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Sense of Place and Sound: Revisiting from Multidisciplinary Outlook

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Abstract: This study revisits the sense of place and sound nexus in the literature. Along with that, it seeks to explore the approaches that influential urban theorists, landscape architects, and planners have recommended. How these concepts converge within the allied disciplines of urban planning, urban design, geography, and landscape architecture remains at the forefront of this investigation. This research proposes a conceptual framework by identifying sounds in three key categories—auditory experience, sound, and silence—to address the gap between sound and urban studies. The study reveals decisive patterns in urban studies' interface between the sense of place and the sound context.

Keywords: sense of place; urbanism; sound



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1. Introduction

Rapid growing technology and their corresponding urban settings somewhat jeopardize individuals' daily lives and environs. Places lose meaning and recognition as they suffer from losing or degrading their sense of place (SoP). This tenuous nexus requires a better understanding of the built environment and its respective sense of place.

Despite SoP's physiological, emotional, historical, and spatial dimensions, place-based experience holds much more than these definitions. Since the term 'environment' typically includes multiple dynamics (both natural and human-related), different perceptions contribute and react differently toward building place familiarity. Among these, vision plays an essential role in design features, including colors. However, its other features constituted quality and needed to be factored in, while place includes numerous factors, including the sound that also partly characterizes it.

This study aims to concentrate on the nexus between SoP and sound through a critical review of the interdisciplinary literature on urban planning, urban design, and geography. As Tuan stated that "*a place achieves concrete reality when our experience of it is total, that is, through all the senses as well as the active and reflective mind*" [1] and emphasized that sound can help people to orient themselves, thereby emphasizing the importance of hearing. By doing this, sound enhances the spatial dynamics of place, including its meaning [1].

Auditory abilities play significant roles in SoP even though vision dominates. In the contemporary and rapidly changing world, not only SoP but also the quality of sensory mechanisms and various perception functions evolve with them. In this case, sound has undergone significant transformations over decades along with many other urban planning characteristics, and few studies have examined this association [2]. Technological and social developments tend to change the societal conditions through social interactions and changes in infrastructure, the built environment, and transportation, but also have long-term implications for sound. To examine the nexus between place, sense of place, and sound, the authors systematically investigated the themes mentioned above, both in theory and along their evolutionary trajectory. Conceptualizing the sound and sense of

place framework involved a theoretical meta-synthesis, and a methodological approach that “influential planners” have developed over time. The study further aims to integrate theories from urban planning, geography, and urban design on the one hand and the practice of sound-related attributes on the other by asking the following questions:

How can the concepts of sense of place and sound be better integrated into the urban studies corpus?

To what extent has sound been transformed over time within the context of SoP, and

What are the viewpoints of “influential urban theorists” regarding the SoP and sound dynamics?

Against these research questions’ broad backdrop, this study performed an overview of their cross-disciplinary literature and theories. The study set out to only review the sense of place and sound-related sources as well as milestone authors recognized for their contributions. Assessing the SoP-related “influential urban theorists and planners” was carried out chronologically.

2. A Brief History on Place and Sound

Sound and place have had a prolonged interaction track-record over the last few decades. Tracing this nexus requires a brief description. In a rather early study, Southworth performed an environmental psychology-based evaluation on the perception of urban sound environments by naming soundscape contexts in Boston, USA [3]. A decade later, Westerkamp (1974) highlighted the sound and sense of place interface by using the soundwalking concept involving active listening and engagement with place [4]. Canadian composer Schafer (1977, 1994) expanded the sound and place concept in educational and research-oriented study and recorded natural sounds for protection against noise threats. Leading the World Soundscape Project, his team developed sense-of-place-related landmarks and keynotes in the built environment [5,6]. Truax (1984) further developed the sound and receiving environmental knowledge by sonic communication for hearing and speech concepts [7]. These initial studies resulted in an interdisciplinary expansion of sound and sense of place, i.e., in geography, sociology, and urban studies. Scholars made efforts in understanding the sound implications of the sense of place at a regional scale over the next decades.

During the 2000s, some scholars even concentrated on measuring the psychological impacts of sound on place perception. Using aural brain activity that triggers special awareness involving different characteristics, i.e., cultural, physical, and aesthetic of sound activities, Blesser and Salter (2007) emphasized the psychological understanding of place and sound [8]. The authors also proposed the necessity of a comprehensive soundscape procedure in place awareness so that individuals can identify the sounds of places with their materials, shapes, forms, and physical dimensions. Other more interdisciplinary approaches stressed that hearing and understanding the place, among other things, involves different senses. LaBelle (2010) particularly put forward the idea of acoustic space that relies on the auditory experience of place by using its physical and social characteristics [9]. Later on, Beligiojoso (2014) developed a more comprehensive approach in the sound and sense of place context [10] and highlighted a platform where architects, planners, geographers, and landscape architects could become aware of sound attributes more broadly, i.e., with art and music. In the last section of the book, the author proposes directions to better understand the sound and sense of place interaction by involving sociology, music, anthropology, geography, and urban studies.

3. Emerging Patterns for Sense of Place and Sound

As a complex phenomenon, which incorporates several disciplines, SoP pertains to humans and their multi-dimensional physical and social settings. As regards sound assessment, SoP characterizes three key themes (auditory experience, sound, and silence) with

five sub-categories: undesirable sound (noise), neutral sound, desirable sound, undesirable silence, and desirable silence (Table 1).

Table 1. Demonstration for the nexus between SoP and sound approach of influential urban theorists.

Theorist/Planner/Architect/ Landscape Architect	Auditory Experience	Noise	Sound	Silence		
		Undesirable	Neutral	Desirable	Undesirable	Desirable
Yi Fu Tuan	•					
Christopher Alexander		•				•
Kevin Lynch	•		•	•		•
Donald Appleyard	•	•	•	•		•
Jane Jacobs		•		•	•	•
Allan Jacobs	•	•		•		
James H. Kunstler	•	•				•
M. Southworth & Eran B. Joseph		•	•	•		
Calthorpe & Fulton		•				
Le Corbusier		•	•			
Oscar Lewis					•	
Peter Hall				•		
William H. Whyte		•	•	•		
Gehl and Svarre	•	•				•
Jan Gehl	•	•	•	•		•
Lloyd Rodwin	•			•		•
Ian McHarg		•	•			
Anna W. Spirn		•		•		
Lawrence Halprin	•			•		•
Gordon Cullen	•	•	•			•
Ewing and Clemente	•	•	•	•		

3.1. Auditory Experience

Studies on the sense of place in sound address the auditory sensory qualities. Despite the fact that hearing occurs with the body's physiological functioning through the ears, the sensory system turns out to be much more complicated. Individuals experience the SoP with stimuli, with sound being one of them. In addition to other disciplines, including philosophy, geography, architecture, and literature, landscape architecture has recently sought to articulate the commonality [11].

As for the SoP experience before the 1980s, in his book (*The Concise Townscape*), Cullen (1980) sketched the visual sensory power through a series of visioning, situating, and architectural compositions [12]. He also highlighted sound as a sensory impression and claimed it to support the visioning and visual attributes. Tuan (1974) found the range of aural sensory experience shorter than the visual, and the aural space vaguer and less precise compared to the visual space [13]. Furthermore, he showed that the human space configuration depends upon the visual and other sensory capabilities, with only the visual enriching the whole experience, similar to Cullen's findings. So, sound, among other senses, enhances the person's cognizance in covering the unseen spatial arrangements. Tuan also emphasized the power of sound in creating the spatial experience and said: "Soundless space feels calm and lifeless despite the visible flow of activity in it, as in watching events through binoculars or on the television screen with the sound turned off, or being in a city muffled in a fresh blanket of snow". Therefore, sound improves place feelings for persons.

Lynch (1960) also drew a similar conclusion and predominantly reiterated the role of the visual sensory power [14]. Establishing five elements of his “cognitive” maps by including “paths”, “edges”, “districts”, “nodes”, and “landmarks” and as for urban legibility that represents “imageability” and “visibility,” evince such an approach. Even though Lynch (1960 p. 96) configured these elements around the visual sensory experience, he slightly included sound in those “elements”. Such remarks view sound as “path” with a unique set of sounds as the network characteristics of efforts forming an urban composite. He also stated that “the node” may radiate characteristic sounds that echo its quality (ibid., p. 103). Gehl (1987) devoted a section with “seeing, hearing, and talking” and brought to landscape architects’ and urban planners’ attention that sound plays a significant prerequisite role in urban design and social interaction [15]. He specified hearing and listening as parts of the urban quality of life. Gehl also provided a comprehensive range of features and guidelines for planners and urban designers by proposing specific distances such as 50–70 m for hearing a shout in public, 35 m for a loud voice as a part of one-way communication, and 20–25 m for short hearing messages, and 0.5–7 m for hearing a genuine conversation [15]. By showing these details, Gehl also acknowledges the evolutionary history of sensory experience as “distances” where senses, i.e., seeing, hearing, and smelling, operate. Some other scholars have also explored the auditory senses of what or how individuals hear and listen to sounds along with their regional implications and some studies have placed much emphasis listening per se [16–18].

The nexus between the SoP and auditory experience globally became more “official”, where landscape architecture and urban planning began viewing sound through multiple components from 1980 to the 2000s. Pioneer urban theorists in this era, including others, are Appleyard, Jacobs, and Whyte. Appleyard introduced traffic volume and its effects on social interaction [19,20]. By doing this, he investigated numerous factors for social communication and traffic relationships, such as crime, street images, various socio-demographic features, etc. He also included visual and aural sensory assessments in his studies and examined the perception of noise in a wide range of street segments [19]. In addition to Appleyard, Jacobs integrated planning features with good urban form integrating the aesthetic and architectural aspects of sensory quality. Even though he focused on the visual quality, he also marginally covered the auditory sonic experience in urban forms [21]. Meanwhile, Whyte mulled over another aspect of the SoP and the auditory. His research team conducted sets of social-science-related studies in New York with important implications for urban planning. His “lenses” through sound were not in tune with Gehl’s findings discussed a decade ago. Whyte found strong relationships between urban sound and social quality and suggested that sound sources and their interactions with people might conjure up positive rather than negative associations with noise [22]. Furthermore, as Westerkamp (1988) has highlighted, place-based sounds provide individuals with the knowledge they need to relate to the environment: “*We reach out to sounds because we want and need them for orientation and information, for locating ourselves within a place* [23]”. In his book “*Geography of Nowhere*” (1994), which depicts a human-centered manifesto, Kunstler criticizes suburban developments in America and finds their urban forms unappealing in terms of architectural styles [24]. He also argues against suburban developments for failing to offer visual or auditory destinations for addressing the SoP aspects (ibid.). On the other hand, Anne Whiston Spirn (1984; 1998), the author of “*The Language of Landscape*” and “*Granite Gardens*”, has examined the relationship between individuals and their living habitats [25,26]. She has pointed out that landscapes include languages with the sensory apparatus as its principal part, considering sound and SoP. Spirn has described those languages and characteristics by including acoustic sensation qualities.

Looking at the period after the 2000s, as Robert Laurini highlighted [27], sensory practices shape the future of urban studies where “*words and numbers and pictures are of course the critical elements in this new world but . . . sound and touch and taste all have a place in the tools which . . . will define digital planning in the near future*”. This statement finds new insights into how landscape architects and urban planners may integrate other sensory

practices, such as hearing the urban features quite possible. Since technology and social life have evolved over time, SoP and the sound relationship have experienced modifications. In the early 2000s, Ewing and Clemente included sound in the imageability category of urban design metrics and reported “*major discrepancies between measurements in the field and the lab for certain physical features, and hence significant discrepancies for the urban design qualities to which they contribute in our scoring formulas*”. Thus, the sound was considered a significant contributing feature of urban life [28]. Based on the human sensory experience and needs, Gehl and Svarre (2013) scrutinized the qualitative criteria for the components of pleasant public places and found sound as one of the attractive ingredients of everyday urbanism [29].

3.2. Sound

Beyond auditory experience, the study also scrutinized another common feature of the sound context in three essential categories: undesirable, neutral, and desirable sounds.

3.2.1. Undesirable Sounds (Noise)

Sounds may negatively affect the urban settings and residents and vary from annoyance to severe public health-related problems, i.e., cardiovascular and hearing loss. Unpleasant sounds can be generated by machinery or individual perception of not preferring certain sound events. In Schafer’s research for sounds, he also found traffic-related noise as the most unpleasant sound caused by mechanical sounds [6].

Alexander (1978) identified noise as the most severe social problem regarding vehicles several decades ago [30]. From his perspective, noise causes both health-related ramifications on individuals and noise-related annoyance and stress. Kunstler (1981) expanded the noise on a broader and more historical level [24]. He criticized that the cities in the U.S. have been exposed to an excessive level of noise since Industrialism. The noise as a part of the industrial process as well as shifting mode of transit from the horse, train, to vehicles create the noise problems. Therefore, according to him, the industry was led off and given its unique negative externality: noise. In a similar aspect to Alexander and Kunstler, Appleyard also categorized noise as one of the most disturbing sources in neighborhoods in his livability studies. He stated: “*Whether it is rumbling, roaring, whishing, screeching, ticking-over, or echoing, the noise of traffic is pervasive* [19]”. Southworth completed his statement by pointing out that traffic-related factors dominate all other sound sources in the city [31]. On a larger scale, Le Corbusier evaluated the streets of cities as too noisy, and because of these unpleasant conditions, he also stated “*a relic of the centuries, a dislocated organ that can no longer function*”. Gehl also points out that the experience of noise while walking in the same street is an extremely different experience than a vehicle. Thus, transportation modes might be affected differently from the negative implications of noise as Gehl highlighted that building facades and passing vehicles generate pervasive noise.

On the other hand, Jacobs and Appleyard emphasized how cities should sustain their comfort zones for place livability. They pointed out that a well-managed environment relatively lacks noise as a part of unwelcome intrusions. Based on this requirement, a place may fulfill the individuals’ livability feature [32]. Furthermore, the authors suggested how to regulate non-aggressive noise in the city’s physical and policy fabric. Jan Gehl puts forward a more transformative approach regarding noise and sound, one of the soundscape’s primary goals in the urban environment. He emphasized that public space should include aesthetic elements and urges planners and urban designers to consider people to protect them from noise. He suggested that people also need to utilize positive aspects of the surroundings on a human scale. [32].

Some geographers focus on the noise aspects of SoP [33–35], while the allied fields of engineering and urban studies, among others [36,37], concentrate more on its geographic aspects.

Steele et al. (2021) assessed small public places by using Musikiosk activities that users carry with their sound and music equipment, i.e., in Montreal, Canada [38]. Meanwhile, almost two hundred participants were recruited to see whether people create their SoP

features and preferences accordingly. The study reported that even creating park users' preferred sound environments could not eliminate traffic noise.

3.2.2. Neutral Sounds

Neutral sounds may be neither positive nor negative in terms of SoP connotation. Even though neutral sounds are not as common as other sounds, they inevitably exist in urban life.

Lynch (1960) mentioned that people learn to see the hidden forms of an urban environment [14]. He described this phrase when seeking an analogy of musical aspects by considering the church bells and choir sounds. For him, people may not connect with the choir's sound, but they do with church bells. The sound of church bells or, more generally, sacred places are neither perceived as positive nor negative [39]. On the other hand, Whyte considered footsteps to have a neutral connotation. Based on his observations, footsteps may vary, and each individual has different foot movements [22]. Since it does not have a consistent and particular type of sound or noise, some people do not even notice footstep sounds, some consider a negative meaning as if someone follows the other by exposed to the dangers of the streets, or even some people recognize the rhythmic interval footsteps as a positive connotation [39].

More specifically, bionomics are somehow parts of neutral sounds. Many scholars indicated that the environment's components, such as ecology and ecosystem, are essential pieces of SoP sound features. For instance, Matless (2005, p. 762) assessed the acoustic environment to observe the belongings of sound and mentioned acoustic ecology consisting of various sounds [40].

McHarg's (1971) book "Design with Nature," has also underlined the ecological movement in landscape architecture and urban planning, prominent and conspicuous, leading to the idea of GIS layering as the overlay maps that illustrate landscapes' positive and negative features [41]. He also created this idea of overlay maps as a decisive outcome with experiential qualities in sound that Hedforde (2003) outlined a couple of decades later [42]. McHarg examined the lush descriptions of sound experiences for a sense of place. On the other hand, Appleyard showed the utility of sound as a potential measurement unit for environmental qualities in the street environment. In addition to sound effects on people's perception and lifestyle, like what Le Corbusier [43] and Anthony [43] mentioned, the ecological and environmental problems caused by sounds that are ignored in city life also sync up with vegetation and other growing things [19]. Geographers have also contributed to the ecological aspects of sound, and Lowenthal (1975) pioneered the soundscape and landscape memory relationship [44]. Later, Porteous and Mastin (1985) expanded a similar idea while Pocock (1989) aimed to understand the sound context of ecology [45,46]. Whitehouse (2015) showed how bird sounds have positive impact on individuals' sense of place by creating narratives of bird sound recordings [47]. The authors also reported that while the existence of birds develop a nature-based SoP, their absence produces negative emotions. Furthermore, Paiva comprehensively reviewed history of sound within the geography context [48].

Personal sound creation is also a neutral sound category. Since SoP reflects individuals and their surroundings, they may prefer to create it in sound rather than places. In other words, individuals may not engage with the sound environment and might prefer personalizing their preferred sounds. Personalized sound environments may positively or negatively affect people's sense of place feelings [49,50]. After introducing the Sony Walkman in 1979, the sense of place was transformed as individuals could modify the sound environment in terms of place experience [51]. Even though these behaviors and place attachments were not common in public life and public spaces, what Walkman initiated over the two decades, Apple and similar companies attempted to put forward state-art points recently [52]. With the rise of the "headphone culture" at the beginning of the new century, mobile listening became more ubiquitous. Headphone culture has enabled people to construct their physical and social environment acoustically.

From an urban studies aspect of SoP, this trend might be interpreted as changing the public space into a private space acoustically by removing or masking other sounds and making them available to the urban dweller through the most preferred sounds [53,54]. Furthermore, the definition and characterization of place refer to a more arguable context when sound is a part of it, particularly where sound can be easily removed from the scene. Hence, due to individualized sound ambiance, it could affect the SoP perception. Particularly in the increasingly populated cities, multi-sourced sound facilities make it more crucial to distinguish when and where to keep a certain amount of “acoustic privacy” [52]. It is crucial to keep the diversity and balance of the SoP context neither disappearing the place’s identity nor keeping some privacy in terms of sound features.

Radicchi et al. (2021) concentrated on the health-related qualities of covering artists, state-of-the-art notions, urban planners, and public health professions [55], and showed both the positive and negative aspects of the relationship between public health and SoP.

3.2.3. Pleasant Sounds

Schafer (1993) quoted a few decades ago: “If we must be distracted 10 or 20 times each day, why not by pleasant sounds? Why could not everyone choose his/her own telephone signal?” After years, this call has been attuned to telephone and cell phone ringtones, and the urban environment has also gained a wide range of sounds from various devices, vehicles, and nature [6]. Thus, urban life includes pleasant sounds people prefer to hear. Scholars have sought to figure out what sounds people perceive as pleasant over the years. Schafer (1993) contributed to this context by obtaining nature-related sounds that are the most pleasant among other sounds [6].

In addition to Schafer’s investigation on soundscape, sound qualities, social context, and individual perception are also determinants of pleasant sounds in the urban environment, and all these factors are highly related to urban planning fields. Whyte (1980) contributed to identifying pleasant sounds in the city [22]. For him, water has a unique sound feature, and he explained how Paley Park, in the middle of Manhattan, NY, takes advantage of water sounds. Even though the park is located adjacent to the heavy traffic streets, the park’s waterfall creates a hidden and masked environment for people. This “new environment’ without heavy traffic allows people to communicate or enjoy the water sounds. Anne Spirn also described how water sounds could be used to mask traffic noise. To do this, she explained one of her personal experiences about how a speaker installation in Parc de La Villette generated a unique ambiance with music and environmental sounds [26]. Lawrence Halprin attributed another point of view to water-related sounds, and he mentioned that water also has sounds: “*It gurgles, splashes. It goes plop, plop, plop.. And fshzzzzsh . . . And spatzzz!*” [56]. By emphasizing this, Halprin created a link to pleasant sound, in this case, water features in the sense of place context. Whyte (1980) also highlighted the importance of music in an urban environment [22]. Even though a busy square or plaza is peaking at lunchtime for very limited site usage, the music changes people’s mood positively in stressful daily lives. Jane Jacobs highlighted that music, even recorded music, is a good asset in public life as it creates pleasant feelings for people and improves the social and cultural life in the cities. Tuan posited another aspect of music in cities. According to him, music includes its form that creates a reassuring sense of orientation. Thus, he concludes his claim with “*form in music means knowing at every moment exactly where one is. Consciousness of form is a sense of orientations*” [16].

The interface between sound and place in SoP automatically conjures up music and art as one of its most recognizable features. Johansson and Bell (2009) view music as an integral part of the human experience [57]. Despite the cultural and political attachments of social relations, music imparts values to SoP [56]. Atkinson (2007) also sees music as a significant part of place perception [58]. Places that hold music events make notable impacts on individuals. Therefore, sound in the form of music shapes places and creates a sense of place. According to Atkinson (2007, p. 1910), music has the power to change the urban environment [58]. Some geographers [59] studied sound and performance

associations while others concentrated on local and regional music and cultural geographic impacts [57,60]. Moreover, Anderson (2004) examined the music and its SoP feelings of memories [61]. Cameron and Rogalsky (2006) highlighted how sound arts create SoP environment and DeSilvey (2010) examined landscape transformations and related sounds may trigger memory and place attachment [62,63]. Some studies measured how to alter sounds for art. In a rare approach, Pink et al. (2019) showed the potentials of transforming traffic noise into the sound art, and its positive impact to improve individuals' well-being and SoP feelings [64]. Paiva proposed some key themes and frameworks regarding this section [65].

Among influential urban planners and theorists, Tuan (1978, p.16) noted that music already has its form and provides a sense of orientation by referring to musicologist Roberto Gerhard "*form in music means knowing at every moment exactly where one is. Consciousness of form is really a sense of orientation* [66]". Tuan (1978 p. 15) also believes that music can create a spatial illusion that plays a critical role in shaping SoP [66]. Gehl (1987) observed the city as a meeting place and music as a dynamic activity for urban gatherings [15]. He also shared his personal experience as a member of a jazz band and numerous city locations that relied on music to create an ambiance in the SoP. He argued that a musical event could generate a completely different dimension for the public, even in a small public square [15]. Like Gehl, Lloyd Rodwin observed music and dance capable of creating lively, exciting activities for people on the streets over the following decade [67]. He also suggested that officials preserve urban areas, such as Grand Canyon and Mesa Verde, and include unique features such as music to enhance the SoP and public attendance [67]. In his book "*Cities of Tomorrow*," Hall (1988, p. 448) drew attention to a different context regarding music and highlighted that creative and informational industries indirectly polarize the urban economy and social life [68]. Some artistic activities, including music, may prove an integrative dynamism [68]. He also defined the First National Bank of Chicago's plaza as the most popular plaza in the country, with more than a thousand people gathering during lunchtime. Hall (1988, p. 59) also argued that along with other characteristics, a successful plaza relies on all place components and music at lunchtime [68]. Pointing out that musicians draw people together by organizing various musical events, these events, according to him, generate "amphitheater" effects as people become part of the place by using the stage and interacting with the music while dancing or making familiar rhythms. A decade later, Spirn (1988), articulated a similar approach to Hall regarding music and SoP, described her personal experience in a public open space and how a speaker installation and playing music could affect a person's awareness of place [25].

The last decade documents an increasing trend for music and the SoP context. Norman (2012) examined the place and sound-related music and art by listening to acoustic environments on how SoP may constitute an auditory perception and enhance the auditory sense in establish a connection between sound specific art and SoP [69]. Barron (2013) suggested to include music within an ethnographic context of SoP [70], and specifically examined the British popular music in different urban environments. Lacey (2016) examined sound installation art works in USA, UK, and Europe in terms of SoP effects [71]. The study used three key processes, including listening practices, audio records, and surveys, and proposed that such installations ensure the SoP feelings of an urban environment with sensory spiritual connections. Cerwén (2016) performed a site experiment-based study in an urban square by including a small landscape setting with an increased forest audios [72]. The study surveyed over two hundred participants whether people prefer and feel SoP and highlighted the potentials of soundscape features. Oberman et al. (2020) conducted a virtual soundwalk laboratory study in three cities for the association between SoP and public space use [73]. Having 44 participants, the study highlighted two areas offering positive SoP and the other including some cultural- and site-specific geometric limitation attributes. Wells and Bailey (2020) conducted a study on sound arts of public spaces and the tried to transform the place with iconic sounds in the British Museum and St George Church, Bloomsbury [74]. The study argued that the church created various sounds and

the authors offered sonic music geographies to sound art and SoP context. Udsen and Halskov (2022) extended the idea of the previous study by installing soundscape features in three historical places to delve into sonic SoP [75] and showing how sensory bond with the sounds of museums offered up-to-date experience in preserving cultural heritage.

Beyond music and SOP nexus, sound research spread across societies that mainly consist of social sciences. Feld (1984) and Hahn (2002) have noted the social structure and social dimensions of the SoP [76,77], while Jones (2006) has concentrated on its artistic qualities and configurations and Kun (2000) on the cultural expression of sound studies [78,79].

In her book, "Death and Life of American Cities," Jacobs (1961, p. 430) referred to Dr. Weaver's variables in problem-solving factors for developing science and discussed the foundation of theories of light, heat, and sound [80]. Eventually, those theories brought forth tangible amenities, including sound for those societies. Pioneering the theory of sound in societies by Jacobs, Gehl (1971) emphasized that increasing sound levels in urban life makes it extremely difficult to hear [15]. This concern ensues several ramifications, including communication problems and permanent stress factors (ibid.). So, this increased sound changing in urban life dominates the public space and public life. Gehl remarks on this "thin line" regarding acceptable and excessive sounds in society. Tuan (1977) diagnosed familiarity as a sophisticated aspect of sound, where the working-class people have few options to leave the city's outskirts [1]. So, they become familiar with human proximity, and human contact more than the background of sound in their daily life. In a similar pattern, in one of his studies, Rodwin (1981, p. 20), used sound as an experimental unit for informative purposes by using the "familiarity concept [65]". He proposed Boston's materializing sounds to obtain historical, cultural, and physical information from residents and visitors.

Some geographers strive to show the social impacts of SoP factors in addition to their psychological and physiological implications [81,82]. Another body of literature investigates how important listening is in geography [83]. Rizopoulos et al. (2014) explored the sense of place and place attachment for visually impaired individuals by highlighting auditory sensory of soundscape concept [84]. Duffy et al. (2016) proposed a methodological approach on using instinctive sound mapping for geographical knowledge of a place [85]. The authors theorized and used a methodology-based strategy and applied it to a driving experience in Australia. della Dora (2021) reviewed spatial aspects of historical sounds for lighting the geography and SoP [86] and offered a multi-disciplinary platform for having a better understanding of historical sounds of geographies. Politically speaking, Waitt et al. (2014) and Brown (2016) discussed sonic places and how their ambiances affect SoP for other individuals in the same locations as they somehow participated or shared sound experience [87,88].

The last desirable sound category is architecture. Acoustic features play roles in the building design process, street layouts, and other physical elements in the urban environment and constitute aural architecture pertinent to shaping the SoP. Even though individuals have different perceptions about the place, sound contributes to it [89]. Architectural components of sound affect the SoP in various ways, from the building form and the construction materials used in their interiors and exteriors to situating the structure within its broader surrounding context. This is how sound affects the sense of place. As Newman (1960) notes, "*acoustics is a concern in every single building project*". So, sound in architecture has implications for humans at the micro-levels [90].

Examining the sound, architecture, and urban planning relationships in the SoP, in his book "Life Between Buildings" Gehl highlighted the combination of aesthetic and functional details that create a valuable public experience. Gehl (1971, p.178) posited that expanding the appeal with sound impressions fortifies the sense of place, and also drew critical attention by highlighting the main attraction of the sense of place in addressing the entire sensory experience [15]. Southworth and Joseph (2006) suggested that street layout and materials strongly correlate with environmental factors such as wind, heat, and sound [91]. In order to establish SoP, the authors also noted that pedestrians and vehicles

create conflicts in street hierarchy and configuration. To do this, they proposed to conduct both interviews and appraisals of sounds as a part of comfort measures. By doing so may help people to explicate their interconnected SoP network.

3.3. Silence

Sounds have several effects on individuals. With the effects of developing technology and human-made other urban factors that are mainly anthropologic-based, people become receivers for sounds of such factors. Finding a quiet place is not as difficult as in this technological era. Even though, in principle and physically, total silence does not exist, the absence of certain sounds seems possible. Thus, the absence of silence is related to context, and inhabitants may or may not prefer it.

3.3.1. Undesirable Silence

Due to rapid urban growth and technological improvements, unwanted rather than wanted silence is less common. In a societal context, silence serves to demonstrate the level of power among individuals. From an urban planning perspective, several scholars have highlighted the implications of unwanted silence. Duany noted that people might suffer from affordable housing, hire fares, and even lack of sounds [66]. The author stated an example that once people live in residential houses that were built, suburban has been surveyed with their occupants, and one lady was complaining loudly:

Woman: "Why?"

Surveyor: "What should have happened? What is the matter?"

Woman: "Everything is so quiet."

In a similar pattern, Lewis (1967) posited his experience regarding silence and other factors, including poverty, sets of different cultures, and making poor people imprisoned in urban life, including unemployment, lack of education, etc. [50]. He also shared a person in memory when people refused to leave the slum or city center over a peripheral area: "*The place is dead. It's true what the proverb says, "May God deliver me from the quiet places; I can defend myself in the wild ones . . . (ibid.)"*. Jacobs (1992, p. 30–31) pointed out the relationship between feeling safe, secure, and sound from a planning perspective [92]. She mentioned that one of her friends who was thinking of moving out told her that "*I live in a lovely, quiet residential area. The only disturbing sound at night is the occasional scream of someone being mugged (ibid.)"* She argued that people fear the quiet and lack of activity without sounds and consider outside lesser, and eventually, streets become unsafe. Furthermore, the Hush City project assessed the quiet areas of urban environment by using mobile apps.

3.3.2. Desirable Silence

Wanted silence is more common in urban environments and may fulfill several attributes, including sound-canceling headphones, sound masking notions, socio-cultural context, and acoustic design, determining the experience of wanted silence [93].

Urban planning also provides various directions regarding wanted silence. In his milestone piece "A Pattern Language," Alexander (1977) devoted a chapter entitled "Quiet Backs" and proposed people pause and refresh themselves with quietude in a more natural ambiance from noisy work and office environment [30]. He exemplified the context of crowded and noisy Paris and walking along the Seine River as a quiet mode. In another example, Alexander (1977) pointed out how each college in the University of Oxford has its own unique "quiet backs" instead of crowded and densely populated campus areas [30]. He provided such examples and suggested designing buildings, vegetation, noise, and quiet zones by considering the water features such as local pools, rivers, or lakes with several sketches in his piece. Jacobs (1992) explained how public open spaces should consider quiet and noisy zones for each activity based on her experience in New York, Washington Square [78]. She observed that each activity occurs in several programmed element areas such as circulation, arena platform, and children's playground and also noted that people who visit the public space for reading are forced to share the public

space with guitarists and dancers because there is a lack of quiet zones for those who prefer reading their books. She implied that city officials and designers should consider these details rather than solely maintaining the vegetation, grass, and seasonal flowers. Jan Gehl, on the other hand, concentrated on urban life and quiet areas. Gehl correlated city vitality as desirable and valuable urban qualities are highly related to quiet in a lively, active city [15]. He emphasizes that designing and planning urban design regarding quiet area creation should be carefully fulfilled as a combination of highly sounded urban life. Similarly, Rodwin (1981) pointed out how stressful and busy daily city life overloads the human senses by invading individual limits [67]. He mentioned busy streets and buildings create more confusion and monotony in society. Even though he acknowledged that this is a part of urban daily life, quiet spaces are particularly becoming essential urban life elements after all these overwhelming noisy aspects. Some geographers aim to show the meaning of silence and noise in urban environments and their positive and negative effects of silence [94,95]. Furthermore, they argue how noise should be transformed to silence in urban settings to better manage the SoP emotions [96].

4. Concluding Remarks of Sense of Place and Sound

This research revisited sound from various perspectives to shed light on the relationship between sound and urban studies. While exploring sound in a broader planning context, the study revisited the history and evolution of sound in the urban studies literature and gave an overview of influential urban planners, urban designers, philosophers, geographers, landscape architects, architects, and theorists. This examination sought to reveal sound-related information by “reading between the lines” as the sound concept has not been explicitly covered in urban studies. Instead, sound has served as a “supportive item” along the visual sense playing some role in the human sensory quality. Sound has been mainly construed around architecture and urban design contexts that constitute a sense of place. Recently, planning, geography, and landscape architecture have extensively and rigorously examined the sense of place and sound. While planning is more into the noise and silence aspects of sound, landscape architecture more concentrates on sound-landscape approach. Finally, geography tends to understand phenomenology and field aspects of SoP. More specifically, music and sound art studies increase remarkably along with noise both from engineering and policy aspects. On the other hand, wanted silence and auditory aspects are still under-explored. Furthermore, sound and SoP studies are very few, if non-exist, within a multi-sensory approach, including smell and touch and future directions may canalize these subcategories.

Based on this, the study proposed a framework from the literature review consists of three main categories: auditory experience, sound, and silence (Figure 1). This section proposes a framework as a tool that incorporates the sound aspect of the sense of place within urbanism. Furthermore, revisiting numerous urban planners, landscape architects, and urban theorists shows the evolution of the concept of sound over time.

Urban studies have engaged with sound since the 1970s. Even though transportation and technological improvements at those times had not reached the current level, many urban theorists observed and explored the adverse effects of noise. Since then, the noise concept has been included in the architecture, planning, and landscape architecture fields around the clock. Indeed, increasing developments and vehicle dependency make the noise concern more critical at the moment. Conversely, urban planners and landscape architects had limitedly examined the pleasantness of sound in urban life many decades ago. The reason might have to do with other challenges facing urban planning and landscape architecture as fields. However, the literature surveyed in this study presents numerous key pieces across various disciplines. Literature may be integrated with practice and develop a platform that aims to understand individuals’ experiences within urban environment and discuss and implement multi-disciplinary urban synthesis and design solutions, such as the Sonorous Cities Project by Gaskia Ouzounian.

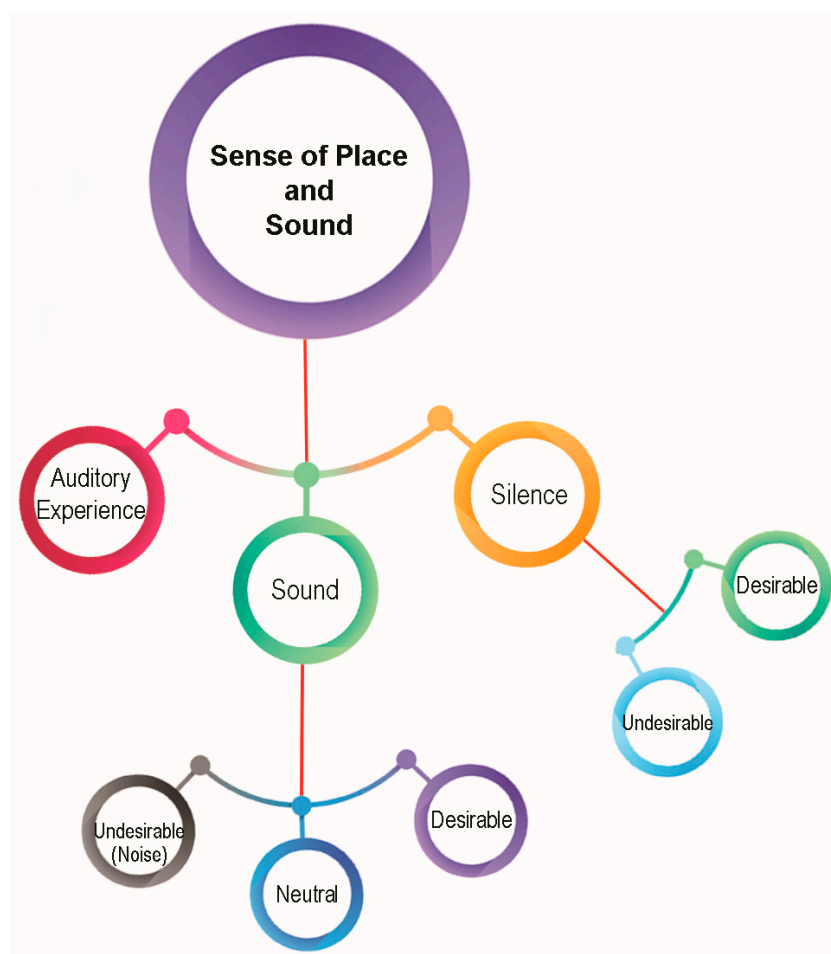


Figure 1. Conceptual framework for the SoP and Sound.

Urban studies have been extended to many other fields and have involved many multi-disciplinary subjects. Sound might be a concept, a transforming technology, and the outcome of a social and environmental structure resulting in different denominations. This research aimed to illustrate the existing sounds and their evolutions by incorporating many influential urban study theorists.

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