I Ching* or *Book of Changes*. In the 1950s came probably his most notorious piece – “4’33” – in which he walked onstage, sat at the piano for four minutes and thirty-three seconds, and then walked off.<sup>16</sup> Many spectators were outraged at the performance, but Cage justified it as more of a philosophical, intellectual statement than an aesthetic one (although it was one, by his tastes). Cage had many philosophical principles on which he depended for his musical work, and which he championed in his writing and spoken lectures. Particularly he focused extensively on the topic of silence, exploring the topic comprehensively through his book *Silence: Writings and Lectures* as well as his compositions. Through exploring four major categories into which Cage’s theories fall, specific applications and parallels are drawn between his work and urban theory, completing the circle of influence that Schafer started and creating tangible guidelines for practice.

---

<sup>15</sup> R. Murray Schafer, “The Father of Acoustic Ecology,” Interview by Anjula Razdan, *UTNE Reader*, (July -August 2005): 1.

<sup>16</sup> Kyle Gann, *No Such Thing as Silence: John Cage’s 4’33”*, (New Haven, CT: Yale University Press, 2010), 7.

## Silence as Subjective



*Score for John Cage's 4'33"*  
Image courtesy of MoMA

Cage once stated, “We really do need a structure so we can see we are nowhere.”<sup>17</sup> Silence, especially through the acoustic ecological perspective, is centered on the individual. Cage took this centering one step further, arguing that silence begins and ends with the individual’s awareness of it – thus, the

silence (or the context for silence) begins when the individual begins listening, and ends when they stop listening. Not only are silences relative to the volume and intensity of surrounding sounds, but also they are dependent on the individual’s attention. This is demonstrated most viscerally in his 1952 composition *4'33"* in which he literally imposes a structure around a silence, where he has ultimate control over the audience’s attention. Silence is inherently dependent on context, and in that sense, an “absolute” version of silence can never be achieved. The relative lessening of noise was the only silence Cage acknowledged, as he completely dismissed the idea of “absolute” silence, saying “try as we may to make a silence, we cannot.”<sup>18</sup> The larger music community generally follows this dogma, establishing a difference between “acoustic,” and “perceived,” silences. An “acoustic” silences are defined as periods where “acoustic analysis shows below-threshold sound stimulus,” while “perceived” silences are defined much more broadly as including “many diverse impressions.”<sup>19</sup> In music, this can be

<sup>17</sup> Cage, *Silence: Lectures and Writings*, 8.

<sup>18</sup> *Ibid*, 8.

<sup>19</sup> Margulis, “Moved by Nothing,” 251.

manifested as a huge forte passage played by many orchestral instruments dying down to a single horn playing a drone. In this context, the drone is considered a relative, perceived “silence,” in comparison with the previously frenzied fabric of the piece. In a famous incident, Cage once was invited to enter an anechoic chamber at Harvard University, thought to be the site of “absolute” silence, but after entering reported hearing two sounds, one high and one low. After complaining, the technician informed him that the high frequency was his nervous system, and the low one his blood circulation.<sup>20</sup> In this sense, prior conceptions of perceptual silence are actually the only silences that exist, as even “our bodies do produce sounds of their own, and in the vast continuum of human experience true silence is virtually unknown.”<sup>21</sup>

The fact that silence is subjectively dependent on two variables -- the individual’s perception and the context -- directly contradicts the seemingly objective approach of current noise-abatement regulations. This relationality calls for a more context-aware approach to sound regulations. The ramifications of this misalignment between principles and practice are particularly visible when there are diverse groups inhabiting the same acoustic environment and perceiving it in different ways. R. Murray Schafer and generations of acoustic ecologists to follow painted shaded variations on a similar approach to understanding and designing soundscapes. Schafer, as a composer and ecologist, introduced many musical idioms into the foundations of the movement’s methodology. The term “keynote,” is particularly applicable. It is based on the musical concept of a key center, or an anchoring pitch around which the other pitches in a composition are seen as relating. Keynotes, ecologically, are sounds “heard by a particular society continuously or frequently enough to form a background against which other

---

<sup>20</sup> Gann, *No Such Thing as Silence*, 161.

<sup>21</sup> *Ibid*, 164

sounds are perceived” -- drones which are seen as a part of the silence, rather than a distinct sound entity.<sup>22</sup> Keynotes differ according to an individual’s memory (or group’s collective memory) as well as cultural and socioeconomic factors. This was obvious in a 2003 cross-cultural study of over 6000 individuals in 14 urban open public spaces in 5 European countries -- Greece, the UK, Italy, Germany and Switzerland. Individuals seemingly universally enjoyed natural and culturally-specific sounds, and dismissed sounds made by construction, vehicles, or machinery. However, in regards to “background-level” speech sounds, opinions varied starkly between countries. Over 50% of the participants in the Kritis Square of Thessaloniki, Greece rated surrounding speaking as ‘annoying,’ and in two case studies in Germany, less than 1% of participants rated their annoyance at similar speech sound levels. Furthermore, in Sesto San Giovanni, Italy, almost 45% of participants rated surrounding speech sound (at a comparable level to the other studies) as ‘favourite.’<sup>23</sup> This proves that the culture of the listener, as well as particulars of the “place,” impacts the perception and evaluation of sounds which are qualitatively and quantitatively comparable. Whether or not speech sounds were considered part of the cultural “keynote,” was influenced by the context. Of course, this study, limited by its Western scope, reveals disparities that may prove even larger if it included participants from the global East and South.<sup>24</sup> With this in mind, regulations can either choose to suppress the local acoustic culture, or enhance it.<sup>25</sup> By enhancing it, encouraging “keynote,” sounds which may or may not be close to absolute silence, listeners are able to feel a greater belonging in their

---

<sup>22</sup> Barry Truax, “Keynote,” in *Handbook for Acoustic Ecology*, CD-ROM Ed., Version 1.1. ed. (Burnaby, B.C.: Cambridge Street Records, 1999).

<sup>23</sup> Wei Yang and Jian Kang, “Soundscape and Sound Preferences in Urban Squares: A Case Study in Sheffield,” *Journal of Urban Design* 10, no. 1 (2005): 63.

<sup>24</sup> Mags Adams et al. “Sustainable Soundscapes: Noise Policy and the Urban Experience,” *Urban Studies*, Vol. 43, No. 13 (December, 2006): 2390.

<sup>25</sup> D. C. Harvey, “Constructed landscapes and social memory: tales of St Samson in early medieval Cornwall,” *Environment and Planning D* 20, no.2 (2002): 248.

community and a sense of being rooted in a specific auditory place.<sup>26</sup> By focusing policy around this sense of regional acoustics, urban planners can lessen their dependence on quantitative indicators, and focus on qualitative aspects of sound as related to place which encourage community.

Cage's proposal to place silence as a container for sounds suggests that the acoustic identity of a location is dependent on the listener's attention, even going as far as saying "There is no such thing as silence. Something is always happening that makes a sound. No one can have an idea once he starts really listening."<sup>27</sup> Furthermore, he redefines the noise within the boundaries of *4'33"*, encouraging surrounding noise to be perceived as a musical composition. This, and the idea of "keynote," suggest that any attempt at creating an objective framework for the acoustic environment is inherently flawed. Instead, regulations should take into account the cultural and acoustic preconceptions within the community, and the expected qualities of sound associated with the place.

---

<sup>26</sup> J.B. Puddifoot, "Community identity and sense of belonging in a northeastern English town," *Journal of Social Psychology* 134, no.5, (1994): 608.

<sup>27</sup> Cage, *Silence: Lectures and Writings*, 191.

## Silence as Connective

The image shows a musical score for John Cage's String Quartet in Four Parts. It consists of two systems of four staves each, representing the violin, viola, cello, and bass. The first system has a blue box highlighting a specific musical phrase, with the text 'REPEATED MODULE' written in blue above it. The score is written in a complex, non-linear fashion, characteristic of Cage's experimental style, with various notes, rests, and dynamic markings.

Score for John Cage's String Quartet in Four Parts, highlighting the repeated module which creates a static, non-progressing, "silent" texture

Silence not only depends on its context, but it also provides it. Within a relative silence, sounds can seem much louder, more vivid, or timbrally distinct. Cage stated that "Actually, anything does go but only when nothing is taken as the basis. In an utter emptiness anything can take place."<sup>28</sup> In Cage's *String Quartet in*

*Four Parts*, composed in 1949, he takes four string instruments (the violin, viola, cello, and bass) with different ranges and timbres, and combines them into a single entity. He scored each voice as contributing to a larger, repeated series of harmonies across the piece, changing individually but creating an ultimately repetitive, static composition with real progression.<sup>29</sup> The combining of instruments to form one unified presence without any prominent parts, in essence, achieves what *4'33"* could not – silence. This silence, relying of course on the perceptions of the performers over time, actually drowns out the sounds. In order to play such a piece, the performers have to completely focus on the sounds they are creating and the rest of the sounds of the group, trying to match and blend. This is quite unlike the production of sound in *4'33"*, which happens incidentally. This new silence requires participation and cooperation between players, and the silence is a mark of their adequacy, not only as individual musicians, but also as listeners and collective beings. This adds a layer to the definition of perceptive/relative silence,

<sup>28</sup> Cage, *Silence: Lectures and Writings*, 175.

<sup>29</sup> James Pritchett, et al. "Cage, John," *Grove Music Online, Oxford Music Online*, (Oxford University Press, 2012), accessed May 3, 2017.

including also, as acoustic ecology emphasizes, the connections between the listener, producer, and their social and environmental context.

Similarly, listeners in the public realm are rendered equal through their collective presence, producing and absorbing sounds. This again only comes from adapting the listener's perceptions of silence, rather than adhering to an absolute. In her book *The Death and Life of Great American Cities*, Jane Jacobs, the famous urban theorist, doesn't directly approach the concept of urban noise. However, in her naturalistic storytelling, weaves in allusions to sound that indicate its role in her larger theories. Particularly, she connects the idea of quiet and noise to privileged and unprivileged areas, and activated or non-activated street levels. For example, she quotes one of her friends as saying "I live in a lovely, quiet residential area," but then continuing on to say, "The only disturbing sound at night is the occasional scream of someone being mugged."<sup>30</sup> However, later in the book, while discussing her neighborhood which frequently serves as the "ideal," she states that Hudson Street during the day "numbers of women in housedresses have emerged and as they crisscross with one another they pause for quick conversations that sound with either laughter or joint indignation."<sup>31</sup> In these two descriptive passages, as well as others, there is a clear delineation between mixed, activated, lively neighborhoods which are filled with sound, and less activated, apparently privileged but in fact more dangerous neighborhoods which are "quiet." In drawing this connection, Jacobs makes a statement linking quietness to a lack of safety to a lack of eyes (and people, and the noises they create) on the street. The active, participatory street, in this sense, is both full of background noise and considered "silent," in the relative sense rather than the absolute.

---

<sup>30</sup> Jane Jacobs, *The Death and Life of Great American Cities*, (New York: Random House, 2002),30.

<sup>31</sup> *Ibid*, 51.

Schafer coined the term “soundmark,” to sum up this inclusive, place-and-population-specific sound. Soundmarks are defined as “a community sound which is unique or possesses qualities which make it specially regarded or noticed by the people in that community.”<sup>32</sup> In this sense, similarly to his term “keynote,” which relies more on memory than current experience, a “soundmark,” is a place’s acoustic identity, including the noises that make up the place. More so than keynote, soundmarks link a culture of people to their current location. An example, suggested by ethnomusicologist Matt Sakakeeny, is the use of an area under Interstate 10 in New Orleans for funeral processions. In this location, the concrete bridge creates ideal acoustics for the jazz music played in the procession, and the confined area creates unity among participants. Furthermore, the space’s frequent use for this purpose means that the sound, played in that space, holds emotional weight for the community who engage in that tradition.<sup>33</sup> Soundmarks stretch the definition of silence further than do “keynotes,” in creating a place-specific sound that exists in the background of a particular location. However, similarly to provisions made for more strictly-defined silence, there should be provisions for these kind of place-engaging enjoyments of sound, particularly as they help “ground cultures in specific localities,” with the potential to support and encourage belonging in neighborhoods occupied primarily by minority cultures which may be underrepresented in other urban spaces.<sup>34</sup>

John Cage’s *String Quartet in Four Parts* is an expression of collective sound production, and collective listening. It is a kind of silence in that it is static and in that it is a singular, indivisible expression of the participants and the place. This kind of repetition was one which

---

<sup>32</sup> Mags, “Sustainable Soundscapes: Noise Policy,” 2390.

<sup>33</sup> Matt Sakakeeny, “‘Under the Bridge’: An Orientation to Soundscapes in New Orleans,” *Ethnomusicology* 54, No. 1 (Winter 2010): 3.

<sup>34</sup> *Ibid*, 3.

Cage emphasized not only in his compositions, but also in his views of the city. Cage recalled his famous compositional father-figure Schoenberg as saying “Everything is repetition.”<sup>35</sup> Cage took this statement and extended it further, seeing repetitions within the city soundscape as structuring and providing identifiable, often place-specific points of reference for urban listeners. As Cage put it, collective silence and collective sound equalize and bond the listeners and creators, “...we will not feel the need to be competitive, for as in those silences that occur when two people are confident of each other’s friendship, there is no nervousness, only a sense of at-one-ness.”<sup>36</sup> Similarly, sounds created cooperatively, and heard and embraced by a community, can strengthen the community’s connection to place. If silence is the goal of urban policy work, then these sounds too should be considered silence, regardless (within reason) of quantifiable factors.

### Silence as Inclusive



Score for John Cage's *Music of Changes*

The creation of sound, heard as elevated above the rest, has long been considered an act of power. In the case of music composition, the writing of music has been associated with ultimate control and authority – the ability of

a single individual to dictate the moves of others and completely dictate an auditory landscape. The built environment has also been rife with architects and planners looking to have complete control of their domain. Cage spoke on the topic of god-like composers, and urged a change in

<sup>35</sup> Brandon W Joseph, “The Architecture of Silence,” in *Experimentations: John Cage in Music, Art, and Architecture*, (New York, NY: Bloomsbury Publishing, 2016), 117.

<sup>36</sup> Cage, *Silence: Lectures and Writings*, 140.

focus, saying “When Art comes from within, which is what it was for so long doing, it became a thing which seemed to elevate the man who made it above those who observed it or heard it and the artist was considered a genius or given a rating...But since everything’s changing, art’s now going in and it is of the utmost importance not to make a thing but rather to make nothing.”<sup>37</sup> In Cage’s *Music of Changes* compositions from 1951, he utilized a technique called “indeterminacy,” where he used chance compositional techniques to take away his control as a composer. After reading the Chinese book of Changes, the *I Ching*, in which tossing sticks or coins are used to select one of 64 possible images, Cage decided upon the idea of using coin tosses to determine the rhythmic durations, pitches, tempos, dynamics, and articulations of his composition.<sup>38</sup> “Pitch,” refers to the rate of vibrations in a sound, dictating its relative highness or lowness. “Dynamics,” refer to the relative loudness or softness of a sound in decibels (dB(A)).<sup>39</sup> What resulted from Cage’s unorthodox compositional technique were pieces devoid of a human element, and devoid of his authorship – a random collection of notes with a pointillistic auditory texture. In this sense, Cage allowed a “natural,” “non-authored” approach, with the emphasis on the timbre of the instruments rather than on the variables usually controlled by the composer. “Timbre” is the particular characteristic quality of a sound depending on its basic, fundamental frequency and the presence and intensity of integer-multiple harmonics, which delineates the sound of an oboe, a trumpet, and a screaming toddler playing and singing the same note.<sup>40</sup> With these compositions Cage changed his definition of silence from “relative quiet,” instead to a relative “absence of intended sound.”<sup>41</sup>

---

<sup>37</sup> Cage, *Silence: Lectures and Writings*, 129.

<sup>38</sup> Pritchett, "Cage, John," *Grove Music Online*.

<sup>39</sup> Neuhoff, "Introduction and History," 18.

<sup>40</sup> *Ibid*, 18.

<sup>41</sup> *Ibid*, 18.

In the case of current noise policy work, the formal authorship belongs to city officials and council-members, and urban planners who help create environments which facilitate adherence to the policies. This needs to be reevaluated, because, as prior discussions of soundmarks and keynotes suggest, the listeners and the communities involved in a certain place should be able to express their desires for relative silence or sound, and have those expressions heard by authorities proposing and regulating policy as well as those authoring the built environment. Before an adequate alternative approach can be drafted, however, “informal” authorship (of a single individual or group of participants over a larger shared sound environment, rather than by “official” figures such as planners and policy-makers) needs to be evaluated. The power dynamic imposed by these individuals poses a distinct threat to soundscapes as cooperative, community-built acoustic environments.

Ursula Franklin, Quaker, scientist, feminist, and social theorist was famous for speaking on the subjective of collective urban communities and silence. In her speech “Silence and the Notion of the Commons,” at the First International Conference on Acoustic Ecology in 1993, Franklin definitively dismisses the involvement of technology in “polluting” the urban soundscape.<sup>42</sup> She states that silence is as important as water or air, but that it has become “special and precious in technologically mediated environments.”<sup>43</sup> Franklin fervently opposes the involvement of technology in the public acoustic realm, whether it be through pre-programmed music pumped onto the streets by businesses, or noise abatement attempts that falsify the soundscape by covering naturally-produced sounds with fabricated sounds (or

---

<sup>42</sup> Debra Sykes, “The Tuning of the World: The First International Conference on Acoustic Ecology,” *Leonardo Music Journal*, vol. 3 (1993): 83.

<sup>43</sup> Ursula Franklin, “Silence and the Notion of Commons,” *Soundscape, The Journal of Acoustic Ecology* 1, no. 2 (2000): 14.

fabricated silences). She even goes as far as to make these pollutions political, saying that “the soundscape essentially doesn’t belong to anyone in particular,” but that “the soundscape has become increasingly polluted through the private use of sound in the manipulative dimension of setting and programming moods and conditions.”<sup>44</sup>

In this sense, Franklin states that by individuals intentionally imposing their sounds on others through the use of technology, they are “privatizing” the public realm, and in doing so, undermining its very publicness. Instead, she advocates for a more open kind of soundscape that allows more space for the “unplannable,” or “unprogrammed” to occur in the form of naturalistic, place-specific sounds.<sup>45</sup> She argues, from a sociological perspective, that these openings for individual interpretation and expression are “the core of our individual and collective sanity.”<sup>46</sup> The fact that it is possible for an individual or business to exert power over a specific parcel of the soundscape implies that by emphasizing a naturalistic approach, one may also create a more inclusive, less hierarchical public realm. Franklin’s focus on technology implicates the quality and source of the sound as equally important to the volume in abatement and regulation on the city and neighborhood scale. This is in agreement with Cage’s argument for a less-authored silence, including natural and un-intentional background sounds from collective sources and but rejecting those imposed by a single individual or technology which create a power dynamic in the soundscape.

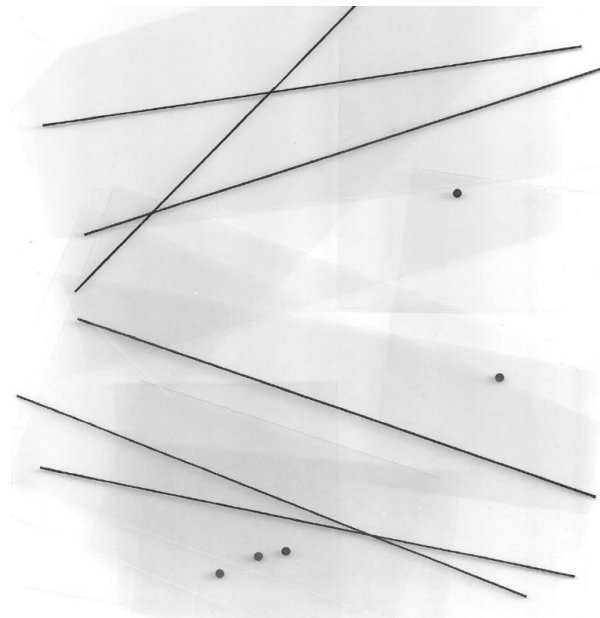
---

<sup>44</sup> Ibid, 16.

<sup>45</sup> Ibid, 16.

<sup>46</sup> Ibid, 17.

## Silence as Accepting



*Interpretation of Score for John Cage's Variations II*  
Image courtesy of Dustin Donahue

Another important aspect of relative silence is that it implies a potential that is not present in absolute silence. Cage suggests this by saying, “no silence exists that is not pregnant with sound.”<sup>47</sup> This statement is quite different from (although compatible with) the other conceptualizations of silence, and indicates that silence creates a kind of expectation of sound in the listener. In his piece *Variations II*, which he composed in 1961, Cage practices this theory

by creation a composition out of 11 small transparent sheets with lines and dots, which are arranged differently by the performer to indicate different sonic variables (such as pitch, duration, timbre, etc) by their distances.<sup>48</sup> In this sense, within the silence, which is often the “default” setting for the absence of notated music, Cage has also created possibility for free and flexible expression of intentional sound by the musicians involved.

This too links with R. Murray Schafer’s founding concepts of acoustic ecology, particularly in the idea of giving attention to “signals,” or the foreground sounds within the soundscape.<sup>49</sup> Foreground sounds are often the focus of scientific acoustic analysis; acousticians are particularly concerned with delineating them from background noise in terms of their volume, duration, frequency, and articulation. This is an important priority, as, even with an

<sup>47</sup> Cage, *Silence: Lectures and Writings*, 135.

<sup>48</sup> Pritchett, "Cage, John." *Grove Music Online*.

<sup>49</sup> Michael Fowler, “On Listening in a Future City,” *Grey Room* no. 42 (2011): 42.

understanding of silence as relative, inclusive, and place-oriented, individuals should be able to have an independent (and heard) voice in their communities. On a more concrete level, even distinct from voices, sirens and signals indicating danger or urgency should be audible, no matter the level of acceptable “silence,” within a community. Some sound “signals” are undesirable – fireworks, a dog barking – but others are desirable, and associated with place and context, such as the example of a motorbike parade lasting a few minutes in a neighborhood known for such events.<sup>50</sup> Sounds above the base, relative “silent” level should be able to be clearly heard, thus prioritizing them in the ears of the community.

In this sense, balancing the desire for place-specific silence also includes the allowance of individual displays of sound which contribute to the community’s sense of auditory space. But, as always, this still depends on the listeners and participants in the acoustic environment – for they are the true collective authors and dictators of the space.

### **Proposed Guidelines**

Translating these four Cagan principles and correlating acoustic ecology and urban planning evidence into real, effective policy is a task best left up to government officials. However, an intermediary set of guidelines, deduced from the given evidence, provides an important step in the reformation process. These guidelines, as stated below, are less concerned with quantitative evaluations of noise, and more concerned with the qualitative methods of evaluation, particularly those linked to the specific place and specific population of sound producers and listeners.

---

<sup>50</sup> Mags, “Sustainable Soundscapes: Noise Policy,” 2393.

1. The particular sounds which are targeted by policy or building-based abatement efforts should be identified by detailed interviews and qualitative as well as quantitative data collection in the listener population.
  - a. Efforts should differ at least by city, if not also by census tract and neighborhood.
  - b. Policies and efforts should change over time depending on the fluctuating needs of populations in a given area.
  - c. The flexibility of these efforts hinge directly on the population, and at all times the people's voices must be heard in the process.
  - d. The role of city officials in this process is merely to recommend appropriate actions to respond to expressed need.
2. Attention and importance should be given to sounds which not only benefit the population but which also are specific to the place and create a location-specific acoustic environment.
  - a. Sounds which have a historic or traditional connection to site should be preserved similarly to the ways which other historical preservation efforts preserve parts of the urban landscape.
3. The target sound level should not be enforced based on a quantitative decibel level, but instead should be designed incorporating the public's opinions and including sounds that are deemed "pleasing," and are created communally.
  - a. Particular attention should be paid to the source of sounds, and whether these sources hold a positive connotation for listeners.

- b. Additionally, sounds produced by a single individual but imposed on the public should be evaluated and regulated by the listening public rather than by the producer of the sound.
4. The overall sound level which is considered “relative silence” should still allow for certain, priority sounds to come to the forefront at levels raised above the background.
  - a. These sounds should be those particularly linked either to instances of urgency (fire alarms, sirens, et ce) or of community importance.

### **Counterargument**

It should be understood, in applying John Cage’s theories to the built environment, certain limitations arise. The connection between music and general “sound,” is indeed representative, not literal. My use of his compositions as inspiration for policy reform is part symbolism, part extrapolation. However, it may be argued that all application of philosophical theory to real application involves a similar level of abstraction and extrapolation. Furthermore, Cage, of all composers had a musical practice and philosophy “concentrated on sounds of the world and the interaction of art and life.”<sup>51</sup> Cage understood and conceived of his theories as intrinsically rooted in the context of the real world, not as abstract principles.

Another limitation involves the idea that Cage was not entirely an advocate for cultural expression in spaces. Although he did advocate for a view of silence as inclusive, his fervent belief in non-authored sounds meant he often opposed human sounds such as speech in favor of non-intended sounds of animals and machinery. In fact, he frequently expressed his liking of

---

<sup>51</sup> Douglas Kahn, “John Cage: Silence and Silencing,” *The Musical Quarterly* 81, no.4 (1997): 557.

machine sounds and sirens (and more infrequently expressed an interest in human-produced sounds), once stating "Silence is all of the sound we don't intend. There is no such thing as absolute silence. Therefore silence may very well include sounds and more and more in the twentieth century does. The sound of jet planes, of sirens, et ce."<sup>52</sup> However, this is a viewpoint that distinctly contradicts many of Franklin's teachings, so it does bring up the question of whether either would be pleased with the extrapolation and combination of their theories. Cage was also much less concerned with the collective population's embracing of sound as a mark of place, and was much more concerned with objectivity and his goal to be "free of individual taste and memory."<sup>53</sup> In this sense, his overarching beliefs align with those of acoustic ecological research, but the minutia are less than compatible. Furthermore, Cage was known to be quite prejudiced and discriminatory toward other races and ethnic and cultural backgrounds, so applying his principles to encourage minority populations to feel more of a sense of belonging and expression in the soundscape is a bit of an ironic twist of fate.

## Conclusion

By the end of the 1960s, Cage had expanded the scope of his focus as a musician to include the arts in general – including architecture and the built environment. He theorized at great length about his feelings toward particular architects, including his appreciation of Mies Van der Rohe, Buckminster Fuller and glass materiality, and his dismissal of other more commercial examples of architecture.<sup>54</sup> He also discussed at great length his views on the modern American city, and the role of his musical theories in critiquing and constructing it. Thus, the application of his theories to many of his contemporaries' theories in the urban

---

<sup>52</sup> Ibid, 558.

<sup>53</sup> Pritchett, "Cage, John." *Grove Music Online*.

<sup>54</sup> Joseph, "The Architecture of Silence," 117.

planning and policy realm – those of Jane Jacobs and Ursula Franklin – is a natural extension of the types of statements Cage was already making in his work.

The improvement of the urban soundscape to focus more on qualitative rather than quantitative indicators isn't necessarily a novel movement, and especially in Scandinavia and East Asian countries, there is a measured movement toward a kind of "sound activism." In Japan, the Japanese Soundscape Association asked the public to nominate the 100 most beautiful soundscapes in the country, and out of the thousands of responses the government identified certain protected sound sites. These place-specific sounds were protected, and the imposition of other sounds around them was prohibited above a certain level.<sup>55</sup> In protecting these sites, Japan prioritized sound and silence as relative, personal, and site-specific, and involved the public directly in the designing of their own soundscapes. America has yet to adopt such an egalitarian system of sound preservation, particularly one that is not merely focused on absolute abatement.

There is a need for Cage's contributions, even in the present urban situation. Perspectives on silence which are manifested in policies and urban planning initiatives, do not fully take into account the role of the individual in society, and the specifics of place and listener experience. The emphasis on quantitative measures of noise mean that the arbitrary goal is absolute silence, a concept which Cage and acoustic ecologists agree is nonexistent. Instead, by integrating Cage's theories into existing urban planning conversations, and by focusing on silence as a subjective, cooperative, inclusive, and accepting force in the public sphere, there can be more space for expression and belonging.

---

<sup>55</sup> R. Murray Schafer, "The Father of Acoustic Ecology," Interview by Anjula Razdan, 3.

## Bibliography

Adams, Mags et al. "Sustainable Soundscapes: Noise Policy and the Urban Experience." *Urban Studies* 43, no. 13 (December, 2006): 2385-2398.

Bekesy, Georg Von. *Sensory Inhibition*. Princeton, NJ: Princeton University Press, 1967.

Beranek, Leo. *Music, Acoustics & Architecture*. New York, NY: John Wiley & Sons, Inc, 1962.

Cage, John. *Silence: Lectures and Writings*. Middletown, CT: Wesleyan University Press, 1961.

City of Seattle, *Seattle Municipal Code*, (May 3, 2017), Chapter 25.08.

Fowler, Michael. "On Listening in a Future City." *Grey Room* no. 42 (2011): 22-45.

Franklin, Ursula. "Silence and the Notion of Commons." *Soundscape, The Journal of Acoustic Ecology* 1, no. 2 (2000): 14-17.

Gann, Kyle. *No Such Thing as Silence: John Cage's 4'33"*. New Haven, CT: Yale University Press, 2010.

Gibson, James J. *The Ecological Approach to Visual Perception: Resources for Ecological Psychology*. (Hillsdale, New Jersey: Lawrence Erlbaum Associates, Publishers), 1986.

Harvey, D. C. "Constructed landscapes and social memory: tales of St Samson in early medieval Cornwall." *Environment and Planning D* 20, no.2 (2002): 248.

Jacobs, Jane. *The Death and Life of Great American Cities*. 2002 ed. New York: Random House, 2002.

Joseph, Brandon W. "The Architecture of Silence." In *Experimentations: John Cage in Music, Art, and Architecture*, 101-131. New York, NY: Bloomsbury Publishing, 2016.

Kahn, Douglas. "John Cage: Silence and Silencing." *The Musical Quarterly* 81, no.4 (1997): 556-598.

Margulis, Elizabeth Hellmuth. "Moved by Nothing: Listening to Musical Silence." *Journal of Music Theory* 51, no.2 (2007): 245-276.

Neuhoff, John G. "Introduction and History," In *Ecological Psychoacoustics*, 1-13. Cambridge, MA: Elsevier Science, 2004.

Pritchett, James et al. "Cage, John." *Grove Music Online. Oxford Music Online*. Oxford University Press, accessed May 3, 2017.

Puddifoot, J.B. "Community identity and sense of belonging in a northeastern English town," *Journal of Social Psychology* 134, no.5, (1994): 608.

Richard Oddie, "Other Voices: Acoustic Ecology and Urban Soundscapes," In *The Natural City: Re-envisioning the Built Environment*, by Stephen B. Scharper, edited by Ingrid Leman Stefanovic, 161-172. Toronto, ON: University of Toronto Press, 2011.

Sakakeeny, Matt, "'Under the Bridge': An Orientation to Soundscapes in New Orleans," *Ethnomusicology*, Vol. 54, No. 1 (Winter 2010), 1 - 27.

Schafer, Raymond Murray. *The Soundscape: Our Sonic Environment and the Tuning of the World*. Rochester, NY: Destiny Books, 1977.

Sykes, Debra. "The Tuning of the World: The First International Conference on Acoustic Ecology," *Leonardo Music Journal*, vol. 3 (1993), 82-83.

Truax, Barry. "Keynote," In *Handbook for Acoustic Ecology*, CD-ROM Ed., Version 1.1. ed. Burnaby, B.C.: Cambridge Street Records, 1999.

Yang, Wei, and Jian Kang. "Soundscape and Sound Preferences in Urban Squares: A Case Study in Sheffield." *Journal of Urban Design* 10, no. 1 (2005): 61-80.