

Notating, Performing and Listening

Music experience under the space-based notation

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Abstract:

In this practice-based research, I discuss how I establish my idea of 3D notation from the inspiration of graphic notation by Earle Brown and Mark Applebaum. I use my own 3D notation projects as case studies to explore my conception of music experience, which originates from Cage's idea of the "time bracket" – free within limitations. The study follows this main idea to explore the function of notation, the role of performing and listening, and score as an instrument. Everything that occurs in the 3D space I designed can be considered as music experience, and the objects in the 3D space are the notation that people navigate to walk or enjoy the moment in the space. The people's walking or moving in the space is the performance of the notation; meanwhile, they are the audience. Moreover, different layers of interpretation occur under the 3D notation.

Notating, Performing and Listening

Music experience under the 3D notation

Chapter I Introduction

In 2008, Mark Applebaum's pictographic score *the Metaphysics of Notation* (2008) was exhibited in a museum in the US, in which Applebaum tried to use graphic notation to arouse people's imagination of sound and music. In the *Handbook*, he said there was no sound in his mind when he was drawing the score (Applebaum, 2008). The score aroused many issues such as the question of musical ontology, the significance of notation, the meaning of composition, and the boundary of music (*ibid*). It is not the first piece using graphics in the score to spark people to imagine sound and music, but for me, it inspires me to consider the graphic notation in a conceptual way of presentation and interpretation. Applebaum's score is very radical, and he requires people to imagine the music without performance, focusing on the way he demonstrates the score, including a scrolling score. His description of the score in the *Handbook* is also from left to right, even from top to bottom. This allows me to consider a more liberated way of notation, which leads me to consider the meaning of notating, listening, and performing (Nyman, 2011). Another score for imagining the sound is Dieter Schnebel's *Mo-No--Musik zum Lesen* (1969), in which the composer required people to imagine sound through reading the "score". The sound from the imagination, in the brain, would combine with the environmental sound as a whole sonority.

In 2018, Johannes Kreidler published his music score *Sheet Music*, which was both shown in a museum and published as a booklet. From Kreidler's conception, the music may not only consist of sound, an event of music could also be music. All three pieces are written without consideration for the realisation of sound, and all use different notation to impart the ideas.

My motivation for this research starts from studying the meaning of notation and trying to evolve from the notations of those works to create my notation projects. Through the construction of my project, I will discuss my understanding of notation and how I use notation to construct my conception of music experience and to explore the roles of performance and

audience. This study will be explored from the work that inspired me to create my projects, and then, I will use my own projects as case studies to compare my evolution from the examples. My core study focuses on notation and how I construct 3D notation based on other composers' concepts.

But different composers have different intentions to create their notation, and the purpose of each composer is also different. Both Schnebel and Applebaum used their scores to invite the imagined sound, however they are also different. Schnebel used many fragments of music or text to allow people to recall the music they have already heard; whilst Applebaum wanted to challenge the role of the score and to extend it beyond its customary role (to record sound and instruct performers what to play). These scores include many visual features like painting. Kreidler's score also applied many visual effects, but his idea is to challenge the meaning of music. His score comes from his conceptual approach, in which he wants to discuss the music and musical events. Drawing on these composers' ideas of notation I established my own approach to notation, which is constructing a conception of 3D notation, in which people's walking will follow the instruction of the object in a 3D space. The happening in the 3D space will be considered a musical experience, and under the music experience, the meaning of performing and listening will be challenged, as well as the meaning of instruments.

Research Questions

Under my conception of notation and music experience, I will address the research questions as follows:

- 1) How does 3D notation have the connection with another graphic score? To what extent can a 3D image function as music notation?
- 2) What are the characteristics of my conception of music experience?
- 3) What is the role of the performer and the listener under this music experience?

Chapter II Notation and musical experience

In *Conversing with Cage*, Kostelanetz (2003) mentioned that performances on stage are like “daily experience”. Later, Kostelanetz mentioned Cage used the term “time brackets”, which means “performers were free within limitations” (*ibid*), to express his planning of the composition. From Cage’s free within limitations, I establish a 3D space, and anything happens within this space, as these “time brackets” could be considered a music experience. The space will be separated by objects of different sizes, creating paths, and the entire space, including objects, construct the 3D notation. I will ask people to walk through the subspaces and the actions of the people such as moving, playing, and even speaking will be the performance of the notation. The conception of 3D notation and music experience will challenge the boundaries of some features of music, from the function of notation to the role of performing and listening. All of them are under my understanding and lead to my projects.

2.1 The Function of the notation

A full study of the function of notation may need to find the original meaning of notation, and why people create notation in the music. It seems, to me, that the emergence of notation is to record the sound and music and to give an instruction to performers. But it would be very hard to trace this history of musical notation, nor is it the purpose of my study. Different cultures will also have different means of notation. Hugo Cole (1974) in his book *Sounds and Signs-- Aspects of Musical Notation* claimed that western notation concentrates on the music as exactly sound and notation. Eastern culture would concentrate on an outline of a thought, being more like an idea for improvisation. From this point of view, in this section, I need to confine my study within the graphic notation of Western music in the 20th century, especially the notation of conceptual music after the 1950s. Cornelius Cardew was concerned with notation as “flexible convention”, and notation as reducing or increasing this flexibility (Cardew, 1965). My study of notation focuses on the former, that notation has broken the convention to pursue an indeterminacy of music.

Although I will limit my concentration on the notation of conceptual music, I still need to go back to discuss the function of notation more generally. One of the major functions of notation is to record the music in a composers’ mind, but there is another type of score which

composers create only from shapes and graphics, to inspire music from visual effects. Those shapes and graphics may be directly from the traditional notation or the evolution from it. These scores are also for performance, but the composer did not have any sound in their mind when they created the score. It becomes more like a visual art. But composers at last would allow the performers to perform these scores. In Applebaum's *Tàthe Metaphysics of Notation* (Figure 2.1.1) He explained the gradually increasing of the size will remind us of the crescendo from traditional notation and people can imagine the change of loudness of a sound.



Fig. 2.1.1. Mark Applebaum. *the Metaphysics of Notation* Panel 4.

He also used a scrolling score to demonstrate the notation, which may be considered as being more like traditional music scores. The demonstration of the scrolling video controls the tempo as a presentation of a music piece. I did not try to find the reason why he used two different ways to demonstrate his score, but both formats are based on his original purpose: requiring people to imagine the sound. In the handbook, Applebaum said it “inspires many interpretations” and arouses questions such as the meaning of the music, and the meaning of notation (Applebaum, 2008). It would be very hard to judge if a score could be considered musical notation only if it could be realised by performers. In some levels, a performer can play any kind of abstract images, although those images are considered painting or visual artwork. We cannot consider if the graphics or images are a musical score only if they can be realised as sound. Moreover, the musical notation may refer to another question: whether it can be considered as music, if those scores have been realised. In Applebaum's score, people can imagine the music through the notation, and the composer even provides a handbook to instruct people to complete their imagination. But if the imagined sound can be considered as a music could be the question. It is a question without an answer, and my research only concentrates on the function of the notation. I may consider that the function of the notation happens within the

communication between composers and performers. Like Applebaum's notation, it can spark people's virtual performance of music, so it can be considered as notation.

From this point of view, the function of notation is giving performers or people instructions, including imagination through score, to complete a performance within a given time. The performance indicates not only the playing of an instrument or performing on a stage. Any motion under the instruction could be considered as performing. In the next section, I will explore my discussion on the idea of music experience, which is based on Cage's time brackets. Under the conception of music experience, the notation is an instruction for people to move or experience the time within a 3D space.

2.2 Music Experience

My study of music experience originated from the notation of Dieter Schnebel's *Mo-No*. It is a score for reading, and Schnebel uses the subtitle “*Musik zum Lesen*” (Music to Read). He requires people just to read the score and imagine the sound in their minds. It is a book with different notation on each page, and in the book Schnebel claimed that sound through imagination in the reader's brain would combine with the environment sound, creating a mixed sonority (Schnebel, 1969). Meanwhile, the sound from the environment will also be heard when people are reading and imagining the score. Schnebel uses the idea of *Cage's silence* to mention that people will experience both the sound in the mind and the surroundings (*ibid*). For this book, because Schnebel only asked people to read and imagine the sound, people questioned if it is music or if his score is musical notation. The argument of how these scores and music can be categorized is the same as my discussion before. If a score is not created for performing the sound, it may be distracting from the idea of music, or from a traditional concept of music. Would it be music if there is no sound occurring during a time? For this question, we cannot define what music is, nor would it be very difficult to answer if one type of art belongs to music, especially when those scores contain many phrases of traditional music. Yeasul Shin mentioned that the pages of *Mo-No* can be connected and we can appreciate the “intervention of time”. *Mo-No* applied many musical scores to allow readers to memorize the music and “the memory of appreciating the entire work called *Mo-No* will be left as a musical experience” (Shin, 2014).

Many composers try to use “soundless” music or notation without performance to challenge the traditional concept of what music and notation is. The pieces I discussed before all

try to ignore the sound as the main role in the music, but each may have different intentions. Cage's 4'33'' is written for performance without sound, but he may concentrate more on the silence of the music. He wants to attract people's attention from the sound to the silence and environment sonority, on which we may not pay more attention. Schnebel used Cage's concept of *silence*, and he improved his imagined scores. Schnebel and Applebaum may have the same idea that people can imagine the sound through looking at their 'score', and both of these composers use a traditional way to demonstrate their score: Applebaum shot a scrolled score as video and Schnebel wrote down the notation in a printed score book.

All those composers try to challenge the way we enjoy what we call music and challenge the notation from the tradition of communicating between composers and performers. All of them thought music is an art of temporal features. If there is an event happening, it may be music. Yeasul, also in the essay, clarified that both Cage's 4'33'' and Arvo Pärt's *Tabula Rasa* are written for soundlessness, but the primary thing for these pieces is the "continuity" of musical time." Following those understanding of music experience, I explore my installation and I set up them as notation for music experience. But in my opinion, the music experience is not anything that happens in an environment, like Kreidler, his notation is only for an event. As aforementioned, my idea of music experience is from Cage's concept of 'time brackets' and what happens within the time may inherit the temporal feature of music, and I may consider it as music experience.

Cage used the term "time brackets" to express his idea that the performance on stage is like daily life, that music is an entity within a time duration, and any happenings within the time could be considered as music. Moreover, Cage thought the noise sound occurs also in a silent environment, and he wants audience can pay their attention more on the sound occurring surroundings. The silence is a part of music and Cage treats silence and sound as equals in music, so people experience the silence the same as they are enjoying a sonic event. But I focus my study in notation and I will use notation to lead people to enter an experience of time, no matter what happens within the time, it could be an experience in time. It is different from Schnebel's imagination and environmental sound, sound is not a concern in the time of my music, and visitors are not required to imagine the sound to indicate they are in the music experience. I do not try to allow people to connect their memory of music to the objects in the space. What I am more concerned with is how I use shapes or different images or other objects

to separate the space to introduce people to visit in it. It is a transfer from a space into a time, which is perhaps the same idea as a traditional idea of notation, but I did not notate both pitches and silence, instead leading to a “happening” in a time period. I change my view from the music to the music experience. In the next section, I will discuss the role of performing and listening in music experience, which may challenge the traditional concept of the performance and audience.

Before I move to the next section, I want to use Johannes Kreidler’s *sheet music* (2018) to discuss the difference between my notation for music experience and visual art. *Sheet Music* is a series of miniatures which are printed by traditional notation. But it is not for performance and Kreidler only uses the meaning of the visual effect from the shape of traditional notation to express other meanings. In this work Kreidler attempts to satirize the traditional notation and music. He used traditional notation but expresses another idea and event. Each picture has a title, Kreidler (2013-14) called them “*prapariertes horen*” (prepared listening), in which Kreidler is interested in hearing the text¹. Such as *aura* (Fig. 1.5). only uses a whole note to express the shapes of aura, and it does not include any music information. In this respect, Kreidler created this score to try to challenge the tradition of music notation. Under his idea, music could be considered as an event, and everything that happens in the event could be music, which is similar to Cage’s time bracket, but Kreidler has a more radical expression in his music. The difference between my approach to notation and Kreidler’s *sheet music* is that Kreidler did not intend to use his picture to control the way people visit his “scores”. My music experience would be under control of the 3D notation, freely within limitations.

2.3 Performing and Listening

As aforementioned in section 1, the function of the notation is to connect with composers and performers. Under my conception of music experience, the performers are those who walk, talk or even play through the paths I made in the 3D space; at the same time, they are enjoying their performance. In this case the role of performers and audiences in the music experience is different from traditional ideas. In Cage’s work, although he applied the concept of “time brackets”, the relationship between performers and audience is the same as traditional music, where the performer just plays the ‘music’, according to the score, and the audience listens to the

¹ This discussion is from Johannes Kreidler’s website.

music in the concert hall. If I use a communication system to analyse 4 '33": the score is a sender and a performer is a receiver, in the notation system; in the sound system, performers are the sender, and the audience is still a receiver. What Cage changed in 4 '33" is just sonic materials, from ordered pitches, rhythmic patterns, and timbres, etc. to a disordered sonority, including environment noise and silence. Whilst, in Schnebel's *Mo-No*, people are required to imagine the sound by themselves. Although the composer mentioned that there is environmental noise, which could combine with the sound in people's mind, there are no other performers joining the whole system. People, when they are reading the score and virtually realise the notation into the sound, they are listening to the piece at the same time. The role of performing and listening is united, the performers are listeners and vice versa.

In Applebaum's *Metaphysics of Notation*, the two versions of the score may have two different types of relationship between performing and listening. In the first version, the performers and listeners are perhaps the same one, or there are many performers trying to realise the score, and the listener will only enjoy the sound. In the second version, the performers and audience may be difficult to discuss. If the function of the video is the same as art in a museum, or the book as *Mo-No*, people who view the video would be the performers, and meanwhile, they will perform the score in their mind, so they are the audience as well. It is the same as *Mo-No*, or the first version of the score. Yet, the video controls the speed of the demonstration of the score, and how the score will be exhibited. So, in this case, the video would become the performer, and people who watch the video would be the audience. Meanwhile, in the audience's mind, there is a performing-to-listening process, and it is originally the performing system. The change of the mediation of demonstration changed the relationship of performing and listening. In this case, the score becomes a type of instrument, although it does not function to allow people to play it as usual, and it may lead to another discussion about the role of score and instruments which influences my installation.

Here I will discuss the role of performers and audience in my notation and music experience. As I introduced before, my idea of notation is using objects to separate a space into several sub-spaces and the process of visiting the space can be considered as both performance and audience. The happening within the space is an experience of music. Similar to people, who read the score of *Mo-No*, playing the role of both performer and audience. When the visitors go through the space as performers, they complete the listening at the same time. But I will establish

a 3D space, in which the objects will be the installation. If I consider my installation as a score, those objects that construct the score as notation will allow visitors to make sound, then the notation will become an instrument. In his essay *scores as instruments*, James Saunders (2012) mentioned a situation that the “score is inextricably bound to the instrument”, so the score has an “additional role” as an instrument. From Saunderson’s idea, there is a way to explore the sound. Under my consideration of 3D notation and music experience, the sound in the experience of visiting the space would be only acknowledged as background noise, although people may make the sound or even play the music in the space. The performance indicates any movement in the space. But Saunders’ study provides me with another perspective towards the performance of 3D notation. If the notation is an instrument, the performance of the installation would have two different layers.

Firstly, I will consider everything happening in the process of visiting as a part of the music experience, so moving through the space could be the first layer of performing. When they are performing another object, there is a kind of second layer of interpretation. Later in my commentary, I will use my installation to unfold the discussion of different layers of interpretation.

2.4 Future Study

In the future, I may concentrate on shape cognition to study more how people can imagine the sound or music through the shapes in graphic notation. Although my focus is the music experience and how I can use a space to allow people or other objects to visit the space, the way that graphic notation arouses people’s mind to imagine the music will provide me with more possibilities to construct the space, and I can also use shapes or images to invite people to enjoy their trip in the space.

Secondly, I could apply synergy theory to study different layers of energy from performance and listening – the role of composers, performers, and listeners would be more complicated. Synergic theory is usually applied in architecture. Different layers of expression in architecture, such as the shapes, the designing, or even decoration, will play a role in making the architecture more energetic. I find my installations include many different layers of expression, which require people to think about the ontology of the notation, the meaning of the music, the

role of performing and listening, and even the meaning of instruments. I will combine these questions together to further my study.

Chapter III Case Study 1 ---- *Time Slicing*



Fig. 3.1.1. *Time Slicing*. A part of intallation, photographed in Toast House, University of Huddersfield.

3.1 Introduction

Time Slicing (2022) (Fig. 3.1.1) is my early piece in which I use several pipes to divide a space into several sub-spaces and people can walk through the paths in these subspaces. This installation originated from Earle Brown's graphic notation *December, 1952* (Fig. 3.1.2), in which Brown thought to establish an installation set around pianist (Brown, 2008). From his idea, the score of *December, 1952* is a kind of sketch for installation in a space-- rectangles with different sizes and shapes should be put in a room. My installation is established from his idea. *Time Slicing* was exhibited in the Toast House, Huddersfield, in January 2023.

The design of the pipes in the space is from the score of *December, 1952*, but I set up the pipes at different heights to fill the space, which can be considered a 3D version of the score of Earle Brown's notation. The pipes are originally an instrument, but in my piece, I only use them as objects to separate the space, and in my conception of 3D notation, these pipes as notation. The performance of the notation is walking around the paths created by these pipes, which is from the idea of Schnebel's *Mo-No*. In *Mo-No* Schnebel asks people to imagine the score without performing, and I evolve the idea from reading the score to walking through the score. The pipes with different sizes just combine ideas from both *December, 1952* and *Mo-No*. From Brown I

developed his graphic score to establish a 3D notation. His graphic designing would act as a map to build up a space, in which people can walk through the space. In *Mo-No*, Schnebel asked people to virtually perform the sound when they read the score. I combine those two ideas and consider the visiting in the space as a virtual performance of the 3D notation, and during the time spending in the space, the happening is what I call a music experience.



Fig. 3.1.2. Earle Brown. *December, 1952*.

3.2 from Pages to Space

The main concern of this installation is the transformation of the notation from paper to space. In the first part, I introduced that walking in a space is like the eye movement across a paper (Godøy, 2017), both of which would connect visual effects to a temporal domain. In Cage's *Fontana Mix*, he used the graphics as free shapes to establish the connection of pitches and time duration. In *Fontana Mix* (1958), Cage demonstrated his idea of indeterminacy by designing the two different shapes – lines and points on different materials pieces. When the two pieces are covered, the line on top will connect the points on the bottom (Fig. 3.2.1). Different ways of covering the paper on top will create different ways of connecting the points. The movement of the eyes across the lines will create a time-dependent scanning, which brings a transformation between atemporal and temporal features in mind (Godøy, 2017). From my

perspective, I transfer the idea from lines to traces, so I use pipes to separate the space to create the paths, and people's walking as eyes movement on the pages to interpret the score[MB2]. Moreover, people will go through the trace to create a sense of time, and music also has a temporal feature, so I call people's walking in the space the music experience.

From this point of view, the pipes in the space would be an instruction of walking. Different sizes of the pipes, different height from the ceiling, and different ways of hanging in a space will influence the people to visit in a space (Fig. 3.2.2), and I will use this different design of pipes in a space to create a special path to allow people to enjoy my space. The enjoyment of the people would be the performance of the notation; meanwhile they finish the listening of their own walking. So, people will be both performers and listeners at the same time. Moreover, I use Cage's idea of time brackets, and consider everything that happened in a time period could be an experience of music. As I introduced in the Chapter II that Cage mentioned in the time bracket, my 3D notation is an instruction of human's activity, not a traditional music. The human's activity can be considered as a music experience. When people enter the space of my installation, they enter a time bracket, everything happening during the time would become a music experience.

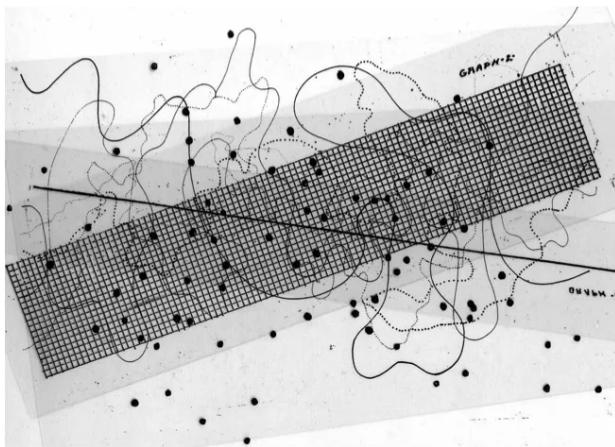


Fig. 3.2.1. John Cage. *Fontana Mix*.



Fig. 3.2.2. *Time Slicing*.

3.3 Score-Instruments and the Role of Performers

In this section I will concentrate my discussion on the role of performance and instruments in space. In the first section I have introduced the situation when visitors are in space. The visitors will be the role of both performers and listeners.

I also prepare beaters for visitors, and the pipes can be considered as instruments. It makes the situation complex. Because the pipes were considered as shapes of notation, it could represent the music features, such as pitches, rhythm, and dynamics. Although in the space, I only concern the pipes as notation for walking, and creating the sound by pipes is only part of the environmental noise during the walking. Yet, when I prepare the beaters, pipes may become an instrument, and when people in the space play the pipes, there is another new relationship between performing and listening. I consider there are two different layers of interpretation of the notation: the pipes as a 3D score, with people walking though it as performance, and using the beaters to play the pipes which could be considered a second layer of interpretation.

My original meaning of the beaters was just increasing the enjoyment of the space and to encourage people to spend more time in the space to create a long performance of my score. But it refers to another question about score and instruments. In chapter II, I have introduced James Saunders score-instrument idea. He furthered the study that different types of material will gain more possibilities, in which I have tried more in the third piece. It is a new perspective to view the meaning of instruments and performance since we have advanced further than traditional music. As Suanders wrote in his *Score as Instrument* at the last in his research:

“This approach to score making has a lot of currently unrealized potential, and requires more consideration.”

---James Saunders

3.4 Future Study

For future study, I may focus more on how objects, which could be pipes or other objects, influence walking and tours in space. It may refer to the psychological study of the influence of visual effects on body action. Moreover, I may record the trace of the people visiting in the space, and the trace would become another shape which can be performed as graphic notation. There would be more layers of interpretation of the notation that challenge the traditional performing-listening systems.

Chapter IV Case Study 2 ---- *Holder and Folder*



Fig. 4.1.1. *Holder and Folder* (2023). The first piece². Photographed in Barbara Hepworth Building, University of Huddersfield.

4.1 Introduction

Holder and Folder (2023) (Fig. 4.1.1) is an installation for textile, which consists of six different textile pieces with some shapes of acrylics hanging on the ceiling. It is a collaborative practice working together with the fashion designer Ayah Almasri. The idea of this installation follows the idea of *time slicing*; We designed many shapes for acrylics to hold the textile. We use laser- cutter to make many small pieces of acrylic, and hang them on the ceiling, and the space will be separated by textile and acrylics. The whole space will be considered as a score and people walk in the space as performing and listening. Moreover, I also follow the idea of *Mo-No* to design the image in the textile to arouse people's imagination of music, which is like the abstract images on the pages of *Mo-No*. Both walking and imaging of people will combine to create the music experience, which is like people will enjoy the sound both from environmental noise and sound from their imagination.

² This piece has not been exhibited yet, so the view is only one of the whole six pieces.

My collaborator Ayah and I have discussed many plans to design the shapes for textile, from abstract to graphic score. Finally, we decided to use some symmetry and shapes (Fig. 4.1.2) to give people more relevant ideas of the music. The symmetry and rotation of the shape is inspired from some images of *the Metaphysics of Notation*. In the *Handbook for the Metaphysics of Notation*, Applebaum interpreted one of his graphics (Fig.4.1.3) that the letter J on the left had a rotation and it refers to an inversion (Applebaum, 2008). Applebaum expressed that he wanted to connect his “adventure with traditional compositional devices” (*ibid*). “Counterpoint...may or may not be *heard* in *Metaphysics*, it can be seen clearly there” (*ibid*). Moreover, the shapes of acrylics originated from the shapes of sound waves (Fig.4.1.4), which could arouse people’s imagination of sound. Moreover, because of the flexibility of the textile, I can change the shape of the textile in demonstration, so one image in the textile would have a variant of ways of demonstrating, and each variant of the shapes would provide us with a different visual effect. I call this piece *Holder and Folder* because I also use acrylics to hold the textile, which will give people a different style of images. As well, textile also can be folded to twist the visual results (Fig.4.1.5).



Fig. 4.1.2. *Holder and Folder*. Designing effect of the first piece.

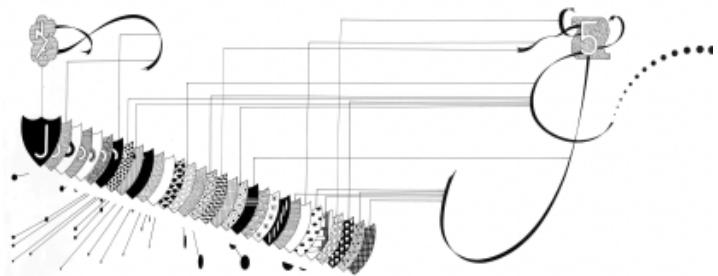


Fig. 4.1.3. *The Metaphysics of Notation* of Panel 4.

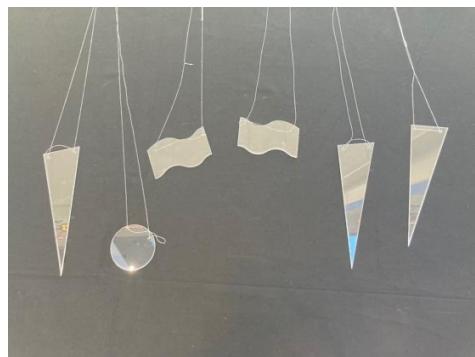


Fig. 4.1.4. *Holder and Folder*. Acrylics.



Fig. 4.1.4. *Holder and Folder*. Different style of demonstration.

4.2 Notating and Composing

Under my idea of music experience, the textile will separate the space and invite people to walk in the space, which maps notation and performance. And, as aforementioned, shapes in the textile, sparking people to imagine the sound, will work together as a navigation for people to walk in the space as music experience, which is from the idea of imagined sound in the mind with sound surroundings from ears together as a sonorous environment. In *Mo-No*, the sound around neighbours is controlled by composers, which could be considered as an independent part of the sound. The imagined sound in people's minds is different from the sound in their ears. Yet in *Holder and Folder*, both the imagined sound and walking as performing are originated from textile. The images and its variant in textile will arouse people's imagination and the textile itself will be extended or hung in the space as navigation. I may consider the process from designing the shapes in textile to using different ways to demonstrate (extending, hanging, or draping over the acrylics) is more like how composers demonstrate his sound in the mind through score. So, the designing of the images would be like compositional materials. Designers applying lines and shapes logically to create an image can be analogous to composers using pitches, harmony, rhythmic patterns to write music, and the way of how those images in the textile can be demonstrated would be considered as the notation. Different styles of notation may bring out different ways for performance and its sonic results.

From this point of view, the way of how the textile and acrylics can be exhibited is the notation and is also a process of the composition. I can choose which part of the image will twist on the acrylics, which is the same as choosing the pitches, harmony, rhythms, and instruments when I start to compose. But composers cannot demonstrate the sonic materials in their mind; they can show it through notation. After they demonstrate the sound in their mind, they have finished notation. However, in this piece, I show both compositional materials and the way of notating separately, and even, how I notate the compositional materials. Although all the terms---composing, notating, and compositional materials---occur under the conceptual level, it is a way to view the composing and notating, and how we use notation to record the sound in our mind.

4.3 the Function of Notation

As I mentioned before, the twist images and position of the acrylics will provide people more possibilities to walk and imagine the music if we consider the walking and imagining as performance. As Hugh (1986) in his writing *Musical Notation—old and new* mentioned two main direction of the notation in the installation pieces: “performers’ action”, and “musical result”;³ the textile functions as an instruction for the movement of the performers—people, and the pieces with different shapes of acrylics, which imitate the sound waves, represent sonic results. Although the shapes do not end up with sound, it follows this concern on contemporary notation.

Moreover, the notation of this piece is from Cage’s score of *Fontana Mix*. The notation in *Fontana Mix* consists of two parts: the lines on the paper (Fig. 4.3.1) and points on a transparent plate (Fig. 4.3.2). The lines will have many different ways to cover the paper part to shape the points to create indeterminacy. Performers can play the sound through the path of the line to realise the sound. For my installation, although it has not yet been exhibited, I will apply Cage’s concern about indeterminate position of the acrylics through hanging on the roof, which would be sporadically located in a space, and fabric pieces which will drape over the acrylics to connect them.

4.3 Future Study

In this chapter, I discussed the difference between composing and notating from my installation, and two ways of demonstration or notation. There are many valuable parts in this section. The one is how artists use different types of ways to show the images. The consideration should start from the beginning of the designing. It is the same that notation should start from when we consider the sonic materials, through the sonic materials we can consider the style of notation. The second study would be the notation for points and lines. Although Cage has established a score, it still has many possibilities to create the notation from the combination of points and lines, especially in a type of 3D.

³*Eye music: the graphic art of new musical notation: (exhibition touring) Sheffield, Mappin Art Gallery, 7 June to 13 July 1986 ... (and elsewhere)* by Hugh David, Julie Lawson, etc.

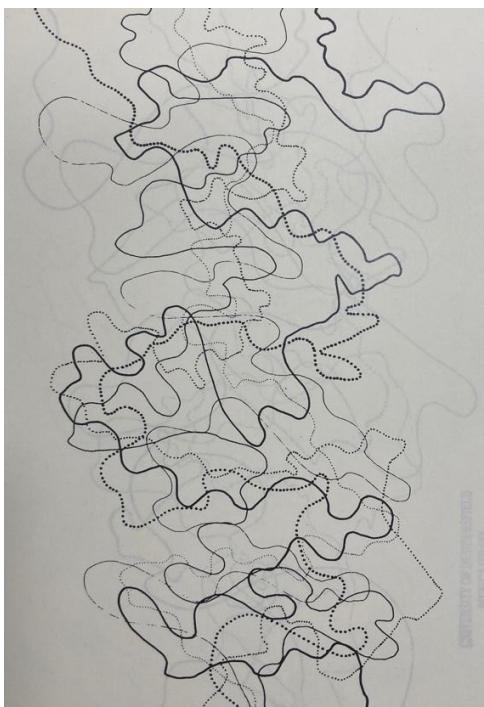


Fig. 4.3.1. *Fontana Mix* (1958).

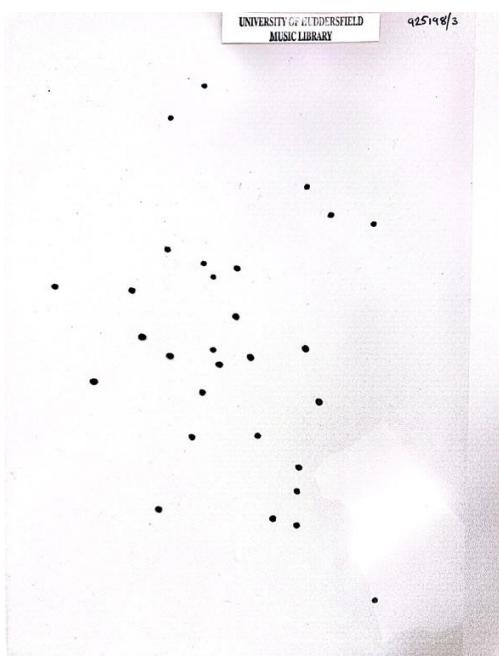


Fig. 4.3.2. *Fontana Mix* (1958).

Chapter V Case Study 3 --- Transcendental Boundaries



Fig. 5.1.1. *Transcendental Boundaries* (2023). Photographed at Barbara Hepworth Building, University of Huddersfield.

5.1 Introduction

Transcendental Boundaries (2023) (Fig. 5.1.1) is a sound installation collaborated with Ayah Almasri, in which I transfer the 3D notation from a room to a board. The notation is traces made by laser cutter of wood on a board, and freely moving marbles. The traces on the board can be considered as paths, which is the score, and marbles moving through it is the performance. It has been exhibited for the Dual City—Non Artist Exhibition by Peeling States in London Location.

It consists of three main parts. The bottom is set up as roly-poly (Fig. 5.1.2), which will allow board shaking freely. I will use marbles moving on the board to symbolize people traveling around the world, so the original idea is to use a mechanical installation which can shake the board automatically. But mechanical installation is hard to design, so Ayah and I decided to use roly-poly, and it allows people to interact with the installation.

The main part is the shapes and blocks on the board, as Fig. 5.1.1. It is the notation or can be considered as a score, which is the same as the idea of separating space. The original idea is using different layers to represent the sea, which means people traveling across the sea and bumping into each other. Finally, we decided to design the borders of the countries, but we

would prefer to design a new border without any geographic connection. I used a cupboard to shape a model (Fig. 5.1.3) and then we designed the whole shape for a laser-cutter. The block on the board means different buildings in the world. Some of the shapes symbolize the culture of the countries. Such as, a leaf-like shape representing the leaf in Beijing. The fortitude shape will build up together as a castle in Europe (Fig. 5.1.4). The china and ceramic block and metal nails are designed for the cities or places made for different materials, and as a sound installation, different materials on the board will create sound results when marbles bump to them.

The third part is the marbles. They can be considered as the visitors in the first piece. If the trace and blocks are a kind of a score, the marbles also play a role of performance. The idea of marble is from Zimoun's sound installation. In Zimoun's piece, he always uses a large number of small objects bumping each other to create a large sonorous entity.



Fig. 5.1.2. *Transcendental Boundaries*. Roly-poly part.



Fig. 5.1.3. The cupboard of the shapes designed for laser-cutter.



Fig. 5.1.4. The leaf and fortitude.

“A variety of symbols are employed to represent the diverse encounters one may come across during their travels. Marbles depict individual journeys. As they roll and move, they symbolize the paths taken by each person as they navigate through life. The presence of a roly-poly base influences the movement of these marbles, adding an element of unpredictability to their trajectories. This unpredictability reflects the ever-changing nature of travel and highlights the need for adaptability to new circumstances.”

—Ayah Almasri

5.2 Two Systems under the Music Communication

For *Transcendental Boundaries*, I consider it as an interactive sound installation. There is another part that triggers the installation, which is from outside of the installation. So, the situation is more complex than the first two. In *time slicing*, when the pipes are notation, people are both performers and listeners. When the pipes become an instrument, people will be divided into two groups: the one who plays the pipes is the performer, and the left are listeners. But everything happens in space. What changes is just the role of performing and listening, and the function of notation and instruments. Yet in this installation, there is a new relationship—the people outside the installation and the installation. So, there is a new system which is outside the notation system, and I call it a listening system. In the notation system, score would be the sender, and performers would be the receiver. And, in my concept of music experience, the performer is also the listener. In *Transcendental Boundaries*, the traces and shapes are the sender and marbles are the receiver. But in the listening system, the marbles become the sender, and people, who are not in the system, become the receiver.

In the chapter of *time slicing*, I discussed a situation for future study. If I record the trace of people's tour in space, the shape of the tour will become another type of graphic, and I would ask other people, who are not in the installation, to interpret the graphics as sound or other performance. This situation would be similar to this installation: people outside the installation—outside the notation system—establishing a new system—listening system. In this case, the marbles have three different roles. In the notation system, they are the performers and at the same time the listeners. In the listening system, they are performers, and people who trigger the installation are listeners. However, the situation is more complex, because if people trigger the installation to create the sound, installation would also be considered an instrument, and the people who trigger the installation would become the performer.

In *Transcendental Boundaries*, people can even control the speed of the marbles through using different dynamics to control the rolly-polly, so it is more like an instrument, and that is the reason I call it a sound installation. From this point of view, the sound in this installation is not an environmental noise, but a sound that is created by the notation: both pitches and time duration is decided by the materials of the installation and distance of the blocks. The score-instrument relationship and the meaning of instrument is not my focus in this study, but I can find a deeper and more complicated relationship in this installation.

5.3 Future Study

Firstly, for the installation, there are more creative shapes I can design for the traces and blocks for marbles, then the marbles will create more types of sound. Complex shapes will represent more different ways of notation. I may transfer a real land view to a virtual map, which is like Cage's *Ryoanji*. Moreover, it would be possible to develop the study using different materials to create the sound, in which I may explore more possibilities on score-instruments. The role of instruments and performers would need to develop in this research.

Summary

Throughout this research, I used other composer's concepts to demonstrate how I have evolved from their idea to establish my conception of notation and music experience. Applebaum and Schnebel use notation to lead people to imagine the sound or to recall a familiar sound in their mind. I develop their idea to establish my 3D notation and invite people to walk through the space. Under my consideration, walking in a space is like reading the graphic notation, the traces and paths leading people's movement could analoge to graphics sparking people's imagination. In my piece *Time Slicing*, I use pipes to split a space into subspace under Earle Brown's graphic notation, and the designing of the positon of pipes in the space will consider the way to invite people to move within it, as the graphic notation. In *Holder and Folder*, the textile will use the images on it to arouse people's imagination; meanwhile it will separate the space as well, to allow people to navigate within a 3D space.

Moreover, following with the idea of Cage's conception of time brackets, I consider that everything happens within my 3D space would be considered as music experience. In Cage's piece, the role of performers and audience is clear, and performers will play the music according to the score. In *Mo-No*, or the pictographic score of Applebaum, the imagining of the sound would simultaneously be a performance and a listening to the music. The reader or the visitor would be both a performer and audience, which is the same happening in the 3D notaition--performers and listener would be the same one. But in the *Transcendental Boundaries*, the relationship between performers and listener would be more complicated, because it is a sound installation. The marbles will create the sound whilst they move through the trace. But in the sound installation, there is others--people who trigger the installation. They are not moving through the trace, but they are the performers of the installation, and at same time, they are the listeners.

Overall, I believe this research challenges the meaning and boundaries of many traditional conceptions in music, and several experimental projects have been created under these concepts to exemplify this.

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Time Slicing

Artists

Ming Yang

Materials

- Pipes
- Fishing Lines

Program note:

Drawing on Earle Brown's graphic notation *December, 1952*. Resonant pipes are suspended in a three dimensional representation of Brown's score design, discussing the musical score as metaphor. Through interacting with the objects in space we find an (in)visible sound the nonetheless seems to take up space, in turn creating the perception of a slice of time delineated by the sounds generated.



Transcending Boundaries

Artists

Ayah Almasri

Ming Yang

Materials

- wood
- metal steel (dome)
- ceramic
- porcelain

Measurements:

W x L x H: 90cm x 90cm X 23cm

Program note:

The installation originates from a mind travel between two friends, one from Beijing and the other from Tripoli. Despite never having physically visited each other's cities, their communication serves as a channel for exploration of each other's cultures. The piece expresses the notion of home and the dreams experience moments of connection, understanding, miscommunication and loss.

A variety of symbols are employed to represent the diverse encounters one may come across during their travels. Marbles depict individual journeys. As they roll and move, they symbolize the paths taken by each person as they navigate through life. The presence of a rolypoly base influences the movement of these marbles, adding an element of unpredictability to their trajectories. This unpredictability reflects the ever-changing nature of travel and highlights the need for adaptability to new circumstances. Furthermore, it emphasizes the qualities of resilience and flexibility required to successfully navigate through unfamiliar territories.



Holder and Folder

Artists

Ayah Almasri

Ming Yang

Materials

- Silk satin
- acrylics

Measurements:

W x L: 90cm x 90cm

Program note:

Holder and Folder is a textile installation, inspired by the score of John Cage's *Fontana Mix*. *Fontana Mix* is a music in which Cage pursues indeterminacy through notation. The acrylics represent the idea of consistency and the textiles that drape over the acrylics represent a structural indeterminacy. Moreover, the textile will split the space into subspaces and people can walk through these spaces. By walking, the people can imagine the sound from the shape in the textile. The walking within the space would be considered the performance of this notation, based on the 3D space.

