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Spatiosonic cut-ups: Montage as a compositional process

Abstract

This article examines several original drawings that explore the significance of montage in the composition of sonic works, where space plays an active role. Whilst choreographic drawings combine temporal and spatial information into a single image, there are very few instances of musical notation that incorporate a spatial element. The original examples discussed in this article do not serve as instructions for musical performances, but instead function as a key part of the compositional process. The technique of compositing spatial and musical notational material aligns with the conceptual basis of the work. The objective is to create compositions that interact with a specific spatial context whilst also establishing their own spatial constructs, using sound as a medium. This type of work is referred to as "spatiosonic".[1]

Introduction

All the pieces examined in this article discuss two key themes: Firstly, the use of spatial metaphor in organising sonic content to create a sense of space. Secondly, the spatialisation of this sonic content in physical space to foster interactive practical and conceptual relationships between the disciplines of architecture and music. In both examples, the process of collaging or compositing notational material is employed to experiment with and establish connections between sound and space, both in physical and abstract contexts.

Although they possess subtle differences, the words montage, collage, and composite are often used interchangeably, generally referring to a curated collection of different parts. In the context of this work, the word "composite" is preferred because it shares an etymological root with the word "composition" from the Latin "compōnere", meaning "to put together". The compositions and their composites, as detailed in this article, are not intended to be understood as final pieces; rather, they form distinct parts of an ongoing process aimed at exploring and nurturing creative dialogues between spatial and sonic practices, specifically within the realms of architecture and music. Consequently, the compositional process holds as much significance in the work as does the ultimate performance.

Drawing plays a crucial role in this process by helping to discover and clarify relationships between the various different active sonic and spatial elements. When the specific relationships between these elements are not predetermined, the composite method of making drawings enables the nature of those relationships to emerge during the process of creating the drawing. In the context of this work, composites explore the potential for interactions

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[1] The author refers to this type of work with the self-coined phrase "spatiosonic", meaning "work and phenomena which regard space (spatio) and sound (sonic) as equal, interactive partners" (Matthews, 2019: 297)

amongst different elements of sonic content and how this content can dynamically engage with a physical performance space.

This methodology is particularly valuable in cases where the nature of 'space' is not explicitly defined. For example, when space is not only described in terms of measurable geometry, consisting of points and lines, but is also understood on more 'relational'[2] terms. Here, the focus shifts towards the relationships between elements rather than emphasising the inherent qualities of the individual elements.

In the visual arts, compositing involves the act of bringing two or more disparate, or at least different, things into relationship with each other. Here, the edges between things play an important role in shaping our perception of their relationships, as they define and articulate the nature of their interactions. For instance, an edge might present a sharp distinction, a gradual merging, or an overlapping blend between the entities in play. Two notable examples of this can be found in Robert Rauschenberg's collages and Roni Horn's cut-ups. In Rauschenberg's work, we are prompted to question the associations between a mirror, a taxidermied eagle, and a pillow (Rauschenberg, 1959). Rauschenberg's "combines" (Olsen, 1977: 23) and composites can be seen more as questions than statements. In Roni Horn's work, the process of cutting up and reassembling, a collage-like technique popularised by writer William S. Burroughs, is also relevant. It establishes a practice of repetition, reassembly, and re-performance, where the resulting artwork stimulates a desire in the viewer, to make their own sense of the assembled pieces. The audience is actively encouraged to question the relationships and associations between the individual elements.

In the work presented here, the drawn composite is an analogue for the performance of musical compositions. In these performances, spatial and sonic content are put into relationship with each other, within a 'live' physical setting to reveal the nature of a range of both practical and conceptual interactions between architecture and music. These interactions illustrate how sound can either articulate space or be articulated by it. The drawn composites then serve as a method for rehearsing, discovering, and understanding these interactions prior to performances. They also serve as conduits for translating ideas between the spatial and temporal domains of architecture and music, respectively. Deleuze's discussion of the composite (montage) in relation to the spatiotemporal medium of cinema is relevant here. We can reconsider Deleuze's following observation within the context of spatiosonic composition in place of cinema: "the parts [sound and space]… enter into connections and liaisons which, through montage, reconstitute the virtual sequence shot or the analytic whole of the [composition]."(Deleuze, 1986: 27). The connections and liaisons being of greatest importance here.

The eventual performance of the work presented in this article does not utilise the composite method as a technique for performing the work to an audience, unlike the example of the "open form" work of Earle Brown, where pages of material can be played in any order, thus compositing, or juxtaposing different musical events, in time.[3] However, the spatiosonic compositional process learns from Sergei Eisenstein's use of composite (montage) in cinema. Eisenstein's technique involves the creation of meaning through the collision of two or more signifying elements—in this case, sonic content, and architectural attributes. Through this

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[2] In this research, it is helpful to regard space as relative "…in the manner of Leibniz, as being contained in objects in the sense that an object can be said to exist only insofar as it contains and represents within itself relationships to other objects." (Harvey, 2010: 13).

[3] Brown's "Twenty-five Pages" (1953) was his first open-form piece. Musical content is notated across 25 separate pages, and the performers decide the order of their performance (Brown, 1953)

juxtaposition, the relationship between these elements contributes to the interpretation of the whole composition. (Eisenstein, 1991: XV)

This article examines three contrasting examples in further detail. The first example explores the relationship between performers in a physical space against their implied spatial relationships as expressed in the score. The second example imagines a scenario where the parallax between objects in perspectival space, during an imaginary journey through a hypothetical landscape, serves as a spatiotemporal sketch for an orchestral score. This example challenges traditional orchestration conventions by envisioning orchestral "objects" as timbral amalgams, positioned within a virtual landscape. Finally, example 3 composites architectural and musical notation within the same image, thereby suggesting more direct modes of translation between spatial and sonic content.

Example 1

Figure 1: Emma-Kate Matthews, A composite for "Remote Overlap", 2021. Mixed media.[4]

This composite explores relationships between two key elements: Firstly, the distances between spatialised performers in physical space (clarinet, glockenspiel, and piano). And secondly, the conceptual distances expressed through the sharing of timbral and pitch-related content. The image combines three different modes of spatiotemporal representation on a single canvas. The composition, titled "remote overlap," is a musical evocation of the longing and frustration experienced by two spatially distant entities who desire to occupy the same space.

In this composition, a bowed glockenspiel creates a slowly evolving drone, defining a territory within which the piano and clarinet attempt to overlap (in both space and in time). The hand-drawn sketch at the top of the page illustrates a spatiotemporal abstraction. Time stretches horizontally across the page, whilst musical events activate specific regions of space within this timeline. These musical events are depicted as contours, which convey intensity, acoustic presence, and spatial reach between the piano and clarinet. Below this sketch are three studies presented in chronological order, from left to right, depicting a portion of a musical score and a corresponding floor plan. The floor plan illustrates the layout and size of the physical performance space, as well as the positions of each sonic "character" in relation to each other and the listening audience. The concentric circles around each of the performer's positions are generated by a MIDI output from the scored notation. Whilst these circles are not representative of any scientific accuracy in terms of the actual direction and intensity of sound radiation from each instrument, they provide a general sense of which performers are active and acoustically present at that point in the score, as also indicated in the musical notation. The circles also indicate a representation of a non-spatially explicit distance between performers based on the tonal range in which they are playing. The glockenspiel remains relatively consistent and serves as a reference point in terms of spatial positioning. However, the clarinet and piano are primarily "distant" from each other as they do not share tonal or timbral overlaps, except in bar 18 where the clarinet plays a multiphonic note that shares a number of overtones with the piano chords. Although they are not playing in the same octave, the shared overtone structures create a temporary timbral ambiguity, making it momentarily difficult to audibly distinguish between the two instruments. This suggests a spatial "closeness" where they are otherwise both sonically and spatially "remote". The architectural and musical notation in this example are kept distinct from each other. Each

[4] The composition "Remote Overlap" was released on NMC records, July 2021.

figure is graphically separate, representing its own role in the work: discussing either space or sound. The act of creating a composite in this example is purely functional. It provides a visual reference for understanding how any perceived "metaphorical" distance between the piano and clarinet might be either reinforced or contradicted by their relative positions in physical space. The sketch serves as a reminder of the overall essence of the piece. Each element could stand alone and still be legible. However, when they are put together, they question the relationship between the type of space explored in the fluctuating timbral closeness or remoteness, and the actual distances between performers in physical space. These composites are not typically part of the material shared with the performers or the listening audience, but they are essential in calibrating elements of spatial and sonic domains during the process of composing spatiosonic works.

Example 2

Figure 2: Emma-Kate Matthews, A composite for "A study of passing objects in an accelerating landscape", 2022. Mixed media.[5]

This composite differs greatly from the previous example in terms of its construction methods and its role in the compositional process. In this case, graphic textures are generated, fragmented, repeated, and reassembled to shape an orchestral composition. This serves as a visual guide or reference for the intended compositional structure throughout the process of scoring. These graphic textures are created through an iterative combination of digital and analogue processes. This involves, but is not limited to, photographing wet media on non-porous surfaces and processing these images digitally before printing, drawing into and cutting them. Followed by an iterative process of re-assembling, re-photographing, re-cutting, and so on… This composite of drawing techniques and processes results in an amalgam of graphic material which has both abstract notational and figurative content.

The way we notate sound and space affects the way we conceptualise them. Both musical notation and architectural drawing rely on abstract geometric symbols to convey complex spatiotemporal ideas. This mode of representation encourages the thought that sound and space are made of discrete, measurable entities rather than existing as part of a fluid, dynamic field of intensities. This view is detrimental to the evolution of symbiotic relationships between architecture and music, as it promotes a standardisation of their interaction that undervalues things that can't be explicitly measured or drawn. This project aims to challenge this, starting with a reassessment of the traditional structure of the symphony orchestra. Rather than viewing the orchestra as made of distinct groups of instruments with defined musical roles, it treats the orchestra as a 'field' of varying sonic intensities. This promotes a more fluid understanding of the musical elements of timbre, pitch, and rhythm. Through the development of an analogous drawing method, the resulting 'textural ambiguity' blurs boundaries between line (analogous to melody) and surface (as timbre) thus engendering a fluidity between content expressed in both sonic and visual realms. The textural content of the image also discusses the material presence of sound in space, as having the capacity to articulate and define space akin to how other, more physically tangible architectural materials do.

This work is particularly interested in allowing abstract, non-quantifiable concepts to be translated, or transposed more freely between sonic and spatial realms. In this case, the

[5] The composition "A study of passing objects in an accelerating landscape" was performed by the London Symphony Orchestra on March 31st 2022, as part of the Panufnik Composers' Residency.

organisation and orchestration of sonic content is inspired by the shift in spatiotemporal perception that resulted from the advent of railway travel. To clarify: As the speed of travel increased, the focus shifted visually from the detailed foreground to the slower-moving objects on the horizon or in the background (Schivelbusch, 2014). In an attempt to develop a musical equivalent of this observation (and its spatial consequences), this composite drawing combines the spatiotemporal logic of slit-scan photographs[6] with the field-like organisation of a spectral frequency display.[7] The composition implies an axial logic, where time or the landscape's horizon stretches between the left and right edges of the page, while the tonal range or perspectival depth (foreground, mid-ground, and background) spans from top to bottom. However, the textural nature of the composited materials makes it difficult to measure these dimensions qualitatively. There are no clear geometric features with defined edges or lines. There are no figurative reference points to provide a sense of spatial or temporal scale. Instead, this composite suggests a fluid spatiotemporal continuity, where objects in the landscape and their musical counterparts are better understood as episodes of varying intensity rather than discrete entities with finite edges. By removing the concept of "edges", the focus shifts once again to space (or sonic space) as a relational construct, where the connections between things become the conceptual and perceptual focal points, rather than the nature of the things themselves. Although the lack of clear edges makes it difficult to understand the process of constructing the image, the image is similar to the examples by Rauschenberg and Horn mentioned earlier in that it is constructed through a process of cutting, assembly, replication, and reassembly. The creation of this image can be considered a performance in itself, where compositional and relational decisions shape the eventual spatiotemporal figure.

Deleuze states that "montage is composition, the assemblage [agencement] of movement images as constituting an indirect image of time". (Deleuze, 1986: 30) Whilst the iterative creation of the drawing is not presented in the form of a film or animation, time and duration are inherently embedded within it. To highlight a few instances, the slit-scan-like logic of its composition registers space (the landscape) over time; Blurring implies the traversal of space over time, indicative of speed; The creation of the drawing embodies the concept of duration through the layered and gradual processing of its content; The temporal nature of music (exemplified in the eventual orchestral performance) possesses mechanisms akin to those employed in the image for organising content through cutting, layering, blurring, and texturing. The composite then seems an appropriate medium for enabling the translation of spatiotemporal ideas between spatial and sonic realms.

Example 3

Figure 3: Emma-Kate Matthews, composite for "Drift". 2022. Animation still from a 3D digital model.[8]

This example presents another kind of composite that merges varied visual materials, interdisciplinary tools and techniques, and various roles in the creation and performance of an

[6] In a slit-scanned photograph "an image is recorded on a moving piece of film as it is being exposed through a slit… [providing] a representation of the action in the scene as "seen" through a thin slit by the moving piece of film" (Meehan, 1990: 73)

[7] A spectral frequency display, or "spectrogram", is a three-dimensional plot which expresses variation in sonic frequency, amplitude and time (Pressnitzer and McAdams, 2000: 39)

[8] The composition 'Drift' was performed for Brighton Festival 2022, at Shoreham-by-Sea on the 14th & 27th May at 7, 8 & 9pm as part of the 'Witness Stand' project, curated by artists Madeleine Flynn and Tim Humphries.

audio-visual work. These amalgams take place in a digital 3D environment, where a 3D point cloud[9] depicts the visible features of the Adur estuary at Shoreham-by-Sea, and abstract geometric figures placed along a pathway act as MIDI 'triggers' for a series of sonic events. The image reproduced here also forms a composite of what the performer sees (the nodal diagram on the left) with what the audience sees (the perspectival and plan views on the right). The performer's image is entirely abstract, signifying a workflow diagram that takes geometric inputs, translates them, and then outputs messages to activate sonic material.[10] The landscape depicted in the audience image is much more figurative and offers first person views both from the ground and from the air.[11] In this performance, the audience represents both a dynamic listener (in the music) and observer (in the landscape). The resulting audiovisual scene is 'atmospheric' in the sense that it is experienced as a compound of sonority, luminosity and palpability (Ingold, 2015: 82). The medium of audiovisual composition and performance is, in itself, a form of multi-sensorial composite.

Additionally, the superimposition of abstract notational symbols onto a figurative model of a 3D landscape suggests that there is a direct connection between entities in the site and the origins of the sounds triggered. It also suggests that the 3D landscape itself is a playable entity, analogous to a musical score. By placing the notation directly into the landscape, the score gains a spatial scale, and in turn, the landscape acquires a temporal scale. The resulting spatiotemporal composite resembles Baroque minuet drawings. In these drawings, choreographic information is superimposed directly onto a floorplan, depicting movements in both space and time within the same illustration.[12]

Finally, besides the significance of the composite in articulating a range of visual materials, and its roles in executing a musical performance, the idea of the composite is also present in the use of cross-disciplinary tools and approaches in both the making of the drawing, and eventual performance. The point cloud, notations and animation capabilities are created in 3D modelling software Rhino.[13] This software is most commonly used in architectural practice to model architectural structures but is very rarely used as a tool for composing and performing music. Beyond providing an environment for creating geometry, this tool can interface with music production tools[14] by sending and receiving MIDI signals. This makes it possible to literally 'play the space' (at least digitally), therefore opening up possibilities for exploring how spatial concepts can inform musical outcomes, and vice versa. This example demonstrates the composite nature of spatiosonic practice, as inherently multidisciplinary in its combination of, methods, terminologies, and concepts from different fields of practice, study, and research.

Recap

As evidenced in all instances presented here, spatiosonic constructs come into being through the integration of graphic elements possessing inherent spatial and temporal logics within the composition. This method entails not only amalgamating the content itself but also blending the methodologies employed in generating such content. These methods typically separately

[9] A point cloud is a collection of data points in three-dimensional space, typically produced by 3D scanning technologies such as LiDAR or photogrammetry. Each point denotes the spatial location and may include other attributes of features in the scanned environment.
[10] Using the nodal parametric plugin Grasshopper. (Simply Rhino Limited)
[11] Planes often fly over the site as Brighton City Airport is located directly opposite.
[12] This type of notation was apparently invented in the 1600's by Pierre Beauchamp and Raoul Auger Feuillet (Hilton, 1997: 45-46) (Feuillet, 1700: 78-79)
[13] Rhino 3D is developed by (Robert Mcneel & Associates)
[14] In this case Ableton Live by (AbletonAG)

belong to the spatial practice of architectural drawing or the sonic practice of music composition. As such, we can define the composite method of drawing as a multi-disciplinary compositional process employed in the creation of spatiosonic work. This method actively encourages creative exchange and nurtures collective graphic, linguistic, and conceptual vocabularies between the fields of architecture and music.

Biography

Emma-Kate Matthews (ARB, RIBA) is an architect, composer, musician, and digital artist. Her work blends sonic and spatial practices, creating site-specific audio-visual projects performed internationally at venues like Sagrada Familia and the Barbican Centre. A composer on the London Symphony Orchestra's Panufnik project, she has also released music on labels including Accidental and NMC Records. Nominated for the Lumen and Aesthetica prizes in 2022, her work has also been "highly commended" at the Sound of the Year Awards. She is lead editor of The Routledge Companion to the Sound of Space, and her work has also been published in Nature and exhibited globally.

List of illustrations

Emma-Kate Matthews. (2021). A composite for "Remote Overlap".

Emma-Kate Matthews. (2022). A composite for "A study of passing objects in an accelerating landscape".

Emma-Kate Matthews. (2022) A composite for "Drift – for Shoreham by Sea".

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