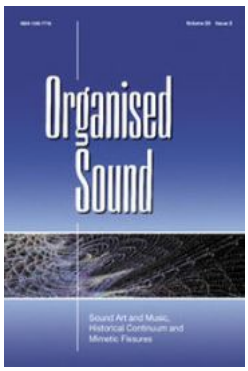

Corporeality of Music and Sound Sculpture

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This article aims to sketch a theory of sound sculpture, one that would explain the variety of forms this artistic practice might take on and define it in relation to other art forms. My hypothesis is that in order to do this we must focus on the traits of sound sculpture connecting it to music rather than on those separating the two. A useful instrument to analyse this connection is Harry Partch's concept of corporeal music. In contrast to Western classical music, which he viewed as abstract and devoid of life, Partch envisioned a music that would emphasise the physicality of sound-making and engage the listener on a more visceral level. Investigating a number of works from all parts of the sound sculpture spectrum, I argue that all the various practices that comprise the art form present the core traits of Partch's musical ideal (physicality of music, audience engagement, and unity of the sonic and the visual) to a substantial extent. Analysing sound sculpture in light of its connection to music brings to the fore a number of musical issues for which this new art form provides a new perspective. Among these are the agency of the composer and the listener, the function and nature of a score, as well as the role of technology in music-making. These issues, along with the general idea of corporeality of music, compose a discourse that transcends the boundaries of different subgenres of sound sculpture, allowing for theorisation of the art form as a whole.

1. INTRODUCTION

Among all sound art practices, sound sculpture is probably the hardest to define and situate in discourse. It seems easy to point out what separates it from music, despite its musical origins, which could make it a poster child for the whole concept of sound art. However, paradoxically, sound sculpture is often excluded from the sound art discourse as well, be it monographs or exhibitions, as if shunned for being so unmodernly modernist.

There is also a problem of consistency within the genre itself. This problem of consistency, however, largely mirrors that with sound art in general. There are so many diverse practices – from the Baschet brothers' instruments to Jean Tinguely machines, to more abstract and conceptual works of Bernhard Leitner or Bill Fontana – united under the same term that the necessity or even meaningfulness of such a term can be easily put into question.

In other words, more than half a century into sound sculpture's continued existence, everything about it – defining it as an art form, relating it to other art forms, developing a proper methodology to analyse it – remains problematic and underexplored. Sound sculpture had the misfortune of appearing at a time when genre boundaries were vehemently questioned in all the artistic disciplines, and because of that it never had a chance to establish its own discipline. As a result, two approaches exist towards defining sound sculpture, neither of which can be deemed satisfactory. One approach is to avoid the subject altogether, leaving the question of what all these practices have in common open. The other is to provide a rigid and prescriptive definition, writing certain artists and works off as something else entirely – this later approach makes for a manifesto rather than creating an analytical instrument.

My aim in this article is to offer a middle ground – a sketch of a theory of sound sculpture that would embrace its essential open-endedness while not eroding its identity. The key to this task, in my opinion, is to understand the continuity between sound sculpture and music not as a hindrance to defining the art form but as its defining characteristic. Such an understanding can both explain why the artistic practices in question are so diverse and provide a theoretical core to unify them. To this end I am going to investigate some of the earliest examples of sound sculpture, as the connection to music is at its most evident there, to discern the core characteristics of the art form that such a connection implies. I will then move on to a wider context to demonstrate how the characteristics that stem from the musical origins of the art form permeate the entire spectrum of sound sculpture.

2. IDEAS OF EMBODIMENT AND EMBODIED IDEALS

My starting point for this discussion will be the ideas and works of the American composer Harry Partch, even though his experimental musical instruments are not necessarily the first sound sculptures in history. Many different phenomena can be named as the origin of this art form: Aeolian harps, Chinese lithophones, Luigi Russolo's *Intonarumori*, etc. (Licht 2007: 75–6, 77–8, 199–200). However, Partch was probably the first to understand the musical instrument as an artistic

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medium in and of itself: as a kind of sculpture. In his essay *A Quarter-Saw Section of Motivations and Intonations* (1967), he describes the direction his work has taken as having 'much in common with the activities and actions of primitive man', as the composer imagined him, who 'found magical sounds in the materials around him' and then 'proceeded to make the object, the vehicle, the instrument, as visually beautiful as he could' (Partch 1991: 196). He even goes as far as to state that he has given the 'imaginative and sculptural forms of [his] instruments … as much time … as to intonation' (Partch 1975b: 89), and intonation was essentially the heart of his musical theory.

Partch even jokingly referred to himself as a 'philosophical music-man seduced into carpentry' (Partch 1962) – though if we take a closer look at his ideas, it becomes evident that to him music and carpentry were not that far removed from each other in the first place. His ideas revolved around the concept of the corporeality of music, which he viewed as an antithesis to the Western tradition of thinking music as a purely abstract art form. Thus a shift from abstract ideas to their corporeal representations (and that is what Parch's instruments essentially are) was arguably inevitable.

Unsatisfied with the Western classical tradition that in his opinion has mostly reduced music to abstract relations between equally abstract signs (Johnston 1975: 85–6), Partch strove for a music that would be 'vital to a time and place, a here and now' and meaningful to its listeners, engaging them on a visceral level (Partch 1974: 8). Such a music would emphasise two important points that he felt were sorely missing from the musical practice of his time: physicality of sound-making, be it the body of the performers, expressing themselves through vocal or musical gesture, or the body of the instruments themselves with their unique acoustic signature; as well as the physicality of sound itself (Sheppard 2001: 181–2).

While Partch's view of the classical tradition is obviously somewhat misinformed, it is not entirely baseless. What he is arguing against is the idea of absolute music. First introduced by Richard Wagner as a pejorative term for music devoid of meaning, it was appropriated and subverted by Eduard Hanslick, who in his influential treatise *On the Musically Beautiful* celebrated the ideal of purely abstract, non-representative music. From that time on the concept permeated the musical discourse, gaining particular prominence in modernist aesthetics. The understanding of music as an essentially abstract art form was further reinforced in the Cold War era that saw formalism as a free world alternative to the ideologically charged representational music of the socialist bloc (Bonds 2014: 1–3).

It was the prominence of the ideal of absolute music that led Partch to declare all Western music since the Middle Ages abstract. The opposition to this ideal was also one of the driving forces behind much of the post-war musical experimentation. Many experimental practices post-1945 dealt with the physicality of music; for example, Mauricio Kagel's instrumental theatre, Pierre Schaeffer's musique concrète or its non-electronic version, musique concrète instrumentale of Helmut Lachenmann. However, the same can be said of sound sculpture, as most of the pioneers of the art form also demonstrated a concern with materiality and physicality of sound and music. For instance, François Baschet said about his and his collaborators' experience of performing music on his sculptures that 'more than melodies [they] wanted a sensuous organic music' and 'to inject physical phenomena into art' (Baschet 1999: 48). Equally, Bernhard Leitner in his works develops the concept of 'corporeal hearing', exploring the way sound can be perceived as a physical sensation by the whole body or different body parts (Schulz 2002). Peter Vogel often refers to his sound sculptures as 'materialised scores' (Vogel 2007: 57).

This is what makes Partch an important figure to our understanding of sound sculpture: he provides the link between musical and sculptural approaches to the materiality of sound. He also was a theorist of his own work, although his seminal book *The Genesis of Music* (1947, second edition 1974) reads at times more like a manifesto that even his own music occasionally contradicts.

For Partch, physicality of sound meant primarily just intonation. He named temperament as the mother of all vices in classical music, as it established the arbitrary system of pitches and rendered it more important than the acoustical qualities of sound itself. (Johnston 1975: 88). In his music theory and instrument design, Partch adopted an opposite approach: never fully committing to a definite scale (in practice if not in writing), he envisioned pitch as a potentially infinite space of possibilities rather than a sequence of tones (Gilmore 1995: 461–2).

Pitch thus acquires a certain dimensionality, which is evidenced by the prominent role graphical representations of tonal relations play in Partch's writings. The most important of them is the Tonality Diamond – a rhombus-shaped diagram of harmonic ratios growing from a single centre in all directions, a figure which translates more or less directly into the design of many of Partch's instruments (Gilmore 1995: 463–7). Partch's musical writing heavily relied on the Diamond as well, as it often consisted of 'tracing different paths through [it]' (Gilmore 1995: 469). All this has two important consequences. First, it ties the spatiality of the instrument to the tonal space in a way that is not only functional but also symbolic: both the sound and the sculptural form become representations of the same musical idea, unfolding in time and space respectively. Partch even called his instruments '[music] pieces in space' (Pouliot 1972). As I intend to

show in the following sections, this kind of connection is essential to sound sculpture in general. Second, it emphasises the performer's gesture as the source of music-making, which Partch reinforced further by requiring the musicians to perform simple dance moves while playing (Sheppard 2001: 183).

Partch's other grievance with classical music was that its abstract nature was strongly upheld by its institutional system. Formalism and rigidness of abstract music were in his opinion strengthened by the formalised setting of a concert performance, which implies a strict adherence to the philharmonic ritual. Corporeality has no place in such a context, as listeners are required to spend hours sitting in reverent stillness often in uncomfortable chair, denied any chance to attend to their bodily needs. According to Partch, an antithesis for a concert hall is a musical bar, where folk music is performed and food and drinks are served. Performing in such a place would blur the lines between music and the everyday, and would provide the audience with a more engaging musical experience. Thus, Partch also viewed the distinction between abstract and corporeal music as one of a social and cultural nature, condemning the 'high-brow' snobbery of traditional concert culture (Partch 1974: 52–5).

Naturally, he wrote this long before contemporary approaches towards exhibiting sound art were established, or they would have provided him with an example of a more engaging and irreverent listening environment. In a concert hall, however informal its atmosphere might be, all the listeners are still subjected to the same linear succession of musical works. By contrast, a sound art exhibition visitors are free to compile the exhibits into their own 'playlist', more or less any way they see fit. While the curatorial narrative woven into exhibition space does direct visitors' experience, it still allows them more agency than a musical performance of any kind (save perhaps for the participatory practices of some folk music traditions). Moreover, as will be illustrated below, audience participation and interaction is an essential and often emphasised aspect of sound sculpture, which enables the artists to engage the audience not only as listeners, but also as co-creators.

However, while he did not go so far as to suggest turning music into an exhibition practice, Partch largely anticipated these developments. 'Corporeal music' meant for him 'music that is neither on the concert stage nor relegated to the pit' (Partch 1991: 194). He admired the total inclusiveness of African ritual music that did not discriminate between performers and listeners (Sheppard 2001: 181–2), even though he himself could not give so much agency to the audience, as for him '[to stop telling people what to do] was to stop making art' (Johnston 1975: 86). Instead, he envisioned his music theatre as having a ritualistic effect – overcoming social and cultural differences by means of sharing a total aesthetic experience:

> If [an artist] wants a whole-experience reaction from his audience he employs or stipulates every possible stimulus at his command … The separate ways in which people have been conditioned … are only skin deep. Touch the total experience, which does have an underlying total affinity and the conditioned attitude evaporates, though perhaps only for a moment. (Partch 1975a: 91)

Partch's concept of total experience bears an obvious resemblance to Wagner's Gesamtkunstwerk. However, while Partch lauded Wagner's ideas, he believed that Wagner's own music drama did not live up to them (Sheppard 2001: 185). It is telling that in Partch's opinion the main cause of Wagner's 'downfall' was his adherence to the symphony orchestra (Partch 1974: 30–1). What Partch actually meant is not quite clear, as his language is rather metaphorical. He calls the orchestra 'the right bower of the Abstract concept' (Partch 1974: 31) and in another essay states that it 'gets both shoulders of Wagner's music drama on the floor within five minutes after the curtain rises' (Partch 1991: 219). I would speculate that the reason for Partch's disdain towards the orchestra was twofold. First, the orchestral instruments were tuned in equal temperament and required the singers to sing accordingly. Second, they were 'relegated to the pit', thus the music appeared as not having a source. In Partch's eyes this stripped the music of all possible corporeality that no kind of stage set could atone for. By contrast, Partch's own music theatre pieces required the instruments to be present on stage at all times, their sculptural forms serving as the elements of the set (Sheppard 2001: 184–5). At times they were even the only visual elements of the staging. The instruments in their musical–sculptural duality were therefore essential to Parth's understanding of the total aesthetic experience.

Thus Partch named three major features of corporeal music: it concerns itself with the physicality of sound and sound-making; it stipulates audience engagement; and it does not limit itself to just sounds, aiming for an all-encompassing aesthetic experience. It is easy to see how these three criteria at once necessitate and translate into his instrument design. First, concern with sound as an acoustic phenomenon led Partch to develop original tuning systems that were not supported by traditional instruments. Second, longing for total experience resulted in emphasising visual and sculptural aspects of his instrument designs. And lastly, using non-musical objects as elements of these designs would connect with the listeners' everyday, engaging them on a more than just aesthetic level.

Interestingly, these three qualities correspond also to three stages in Partch's instrument design. His first forays into carpentry were the adapted violas and guitars that served his tuning needs, but did not have

any sort of special visual appeal. The instruments of the second and largest group – *Harmonic Cannon*, *Diamond Marimba* and others – possess beautiful exotic forms that serve perfectly the kind of theatricality Partch was seeking. But it is with his work with ready-made objects in the 1950s and the 1960s that the aesthetic potential of his instruments reached its pinnacle. Because of their inherent symbolism that transcends both visual and musical dimensions instruments like *Cloud Chamber Bowls* (1950–51) or *The Mazda Marimba* (1963) are perfectly able to stand artistically on their own. For example, at the heart of *The Gourd Tree and the Cone Gongs* (1964) lies the duality of the ancient and the modern (a trait very characteristic of Partch's work in general), expressed both visually and musically. The ancient is represented by the natural curves of the eucalypt bough and the clear jingly sounds of Chinese temple bells (the gourd tree), the modern – by the slick and menacing design of the airplane fuel tanks (the cone gongs) and the long howling tones they produce. This instrument is already a music drama, condensed into a sculpture.

Therefore, it does not seem to me too much of a leap to assume that to realise the ideal of corporeal music such instruments do not necessarily need music written for them – even though for Partch himself it was unthinkable. Playing the instrument themselves would allow the listeners to experience the materiality of music much more directly than just listening to someone else doing it. The forms of Partch's instruments, unlike the ones of the symphony orchestra, were designed not to facilitate a virtuosic performance but to visually express a musical idea. It is conveyed through the unity of the instrument's sculptural form and the sounds it produces, and this unity would become all the more evident if listeners were to explore the way the instrument is played. This experience would also be more all-encompassing than any stage work could possibly achieve, as one more sense is added to vision and hearing: touch. Another thing to consider is that a written score limits the ways in which both listeners and performers could interact with the instrument. A score (at least a traditional one) reinforces the social boundaries that Partch hoped to transcend in his art, as it excludes those who lack special training from the act of music-making. However, being engaged in the collective creation is probably one of the most socially liberating experiences.

I am not saying that Partch's adherence to written music was unjustified. The sculptor-composer's intimate knowledge of his instruments allowed him to use their most intricate sonic possibilities, which would be unachievable in an audience-driven performance. Partch's musical drama has also at least one more component that cannot be conveyed by the sculpture-instrument – the text. However, as far as physicality of music, audience engagement and total aesthetic experience go, the artists, who did away with the score and let their audiences play their instruments, arguably took these ideas further than Partch himself.

3. INSTRUMENTS WITHOUT SCORES AND SCORES WITHIN INSTRUMENTS

French sculptors Bernard and François Baschet were the first artists to move from creating instruments for music-making to creating instruments that are works of art in themselves. They also gave the new art form its name. The brothers actually used two terms interchangeably: 'sound sculpture' and 'sound structure' (Baschet 1999: 110): the former designating the instruments to be exhibited; the latter, the ones to be used in music performances. In practice though, it was not always clear even to the Baschets themselves what category a given work should be assigned to. Such a distinction, together with its essential fuzziness, is rather telling of the brothers' approach that combined in equal parts sculpting and engineering. As Bernard Baschet puts it:

> In technological activity, the materials are assembled according to a structure characteristic of their physical properties and are easily grasped by the intellect. The laws, in this case, are already determined. Art tries to assemble the materials according to a structure internal to us. Perhaps it is the structure of the images of these materials which we seek in ourselves? This concept calls in emotion, which is entirely excluded if we are speaking of technological activity. The success comes, I believe, in discovering the structures which coincide. In short, to seek a certain order which coincides in the space without and the space within. (Baschet 1975: 4)

Thus aesthetic considerations drive engineering solutions, which in turn influence the artistic result. The engineers Baschets broke the musical instrument down into four basic elements: '(a) a vibrating element to create an oscillation; (b) energy to start and maintain the oscillation; (c) a device to modulate the scale; (d) a device to amplify the sound' (Baschet and Baschet 1987: 107), which would provide the core framework to build upon. As artists they realised those elements in a number of materials and shapes (some of them rarely or never used before in instrument-building) that would determine both musical and sculptural qualities of the resulting work. Music and sculptural form are not yet quite one and the same here, but they are already inseparable, being built upon the same 'sonorous carcass' and emphasising the essential physicality of both.

What is important here is the shift (or maybe a return) to a very different mentality concerning the notion of sound and its source. The instrument-builders of the nineteenth to early twentieth centuries mostly approached their work with a certain ideal of musical sound in mind. The acoustic model was set in

stone and the canonised musical literature left little room for innovation. Even for the likes of Julian Carillo or Luigi Russolo, the desired sonic qualities came before the material implements. The Baschets worked backwards by experimenting, much akin to Partch's 'primitive man', with different materials and shapes and emphasising the uniqueness of sound that combinations of these materials and shapes would bring about. This approach brings to the fore the technological aspect of music-making that is crucial for Jean Tinguely's and Joe Jones's robotic sound sculptures.

However, the focus on the material sources and carriers of sound is not exclusive to sound sculpture. From Telharmonium to Theremin, to Robert Moog's synthesisers, to circuit-bending movement, fascination with music technology and exploration of its sonic possibilities has been the driving force of electronic music (Davies 2001). Tape music introduced a different kind of sonic materiality, where sound was manipulated by cutting and patching magnetic tape (Holmes 2008: 124–8). Fascination with technology does not even necessarily have to do with new and exotic sounds, as demonstrated by the HIP movement that saw its participants resuscitating the instrument-making technologies of the past in their quest for a more authentic sound (Haskell 2001).

Sound sculpture merely takes this fascination further. Music-making technology for the Baschets is not only the means to a musical end but also an art in its own right. In other words, compared to other technologically informed musical practices, sound sculpture changes the disposition of the actual and the potential. To electronic music, technology is a field of possibilities to be employed in a musical act. To sound sculpture, technology itself is what constitutes the artwork, while music remains a possibility to be actualised in interaction with the listener.

Musicality thus becomes a quality of the material to be considered by the sculptor, alongside such things as colour, density, structure, etc. At the same time music itself is treated as a function of sculptural form that unfolds in temporal dimension (Gertich 1999, 176–8).

This approach was realised to the fullest degree by the American sculptor Harry Bertoia, the other artist who can be credited with the invention of sound sculpture. Arguably the creative evolution of the Baschet brothers moved from musical instruments to sculpture (since their early works were still mostly performance-oriented), the opposite is true of Bertoia, who discovered the musical potential of sculptural forms only in his late years. The discovery was largely accidental, as he had been creating minimalist sculptures out of metallic rods long before, and became fascinated with the sound they made when they hit one another.

His sound sculptures, or *Sonambient*, as Bertoia called them, are built according to a single principle: series of rods, mostly of equal length, are uniformly fixed upon a metallic base so as to form a basic geometric shape like a prism or a cylinder. The rods are flexible enough that when something disturbs them, they start undulating and colliding, producing sounds. The overall uniformity of structure is complemented by the difference in materials, rod shapes and the work's spatial dimensions – all contributing to the distinctive timbre and melodic pattern of each sculpture. Such uniformity, however, is also essential for unifying the musical with the sculptural as it establishes rhythmicality as a guiding principle for both.

This introduction of movement connects Bertoia's work with the kinetic branch of sound sculpture, exemplified by such works as Tinguely's *Metaharmonie* series or Stephan von Huene's *Tap Dancer*. It is also what makes the musicality of these works so tangible. From the point of view of physics, movement is the very nature of sound. The wavelike motions of metallic rods in Bertoia's sculptures mirror their musical output and make the kinetic nature of sound explicit to the viewer (Nelson 1970: 41–3). But movement also provides the sculpture-instrument with a perceived agency of its own, independent of what a player or a composer has in store for it. The chaotic and unpredictable nature of this movement renders any attempt to make such an instrument conform to a score futile.

Sound sculpture eschews the written score; it does not commit itself to a composed music piece. But the way Partch's Tonality Diamond translates into his instrument design, or the way the spatial rhythm of metallic rods determines the rhythmic patterns of sounds in Bertoia's sculptures, or the way sound sculptures and sound structures converge in the works of Baschet brothers – all implies that a certain musical structure is always present within the sculptural form of such works. While traditional instruments are also built around an acoustic model, what makes sound sculpture different is its unity of acoustic structure and sculptural form. And since the latter bears aesthetic content, so does the former. The acoustic model thus turns into a sort of implicit aleatory score embedded into sound sculpture.

This kind of implicit score has been made explicit in the works of German artist Peter Vogel. As I have mentioned above, he referred to his sculptures as 'materialised scores' (Vogel 2007: 57). Vogel's sound works, most notably the *Klangwand* series, feature colourful electronic components arranged in an ornament-like fashion within a wire framework that bears a certain resemblance to a stave. Photosensitive elements placed within react to the viewer's shadow, playing various sounds that are produced by the very same components.

In essence, Vogel's electronic sound sculptures rely on the same principle as the earlier mechanical ones: exposed music-making technology forms the basis for the sculptural form. However, there is a substantial

difference in how sound and sculpture interrelate, stemming from the kind of technology used. In the works of the Baschets and Bertoia, the sculptural form as a whole defines sonic possibilities in their entirety as it is also the sound-producing mechanism. In Vogel's sound sculptures overall form comprises a multitude of standardised electronic elements of different types, each of which controls a single sound or an aspect thereof (Supper 1999: 129–30). The physical shape of such an element does not define its function but rather signifies it. The fact that they comprise standardised elements that signify sounds and are arranged in a stave-like fashion is what makes Vogel's works akin to scores.

This allows situating Vogel's work also within the tradition of graphic notation. The written score is arguably a defining characteristic of Western classical music. It is no wonder that the composers, who thought it necessary to reinvent their art, made it an object of most vehement experimentation. The need to notate newly developed playing techniques, as well as the desire to give the performer more freedom resulted in eschewing traditional musical signs in favour of abstract shapes and colours. Performing such scores meant less following instructions and more improvisation, informed by the associations the imagery invoked in the performers mind (De la Motte-Haber 1990: 223–34).

Later on, graphic scores would transcend their graphic nature, becoming three-dimensional objects like, for example, Jennifer Walshe's *My Extensive Relationship with Mr. Stephen Patrick M.* (2007). The score of this piece is a set of ribbons of different texture and length attached to a neckband that are to lead the performer's thought through tactile sensations. Interestingly, there is a certain parallel between such scores and sound sculptures: both put the materiality of music into the spotlight, only in the case of the graphic score it is the materiality of musical text rather than sound that is foregrounded.

On the one hand, graphic scores remain performance instructions. On the other hand, they are often exhibited as artworks in their own right. The unique trait of Vogel's works, when we see them as scores, is that for them performance situation and exhibition situation are one and the same. Moreover, his sculptures are both instruments and scores at the same time.

The extent to which they function like scores for an average exhibition visitor is, of course, unmeasurable and would vary from person to person. The artist clearly intends his sculptures to influence the viewer's actions towards them (Vogel 2007: 56–7), and I would speculate that they indeed do, at least on a subconscious level, trigger such an interaction. Thus the viewer is at the same time the performer. But, and barring the artist's intentions, the score-like qualities of Vogel's works raise the question of whether and how the visuals of any sound sculpture affect the way the audience interacts with it.

4. MUSICS WITHIN BODY AND BODIES WITHIN MUSIC

According to Parch, engaging the listener physically and emotionally is one of the driving principles of corporeal music, and at the same time it is a defining trait of sound sculpture. The Baschet brothers name audience participation as one of the three core components of their art:

> Our works are a synthesis of shapes, sounds and public participation … Sound sculpture is a tool as much as an art form. The sculptor makes something, and musicians or visitors use it to create their own art. It is a double-trigger operation … Eckerman asked Goethe, 'What is a real thing [eine echte Sache]?' Goethe answered, 'A thing is "real" when it produces something else [wiederproduktiv].' In this case, sound sculpture fits with Goethe's definition, as it gives the musician or visitor the pleasure of creating as well. (Baschet and Baschet 1987: 110)

The Baschet case is of particular interest here, since in their later years, they switched from building instruments for the audience to play to providing parts for the audience to build their own instruments. Such an approach is highly reminiscent of Joseph Beuys's idea of social sculpture, which called for the uniting of artists and their audiences into a collective artistic subject. Sound sculpture as a musical body transcends the bounds of an artwork and binds the listeners together as a social organism. In a sense this also makes the Baschets' oeuvre one of the earlier examples of participatory art, as the actual aesthetic qualities of the instruments and sounds become secondary to the social practice of artistic communion.

A more intimate approach to physically engaging the audience was introduced by Bernhard Leitner. His *Sound Chair* has four loudspeakers built into it, so that people sitting on it would listen not only with their ears but also with their whole body, exploring its spatiality. The body, as Brandon LaBelle puts it, 'parallels the ear, creating multiple levels of perception: one external, the other internal. Bodily hearing creates a deep awareness of physical sensation, diffusing perception of sound towards the tactile sense that touches the body as a whole' (LaBelle 2006: 175). A similar work of Leitner's, *Headscapes*, is a series of binaural tracks, aimed at creating sculpture-like sound shapes that listeners would perceive as placed within the boundaries of their own heads. The spatial dimension of the inner self thus unfolds (LaBelle 2006: 176), and inner speech, the core of one's identity, is forced to locate itself in space.

I contend that, if we are not set on establishing sound art as separate from music, these two works by Leitner can be considered to belong to the realm of

music: they are recorded sounds that are organised temporally and lack a visible sculptural shape. However, this music acts as a corporeal entity, interacting with the listener's body, in a sense inhabiting it. The listeners themselves lend the work its sculptural shape in the form of their bodies, thus completing it.

Leitner's works belong to a different branch of sound sculpture than the ones discussed above. While the instrument-like and kinetic sculptures treat sound as a quality of the sculptural material, in works such as *Headscapes* and *Sound Chair* sound itself is being sculpted. In other words, the physicality of music in the works of the Baschets, Bertoia and the likes is experienced indirectly, through the music's undeniable unity with its material source. In Leitner's case, however, the experience is much more immediate, as listeners can feel the sound itself moving through their bodies.

Interestingly, the kind of sound sculpture that makes use of both modes in which the physicality of music can be experienced is also probably the oldest one in existence – the Aeolian harp. One of the most prominent artists to use this model is the Canadian composer Gordon Monahan. His sculptures often involve long (sometimes extremely long) piano wires, installed in natural or urban landscapes and agitated by wind or running water, producing aeolian and 'aquaeolian' (Monahan's own term) tones. Such practice has clear ecological undertones: sound sculpture is used as an instrument to give voice to environmental processes that are normally invisible and silent, thus raising the listener's awareness of them. Attempts to imitate natural forces have been a subject of much musical composition in the eighteenth and nineteenth centuries, but in Monahan's case music is literally nature expressing itself.

The way Monahan makes instruments for natural forces mirrors the indeterminacy aesthetics, mostly associated with John Cage. This aesthetics, as Richard Taruskin puts it, aimed for 'the resolute elimination of the artist's ego or personality from the artistic product' (Taruskin 2009: 55). It is easy to see how Monahan's works realise this intention to the full. While chance operations of Cage and his peers generally had certain rules, however vaguely defined, that translated into a temporal structure, the result of interactions between natural forces and a musical instrument can be as unpredictable as the weather itself. Furthermore the music produced by the aeolian sound sculptures does not imply an ending, in principle it could go on indefinitely.

Aeolian sound sculpture, unlike concert music, also possesses a certain architectural quality, as it interacts with the acoustical characteristics of the landscape and organises it sonically. This posits a number of questions about the relations between music and architecture. As another notable builder of aeolian instruments, Max Eastley, writes:

> Composers sometimes speak of the architecture of a composition. To me that implies that there is an interior and exterior. If the composition is like a building does the listener hear the outside of the building and the composer the inside? Does the listener only experience the outside of the music? Can music be thought of as dematerialised architecture? In the future could there be an architect-composer? (Eastley 1996: 145)

It is easy to see how, given the scale of such works, listeners can feel on the inside of music. Since most aeolian sound sculptures are commensurate with the environment (to collect the power of natural forces and not be damaged by it) and not with listeners, the latter find themselves within a system of sound sources and can experience the harmonic relation between the sounds they produce spatially. Thus these relations form a certain architecture-like structure that encompasses the listeners and replaces the traditional temporal structure of music (since the sounds themselves are fairly static and indefinite in length).

This principle of 'musical interior' is even more prominent in the more abstract works of artists such as Bill Fontana and Michael Brewster, who shape space with sound without a material proxy. Brewster's use of standing waves creates invisible structures that can only be perceived wholly when inhabited – that is, from the inside. Fontana's superimposing of acoustic sites expands listeners' acoustic horizon, so that the space they are in feels like an interior to a larger soundscape. In both Fontana and Brewster's works, sound itself becomes a sculptural and architectural material, acquiring such characteristics as density and mass and fully realising its physicality.

5. CONCLUSION

Embracing the connection between music and sound sculpture provides a common thread that runs through all the diverse practices that comprise this art form. The framework for analysing this connection can be borrowed from Partch's ideas. Describing his ideal of corporeal music, Partch names its three core characteristics that can be also applied to sound sculpture: physicality of sound and sound-making, totality of aesthetic experience provided by the artwork and its ability to engage the audience on a visceral level.

While these traits are common to all sound sculptures, the extent to which they are present and the way they manifest vary across the spectrum. For most artists the concern with the physicality of sound means treating it as a quality of the sculptural material, alongside its colour and density. Conversely, in the works of artists such as Leitner or Brewster, sound itself is sculpted into a spatial form. The totality of aesthetic experience usually translates into the interplay between the visual and acoustic shapes that mutually define one another. However, works of the

sculpted sound variety often downplay the visual element, substituting it with tactile experience. Finally, audience engagement can also be achieved in a number of ways. The instrument-like sound sculptures involve listeners in the process of music-making. Others let them experience the 'interior' of music or make their body into a casting mould for sound. In the case of kinetic sound sculptures, audience engagement stems from the perceived agency of the artwork that possesses the means of movement and expression, akin to those artworks that deal with the concept of artificial life

Movement generally plays a prominent role in sound sculpture, as it is the physical nature of sound. Various kinds of movement permeate the art form: it can be movement of the parts of the sculpture or the performer's gesture, sound moving through space or listeners moving through spatially arranged sound. Such abundance of movement ensures that sound sculpture is experienced viscerally and not just intellectually.

Sound sculpture can be situated alongside other trends of the twentieth-century musical experimentation, as it shares a number of issues with them. In fact, the materiality of music discussed above is one such issue that is dealt with in different ways in instrumental theatre or musique concrète. Another one is that of indeterminacy, questioning the composer's agency by delegating it to someone or something else. Sound sculpture can achieve indeterminacy in two ways, making for two vastly different versions of it. One is for sculpture to take the form of the Aeolian harp or a similar instrument, powered by the forces of nature. This effectively dehumanises the music, doing away with the composer and performer's roles altogether, and making the artwork commensurate with the environment rather than with the listener. The other is to provide the instruments for the audience to play, which blurs the lines between composers, performers and listeners and makes for a liberating and even therapeutic experience.

Directly connected to the issue of indeterminacy is the one of the nature and function of the score. There are certain parallels between sound sculpture and graphical notation in this regard. Both these practices ascribe inherent aesthetic qualities to the objects that in music performance usually play supporting roles: instruments, recording and playback devices and scores. Both also emphasise the materiality of music, be it the materiality of sound in case of sound sculpture or the materiality of musical text in case of graphic score. It can even be said that the sound sculpture's visuals like a graphic score influence the listener's musical interactions with the work – even though the extent of such influence would vary from person to person and from work to work, making it impossible to measure.

Turning musical instruments into art, sound sculpture also makes music an instrument that it can use to a number of ends: to explore the physical space of a landscape, or that of the listener's own body; to extend the qualities of its sculptural material; or to build social connections between its listeners. In its focus on the material side of music, sound sculpture overturns the script and elevates the aspects of music that were historically downplayed by the dominant ideologies of art music over those that were favoured by them: the corporeal over the symbolic; the spatial over the temporal; and the agency of the audience over its passivity. This inversion is what constitutes the essence of the connection between the two art forms.

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