

Sonic Ontologies of Place

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Abstract

This paper explores two complementary questions – How has the use of technology in music and sonic practice helped to enrich our understanding of place, and how might four theoretical frameworks of place developed by Bachelard, Lefebvre, Deleuze and Guattari, and Augé help contextualize such an aesthetic investigation. The paper examines a range of creative work through the lens of these frameworks to provide an overview of various ways in which questions of place have been aestheticized. The paper concludes by considering how technology offers new ways of casting questions about the human experience of place which ultimately enrich and enhance our understanding.

Keywords

Place, technology, music, sonic arts, virtual reality, embodiment.

Introduction

“A quiver runs through the air: the pines of the Janiculum are silhouetted in the clear light of the full moon. A nightingale sings.” [1]

O. Respighi, 1924

In 1924, in the waning shadow of a Futurist movement which had profoundly shaped Italy’s cultural milieu, Ottorino Respighi’s *Pina di Roma* (Pines of Rome) was premiered at the Teatro Augusteo in Rome. For a member of the audience present at that debut performance, the work’s third movement “I Pini del Gianicolo,” in which a phonograph recording of a nightingale accompanies the large orchestra, must have been particularly striking although it was not considered especially noteworthy, at least by Italian critics of the time. [2] For listeners long accustomed to the evocation of place through more traditional compositional techniques such as melodic quotation, the use of exotic scales or rhythmic patterns, or perhaps unusual techniques of orchestration or instrumentation, the novel use of a recording in the third movement of Respighi’s work brought an unprecedented degree of verisimilitude to such an evocation and offered new possibilities for composers seeking to aestheticize themes of place.

While aestheticians and cultural theorists have engaged in long discussions on whether musical references to extraneous, real-world places can be successfully integrated within a work, [3, 4] rarely has such discussion considered how our

understanding of place might be enriched by such evocations or conversely, how theories of place might indeed be able to provide new ways of thinking about musical forms. Such questions have become increasingly pressing for composers of today interested in exploring the musical possibilities of locative technologies, for example, which have gradually become part of everyday life and which have afforded exciting new possibilities for creative expression. Beyond concrete evocations of place through recorded samples of urban environments in works such as Steve Reich’s *City Life* (1995) or Luc Ferrari’s *Presque Rien* (1967), for example, networking technologies have offered more complex ways of aestheticizing place through directly thematizing the spatial dislocation of those participating. In Max Neuhaus’s *Public Supply* (1996), which invited listeners to be part of a collective performance over the National Public Radio network, [5] questions of place are directly integrated in the very framework of the work while in Blast Theory’s *Too Much Information* (2015), participants are invited to explore the streets of Manchester and listen to geotagged audio recordings of people’s recollections of the city and through that develop an enriched relationship with and renewed understanding of their urban environment.

Phenomenological investigations of place and the way that we experience the world that we inhabit have a long history. [6, 7] Such investigations were considerably accelerated in a rapidly changing twentieth century, however, from emerging insights in humanities disciplines such as social theory, human geography, urban design, and behavioral economics. Given that many of these theories grapple with the same concerns, albeit from a non-aestheticized perspective, as the place-oriented artistic work of various schools of creative practice – typified in the work of Neuhaus and Blast Theory just cited – what insights might such theoretical frameworks be able to provide into questions of an aesthetic nature? Conversely, how might an aesthetic thematization of place provide an enriched understanding of our relationship to place itself. This paper will explore these questions through the lens of four theoretical frameworks developed by Bachelard, Lefebvre, Deleuze and Guattari, and Augé. Before proceeding, however, a high-level overview of some fundamental theoretical concepts will provide a helpful way of framing the subsequent investigations.

Space and Place

The Chinese-American geographer Yi-Fu Tuan defined place as "...any locality or space that has become imbued with meaning by human experience in it." [8] Encapsulated within this definition is a subtle distinction between *space* and *place*. For Tuan, place is fundamentally grounded in the human experience of a distinct spatial location, hardly surprising perhaps given Tuan's professional career and attunement to the nature of lived experience within the built environment.

The psychological grounding of place which Tuan and other researchers of human geography argue for, was profoundly influenced by a methodological framework grounded in a phenomenological tradition of inquiry tracing back through Merleau-Ponty, Heidegger, and Husserl. [9] Merleau-Ponty's phenomenological project, for example, while maintaining a distinction between geometric, abstract space and anthropological or existential space, contends that our lived experience of place is fundamentally driven by our embodied experience within a world rich with relational milieu, [10] while Husserl's central concept of the *lebenswelt* ("lifeworld") correlates directly to the lived experience of the world, [11] forming the backdrop against which all our actions take place. While Heidegger grapples with place somewhat in *Sein und Zeit*, where Dasein finds ontological meaning within the world in which it is embedded, [12] the concept of *wohnen* ("dwelling") features more prominently in late Heidegger in his exploration of the various ways in which humans inhabit the earth – "Man's relation to locations, and through locations to spaces, inheres in his dwelling. The relationship between man and space is none other than dwelling, strictly thought and spoken." [13]

It is important to bear in mind that clear distinctions between space and place are not so easily maintained outside English speaking discourse. [7] The French "espace", for example, carries strong connotations of place which the English "space" does not. The subtle conflation of space and place is thus visible throughout the French critical tradition, from Foucault, for example, where space ("espace") is not merely a neutral backdrop but a dynamic arena where social and cultural forces are constantly at play, [14] through Bachelard, Lefebvre, and Augé. In these traditions, space, therefore, does not simply operate as a passive container within which places are established but is instrumental in helping develop our connections with the world. This will become increasingly evident as we progress through an outline of four influential spatial frameworks in the next section of this paper, all of which have stemmed from this theoretical tradition.

Linguistic issues aside, two other fundamental features are key to the establishment of place and are important to recognize. Firstly, places are fundamentally defined by the active agency of individuals or groups operating within them. The interactions, rituals, traditions, and everyday activities that occur between and amongst people, infuse spatial locations with personal and collective significance, elevating the locations of these engagements above and beyond mere points in space. The significance of these everyday

activities in cultivating places of human significance features prominently in the work of Lefebvre [15] and other prominent theorists of urban design.

Finally, places can only acquire significance through the pivotal role of memory, without which spaces could not be imbued with meaning and places as we know them would simply not exist. Collective memory, for example, often manifests in places such as memorials, historical landmarks, and culturally significant landscapes with such places becoming repositories of communal identity and fostering a sense of belonging and continuity. [16] Beyond communities, the memories of individual experiences and the emotions associated with them, have a profound influence on how places are perceived. Memories anchor past experiences to place and help shape how new memories are formed. It is through this interplay of the past and present, the personal and collective, that memory actively constructs and reaffirms the significance we ascribe to place. [17]

In the following section, four theories of space and place will be examined. While there is some conceptual crossover between them, they are unique enough to provide helpful insights into how concepts of place have been aestheticized in a broad range of musical and sonic arts practice.

Theoretical Frameworks

Intimate Spaces - Bachelard

In his seminal work, *The Poetics of Space* (1958), Gaston Bachelard explores the human experience of the intimate spaces that we inhabit from the cozy nooks of our childhood homes through to the vast expanses of the cosmos, contending that these spaces are not just passive backdrops but active agents in shaping our thoughts and emotions - "For diverse reasons, and with the differences entailed by poetic shadings, this is eulogized space. Attached to its protective value, which can be a positive one, are also imagined values, which soon become dominant. Space that has been seized upon by the imagination cannot remain indifferent space subject to the measures and estimates of the surveyor. It has been lived in, not in its positivity, but with all the partiality of the imagination." [18]

For Bachelard, spaces possess a profound psychic resonance that foster both emotional and intellectual responses. He argues that the house, in particular, is a rich source of poetic inspiration, filled with memories and experiences that contribute to the construction of our inner worlds. In Bachelard's view, the corners, drawers, and staircases within our homes are imbued with layers of meaning that spark our creative faculties and provide a unique lens through which we perceive the world. Bachelard introduces the term *topophilia* to characterize this attachment and love for personal places and spaces – "Topoanalysis, then, would be the systematic psychological study of the sites of our intimate lives. In the theater of the past that is constituted by memory, the stage setting maintains the characters in their dominant rôles. At times we think we know ourselves in time, when all we know is a sequence of fixations in the

spaces of the being’s stability – a being who does not want to melt away, and who, even in the past, when he sets out in search of things past, wants time to “suspect” its flight. In its countless alveoli space contains compressed time. That is what space is for.” [19]

Bachelard explores the dialectical relationship between the shell (our intimate, personal spaces) and the universe (the broader, cosmic realm) positing that our sense of self and the world is intricately tied to our perception of space. The poetic experience, for Bachelard, involves a deep interaction between the self and the environment, as we project our emotions and desires onto the world around us these inner and outer worlds are in constant dialogue. Key to this experience are the objects that populate the spaces we inhabit which come to play important roles in our attachment to places, mediating out relationships and helping sustain intimacy – “...they produce a new reality of being, and they take their place not only in an order but in a community of order.” [20]

Bachelard’s framework provides a helpful lens through which to consider a tradition of musical practice that is fundamentally concerned with revealing sonic details in the spaces within which we live that might ordinarily be hidden, masked, or otherwise simply not attended to. Early work in this tradition is well represented by John Cage’s *Cartridge Music* (1960), see Figure 1, where various small physical objects are inserted into phonographic cartridges to reveal their hidden auditory details, [21] or David Tudor’s *Rainforest IV* (1973), an interactive sound installation which encourages participants to hear the sounds of resonant objects suspended in the exhibition space and through this auditory relationship establish a deeper connection with the sonic environment.

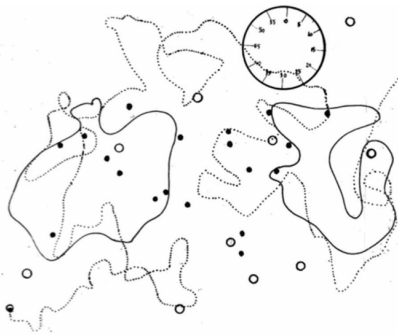


Figure 1. An excerpt from the master score of John Cage’s *Cartridge Music* (1960) assembled from superimposing a series of pre-printed transparent sheets.

Natural environments have proven to be rich sources of inspiration for sound artists and composers aestheticizing the *topophilic* relationship with place. [19] In Janet Cardiff and George Miller’s sound installation *FOREST (for a thousand years...)* (2012), for example, listeners are invited to sit on a stump in a forest and listen to both the natural environment in which they are situated and to sounds emitted

through over thirty loudspeakers placed around them. These sonic textures, are lent a striking verisimilitude and presence in the binaural realization of the work, transforming the listener’s experience of place through sound.

Bachelard’s examination of the house draws heavily on the idea that homes are repositories of memories with their rooms, corners, nooks, and general design all becoming intertwined with the memories of the inhabitants. These intimate spaces become the scenes of our lives, and we are unable to separate our experiences in these spaces from the spaces themselves. [22] The ways in which memories mediate our relationships with place is heavily foregrounded in several recent works designed for virtual reality such as Manchester et al.’s *Tangible Memories* interdisciplinary project where memories are evoked through interactive furniture and translated into surround soundscapes displayed on virtual reality head-mounted displays, [23] and Chloé Lee’s *Temporal World* (2023) which investigates the fragile nature of memory and the way in which it shapes our relationships with place. In Lee’s work these themes are explored in a virtual reality space enhanced through haptic feedback, see Figure 2. [24]



Figure 2. A “haptic jacket” worn by participants in Lee’s *Temporal World* (2023).

Bachelard suggests that our intimate experiences of space come from the immediate geometry – corners, ceilings, walls, doors, windows, cellars, and attics – of our homes. The physical dimensions of the spaces that we inhabit, in other words, have a direct emotional and psychological impact on our experience of place. The spatial geometries of rooms have been aestheticized in the work of numerous composers such as Peter Ablinger, Nicolas Collins, and Alvin Lucier. In Peter Ablinger’s *Orte* (“Places”) (2001), the resonant properties of performance spaces are acoustically measured and used to generate microtonal scales freely played by the performers. Nicolas Collins’s *Roomtone Variations* (2013-2014) adopts a similar strategy although the analysis happens in real-time during the moment of performance with the results mapped to a digitally projected score. The translation of a space’s resonant frequencies into musical structure was pioneered by Alvin Lucier in highly

influential works such as *I am Sitting in a Room* (1969), and in later works such as *Music for Piano with Amplified Sonorous Vessels* (1990). Both works rely on recursive technical processes to extract acoustic features that cannot otherwise be straightforwardly perceived by the human ear.

Nomadic Spaces – Deleuze and Guattari

Nomadic space is a central feature of Deleuze and Guattari's rhizomatic philosophy, in which they challenge traditional notions of fixed, hierarchical spatial structures. [25] Nomadic space is the embodiment of *smooth space* ("espace lisse") and is characterized by its fluidity, multiplicity, and resistance to categorization. In such space, lines of flight and connections are always forming and reforming, defying linear, orderly arrangements where entities are constantly deterritorializing, breaking free from fixed constraints, and reterritorializing, forming new connections and territories. Deleuze and Guattari describe this process as a constant state of flux and transformation.

Nomadic space challenges conventional modes of thought and organization, advocating for a dynamic and ever-evolving network of connections. It encourages us to rethink our understanding of space, knowledge, and creativity as nonlinear, nonhierarchical, and continually in flux. In embracing the rhizomatic nature of thought and existence, Deleuze and Guattari offer a new perspective on the richness of multiplicity and the potential for limitless, innovative connections in our world.

Deleuze and Guattari's nomadic space was strongly influenced by Debord and the Situationist Internationale and especially their concept of the *dérive* with its rejection of fixed, predetermined spaces and its emphasis on movement and the psychogeographical exploration of urban environments - the *dérive* itself, in turn, traces its heritage back through the urban wandering of the *flâneur*. [26] Key to nomadic space, the *dérive*, and the *flâneur*, is the active agency of the individual who defines space and place through their lines of flight.

With the rapid development of locative technologies, [27] artists have found innovative ways of aestheticizing lines of flight and recasting our relationship with place. In Blast Theory's *Take me to the Bridgewater* (2017), for example, a site-specific work installed for one weekend in April, 2017, participants were asked to explore a canal and listen to oral history recordings of people's experience of place which were automatically triggered when particular locations along the way were approached. The experience of the work for participants as they traverse through the nomadic space in which the work was situated, created a rich reframing of place deeply mediated by the historical experiences of others.

The aestheticization of journeys through nomadic space foregrounds the agency of the participant and their ability to form connections between the heterogeneous elements of a work, although this agency is usually directed, unlike the *flâneur*, or constrained within predetermined boundaries. This is particularly evident in *Take me to the Bridgewater*, but also in the broader stylistic genre of soundwalks. In

composer Ellen Reid's *SOUNDWALK* project, for example, participants freely wander around natural parks, usually situated within the bounds or at least within close proximity of urban environments and listen to prerecorded music automatically triggered by their GPS location. The work is experienced through a bespoke iOS/Android phone application and has been designed for various locations around the world.

Like Reid's *SOUNDWALK*, the work of the arts collective Marshmallow Laser Feast, hereafter MLF, is fundamentally connected to our experiences of place in the natural world. At the forefront of immersive virtual reality design, MLF use technology to visualize natural data – such as the patterns of airflow in a forest or the growth processes of trees – revealing aspects of the natural world that are typically invisible to the naked eye. By using VR and AR to overlay or transform natural environments, MLF deterritorialize the viewer's perception, taking them out of the structured understanding of space and into a more fluid experience. The viewer's perceptions are then reterritorialized in new ways through the creation of a spatial experience that is informed by the interaction between the environment, the technology, and the participant. This new space is nomadic in the sense that it does not have fixed boundaries or a permanent form; being defined by the moment-to-moment experience of the participants. In their work *Treehugger Wawona* (2017) for example, [28] the circulation of water through giant sequoia trees is visualized in a virtual reality environment with custom-designed scent dispensers providing an additional olfactory experience for participants. In their more recent *In the Eyes of the Animal* (2022) the experience of the world from the perspective of an animal is provided to participants through hyperrealistic lidar scans and 360 drone footage. A binaural soundscape assembled from field recordings taken from forests in the north of England provides additional verisimilitude to the experience, see Figure 3.



Figure 3. Participants in Marshmallow Laser Feast's *In the Eyes of the Animal* (2022) are immersed in a virtual world and virtually situated in the bodies of animal

Nomadic journeys through fluid space need not necessarily be ones undertaken by spectators in a site-specific installation. In *5x3x3* (2020), by the author, for example, a three-dimensional holographic performance score is presented to the performers via augmented reality headsets. The score in effect establishes a virtual place, situated within the bounds of a real-world performance venue, which performers navigate through to realize the musical possibilities presented by the score, see Figure 4. The journeys undertaken by the performers through the holographic score's latent possibilities comes to define the formal structure of the work. [29]



Figure 4. In Kim-Boyle's *5x3x3* (2020), the three performers view a three-dimensional holographic score projected in the performance space via a Microsoft HoloLens. The score is physically explored through a nomadic journey through the performance space.

Everyday Spaces – Lefebvre

For Lefebvre, space is not merely a physical or objective entity but a social and lived experience. The emergence of place through these dynamic, socially constructed spaces reflects the relationships and power structures upon which society is founded. Individuals thus perceive and understand space through their own lived experiences and interpretations, and this perception is fundamentally influenced by their cultural, social, and historical context. Thus, the meaning of a place is not universal but is constructed by those who inhabit it and their perceptions of it, for which Lefebvre coins the term *perceived space*. [30]

Lefebvre's theory of place underscores the importance of understanding how individuals perceive and experience space, how power and social relations shape space, and how places can be sites of struggle and resistance. Central to Lefebvre's theory of place is his concept of *rhythmanalysis* outlined in his text of the same name. [31] Although Bachelard himself uses the term in his *Poetics of Space* and *The Psychoanalysis of Fire* [32] to characterize the simple rhythms of both nature and domestic spaces, Lefebvre's *rhythmanalysis* is a more systematic and extensive analysis of the rhythms of everyday life. Rhythms, according to Lefebvre, are not just temporal but also spatial, encompassing both natural and social phenomena – "Everywhere where there is interaction between a place, a time and an

expenditure of energy, there is rhythm." [33] By analyzing the cadence of everyday life, from the pace of pedestrian movement to the cycles of urban activities, Lefebvre demonstrates how rhythms influence our spatial experiences.

Lefebvre's approach challenges traditional spatial analyses that focus solely on physical structures and highlights the dynamic, lived aspects of space. Rhythmanalysis reveals the dialectical relationship between space and time, shedding light on the socio-cultural and emotional dimensions of spaces. In essence, Lefebvre's *rhythmanalysis* enriches his theory of space by emphasizing the essential role of rhythms in shaping our spatial perceptions and urban environments, fostering a more holistic understanding of the spaces we inhabit.

Lefebvre's concept of the everyday has received its most direct musical and auditory correlation in the work of R. Murray Shaffer through his discussion of the soundscape and its subsequent development in the field of acoustic ecology and related genres such as soundscapes, soundmaps, and soundwalks. [34] Curiously, Shaffer does not reference the work of Lefebvre or related theoretical investigations on the everyday such as those developed by de Certeau [35] or Vaneigem [36] but this may perhaps be partly explained by the relative obscurity of Lefebvre's project until the mid-1980s. The correlations and similar theoretical motivations are nevertheless striking.

The rhythms of everyday life are foregrounded in Luc Ferrari's *Presque Rien* (1967) a series of electroacoustic compositions, and perhaps one of the earliest and most emblematic examples of "soundscapes" in music. Through the recording and assembly of environmental sounds, Ferrari explored the rhythms and textures of everyday life, capturing the ambience of places and events and presenting them in a musical form.

Ferrari's recordings, like the sounds of a village waking up or the ambience of a beach, bring to the fore the everyday, seemingly mundane rhythms of life which in Lefebvre's framework become essential in shaping our experience of space and time. In *Presque Rien*, various environmental sounds intersect and overlap. The chirping of birds, the distant sound of human activities, and the natural elements all contribute to a layered rhythmic experience, further mirroring Lefebvre's idea of how different rhythms—natural, human-made, daily routines—intertwine and interact in a space. The spatial interaction amongst sonic objects in *Presque Rien* is given additional richness through the often-overlooked fact that *Presque Rien* is one of the earliest *concrète* works composed from field recordings that were captured in stereo. [37] The spatial organization of these recordings lends an unprecedented realism to the experience of the work's composed places.

Just as Lefebvre was interested in how rhythms structure our experience of time (daily routines, cyclical changes of seasons, etc.), Ferrari's work captures a temporal progression. The listener feels the passage of time as day turns to night or as a location shifts from calm to bustling. Both Lefebvre and Ferrari invite the audience (or reader) to

become more attuned to their surroundings. Ferrari's work, by presenting the environment in a musical context, shifts our perception and makes us listen more closely. Similarly, Lefebvre's rhythmanalysis is an invitation to perceive the world differently—to become sensitive to its rhythms and aware of the beauty, complexity and significance of what might ordinarily seem mundane or routine.

The rhythms of urban environments have proven to be a rich source of inspiration for sonic practices outside a more mainstream musical one. Sound artist Bill Fontana, for example, has regularly foregrounded the rhythms of urban environments and the natural world in his work. Fontana's installations capture and amplify the sounds that typically fade into the background of our consciousness – the hum of traffic, the rhythm of a bridge, the whisper of wind through a structure. By making these sounds the focal point of an installation, Fontana elevates the everyday auditory experience, which Lefebvre would regard as a means of highlighting the importance of everyday life in the production and understanding of space.

Fontana's sound sculptures bring to light the temporal and rhythmic aspects of a place, revealing patterns and time-scales that may not ordinarily be attended to. This sonic dimension adds depth to the understanding of place, suggesting that the character of an environment is not static but is dynamically shaped by its inherent rhythms. In his *Desert Soundings* (2014) vibration sensors were placed deep inside the sand dunes of the Abu Dhabi desert to reveal the sounds of millions of grains of sand moving and coalescing, [38] while in his earlier *Harmonic Bridge* (2006) the mechanical vibrations of London's Millennium Foot Bridge were captured with similar sensors placed at various locations along the bridge's infrastructure with the sonic data mapped to a spatial array of loudspeakers installed in a gallery space within the Turbine Hall of the Tate Modern. [39] Of this aestheticization of the everyday, Fontana has stated - "No one pays much attention to the sounds we live with everyday. People walk around with their headphones on, listening to music. I have made it a practice to explore how musical phenomena exists in the everyday world we live in." [40]

Non-Places – Augé

Marc Augé's theory of "non-places" reflects the homogenization and anonymity of modern spaces, particularly those in contemporary urban environments and travel hubs. Non-places are defined by their transitory nature, lack of meaningful social interactions, and the feeling of anonymity they produce. Augé distinguishes non-places from traditional "places" that are imbued with history, culture, and social significance, describing them as follows - "If a place can be defined as relational, historical and concerned with identity, then a space which cannot be defined as relational, or historical, or concerned with identity will be a non-place." [41]

Non-places can be found in various forms, such as airports, shopping malls, highways, hotel rooms, and train stations. Augé argues that these spaces are designed for efficiency, functionality, and mobility, but they often lack a

sense of belonging or a deeper connection between individuals and their surroundings.

Augé's theory of non-places highlights the alienating aspects of contemporary society, where individuals often move through spaces without meaningful engagement with others or the environment. He suggests that non-places represent a paradox of supermodernity: while they facilitate the rapid movement and exchange of people and goods, they also contribute to a sense of dislocation and the loss of a rooted, cultural identity. By contrasting these non-places with traditional, meaningful "places," Augé invites us to reflect on the impact of supermodernity on our sense of identity, belonging, and the way we experience the spaces around us.

Augé's framework provides a particularly helpful lens through which to view musical works designed to be realized or performed over networks. Such networks are inherently non-physical and disconnected from traditional physical spaces, promoting an interaction that is not necessarily predicated on personal connection or geographical proximity. The transcendence of traditional geographical and physical boundaries promotes a global interconnectedness which is often a hall mark of non-places.

Max Neuhaus's *Public Supply* (1966) and *Radio Net* (1977) foreground many of the defining characteristics of non-places. Both works were designed to be realized over radio networks, where incoming telephone calls from listeners were mixed by Neuhaus during performance, to create a rich musical dialogue connecting disparate places through voice. The non-places in which *Public Supply* and *Radio Net* are situated is transformed into what Augé terms a "place of interest" through the creation of a new kind of social space where previously there was none. The transient nature of the non-place is thus confronted by the engagement and interaction that happens within the musical and sonic context of the work.

The aestheticization of non-places is also a key feature of the work of Robin Rimbaud (aka Scanner), and especially those works of his from the early 1990s from which his alias derives. Utilizing a scanner to intercept and incorporate live, unfiltered telephone conversations as musical material, the mundane chatter of unsuspecting individuals became aesthetically foregrounded. These works interrogate the mediated conditions of modern life where personal boundaries and public spaces are increasingly blurred. By recontextualizing the sounds of everyday life and integrating them into his art, Scanner encourages a reconsideration of what would be considered everyday non-places. This recontextualization lends an aesthetic significance and uniqueness to otherwise homogenous spaces.

Stanza's *Soundcities* (2021) project involves the collection and mapping of sounds from cities around the world. Users can interact with a database of city sounds and compose their own soundscapes using these auditory elements, see Figure 5. *Soundcities* adds a layer of relational and historical context to the experience of a city by enabling one to engage with its unique auditory environment. The sounds of a city — from its street vendors to the church bells — are

imbued with the history and culture of the place, transforming "non-place" into a "place" by providing a sense of identity and history. By archiving and presenting the sounds that are characteristic of different cities, *Soundcities* allows individuals to experience and relate to places they may not have physically visited. This sensory engagement can help form or deepen a person's identity in relation to those places, making them more than just spaces but significant locations that hold meaning. The interactive element of *Soundcities* invites users to become active participants in the construction and interpretation of an urban environment, aligning with Augé's views on the importance of interactivity in the construction of meaningful spaces.

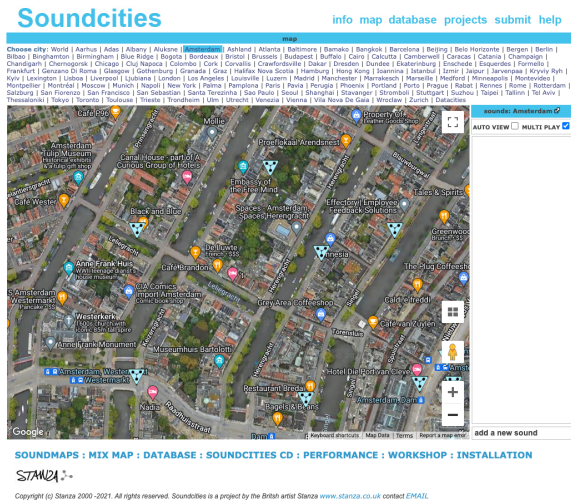


Figure 5. The web interface for Stanza's *Soundcities* project which invites participants to listen to the sounds of cities around the world and to compose their own urban soundscapes.

The situation of musical works and performances in the non-places of networked space invites interaction and fosters a sense of community and engagement that can turn such places into relational space filled with human connections. Unlike the spatial frameworks of Bachelard, Deleuze and Guattari, and Lefebvre, the nature of the space itself is radically transformed through the aesthetic work situated within its bounds.

An Aesthetic Reframing of Place

While the preceding outline of four theories of space and place endeavored to illustrate how each of these frameworks provides helpful insight into their aesthetic translation in various musical and sonic art works, the converse question regarding how our understanding of place is enhanced through aesthetic expression remains. How might, for example, our understanding of urban environments be enhanced through a deep engagement with Ferrari's *Presque Rien*? How might our relationship with urban parks be transformed

through a nomadic journey through soundscape of Ellen Reid's *SOUNDWALK*?

Heidegger provides a helpful way to approach the question. In "The Origin of the Work of Art," he claims that the essence of art is truth setting itself to work. [42] For Heidegger, art has the power to disclose or unveil the world and its truth in profound ways. This means that our engagement with art can reveal the essence of a place in ways that might be hidden or obscured in everyday experiences. While musical expression is not Heidegger's primary focus, his theoretical project is nevertheless broadly applicable in a musical context.

The reframing of our understanding of place through the aesthetic experience is, of course, intimately connected with music and sound's ability to evoke memories and experiences of places visited or places which might otherwise be meaningful to us. The translation of such spatial experiences into places is, of course, reinforced through repetition and the entrenchment of relationships that are made more robust over time. These *spatial rhythms* [43] are the cornerstone of Lefebvre's rhythmanalysis and help structure our experiences and provide a sense of order and continuity. Indeed, the topophilia that Bachelard writes of and intimacy itself is predicated on such spatial rhythms and their concomitant relationships which are sustained over time.

The extent to which technology can restructure spatial experiences and provide new ways of thinking about space and place is thus of especial interest and here the relationship between embodiment and our understanding of place would seem to be of critical importance - our relationship with place is, after all, fundamentally mediated through the body. Indeed, Dylan Trigger argues that our experience of place is essentially an embodied experience of the world - "...the body is the vehicle of expression for a relation with the world, thus the life of the city fundamentally manifests in the nuances of the bodily self." [44] The argument is echoed by Don Ihde, the noted phenomenologist of sound, who contends that listening is an inherently intimate experience that brings us closer to the world and helps us to form connections with place, [45] carrying with it a sense of rhythm, pace, continuity, and sequence that our other bodily senses do not possess.

The ability of technology to extend the capacity of the body profoundly reshapes and deepens our understanding of place. Indeed, the relationship between embodiment, technology, and questions of place runs as a common thread through all the creative works discussed in the previous section of this paper, irrespective of which theoretical lens each of these works is viewed through. Topophilic relationships are fundamentally recast through the ability of technology to extend the sensory precision of the body and reveal the microlevel details of intimate spaces, while the virtual worlds created in the work of arts collectives like Marshmallow Laser Feast provide ways to perceive the world through different bodies and indeed through difference sensory modalities. [46, 47] Ecologist and philosopher David Abram argues that such technologies, while often seen as distancing us from the natural world, can also be harnessed

to rekindle our embodied experience of place, [48] reawakening our senses, enabling us to engage with place in a more profound and ecologically attuned manner.

For Donna Haraway, the ability of technology to augment the body's capacities provides new ways of interacting with place. [49] Haraway's vision of the cyborg challenges conventional boundaries between human and machine, emphasizing how technology can extend our sensory and physical abilities. By transcending traditional notions of embodiment, she suggests that we can engage with place in unconventional and transformative ways, opening possibilities for experiencing the world through a blend of human and technological senses. Locative technologies, for example, offer new ways of relating bodily presence and nomadic movement to geospatial locations while the infrastructure of networks themselves help transcend the spatial separation of bodies, and thematize the non-places in which these disembodied relationships are situated. In all these ways, technology has offered the ability to move beyond simple denotative explorations of place and toward a more fundamental understanding of the human experience.

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Summary

This paper has endeavored to show how technology such as binaural and stereo recordings, amplification and sonification, haptics, locative media, and virtual and augmented reality platforms have provided new ways of aestheticizing place beyond traditional compositional techniques such as melodic quotation or orchestration. Four influential theoretical frameworks were described each of which was used as a means of providing a helpful lens through which the aestheticization of place in various musical and sonic art works could be better contextualized. This investigation revealed that the relationship of the body to place was of central importance and one in which technology can reframe in exciting new ways, providing unique opportunities to explore, perhaps somewhat ironically, what are ultimately fundamentally human questions.

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David Kim-Boyle is an Australian composer and researcher whose creative practice explores the creative affordances of non-linear processes through their visualization in real-time, generative graphic scores. His recent research has focused on musical applications of AR/VR and the immersive visualization of complex, interactive data sets for musical performance. Recent projects have included work for the ELISION ensemble with a 3D holographic score displayed on the Microsoft HoloLens, and a VR work for the Neue Vocalsolisten Stuttgart, premiered in 2022, featuring an immersive score generated from Instagram data. His research has been regularly presented in leading forums for new music technology research including the International Computer Music Conference, the Digital Audio FX Conference, SMC, TENOR, JIM, and NIME and published in journals such as Contemporary Music Review, Organised Sound, Leonardo Music Journal, Tempo, and Digital Creativity. He has been a guest artist at some of the world's leading computer music research facilities including ZKM (Karlsruhe), SARC (Belfast), STEIM (Amsterdam), and IRCAM (Paris) and is currently the Technology Manager at the Sydney Conservatorium of Music (The University of Sydney).