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# 'SOUND PATHS: HEPTONSTALL'; USING PLACED SOUND AND AUGMENTED REALITY TO ENGAGE AUDIENCES WITH THE HISTORY OF A PERFORMANCE LOCATION

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## INTRODUCTION

'Soundpaths: Heptonstall' is a site-specific musical work that attempts to engage users in the history of its performance location. It does this through the use of GPS and Augmented Reality (AR) technology. The work is performed through headphones via an app that can be downloaded for free onto GPS enabled Smartphones. Adorno suggested that sound and landscape can be used to "think with",<sup>1</sup> while Hudson<sup>2</sup> has written that through 'site-specific discourse' it is possible to use art to examine the multiple, overlapping histories embedded within a location. GPS technology allows for the mapping of an audio composition over a landscape so that it is experienced within the context of a very specific geography. Passages of audio can be attached to specific locations, so that as participants move through the landscape they experience audio that is tailored to their journey. Behrendt has termed this type of work "placed sound".<sup>3</sup>

"Here, artists or designers curate the distribution of sounds in (outdoor) spaces, often – but not exclusively – by using GPS. The audience typically experiences these sounds via headphones and sometimes via mobile phone speakers or other mobile speakers. The audience does not contribute their own sounds or determine the location of sounds[...] But each member of the audience creates their own version or remix of a 'placed sound' piece, depending on their trajectory."<sup>4</sup>

A placed sound work is tied to a specific location by definition, and this offers the artist an opportunity to tap into deeper layers of meaning associated with that location. Indeed, in their Brief Bibliography and Taxonomy of GPS-Enabled Locative Media, Bleeker and Knowlton show the greatest interest in "experiences that take into account the geographic locale of interest, typically by elevating that geographic locale beyond its instrumentalised status as a 'latitude longitude coordinated point on earth' to the level of existential, inhabited, experienced and lived place."<sup>5</sup> Placed sound works are at their most effective when engaging with the historical, cultural or environmental context of their location of performance.

Augmented Reality (AR) is often perceived to be in the visual domain; users can view digital content overlaid onto the real world by looking through a phone screen or smartglasses. However, AR experiences can be created for the other senses too<sup>6</sup>; "Audio Augmented Reality"<sup>7</sup> (AAR) takes place when a real-world soundscape is overlaid with digital sound.<sup>8</sup> Van Krevelen and Poelman<sup>9</sup> suggest that in order to be classified as AR, an experience must satisfy three conditions:

1. Combines real and virtual objects in a real environment.

2.Registers (aligns) real and virtual objects with each other.

3.Runs interactively, in three dimensions, and in real time.

Green<sup>10</sup> relates these conditions specifically to AAR and expands upon them accordingly; a listener must be able to engage with the virtual sound layer and their surrounding, real environment concurrently. The virtual layer should also align contextually and/or spatially with aspects of the real environment; therefore virtual content should be included that “sympathises with reality” or that appears to “originate from a comparable point in space”<sup>11</sup> to real objects. Finally, in order to be designated an AAR experience, the virtual sound layer must be delivered in real-time and in three-dimensions (the listener should feel immersed), while also responding in some way to the listener’s activity.

As well as listening to recorded material, listeners will experience the soundscape of the performance location in real-time. This interaction of real-time and recorded sound will guarantee a unique listening experience to every participant, but AAR offers the opportunity to do more than that. Behringer and Kastel assert that “Augmented Reality has significant potential for enhancing the human interaction with cultural contexts through enabling a deeper engagement.”<sup>12</sup> The challenge is therefore to use this technology to encourage engagement with the wider context of a location; in the case of ‘Soundpaths: Heptonstall’ an engagement with the history of this remarkable location is the goal.

### **The history of Heptonstall**

Heptonstall is a village of fewer than fifteen hundred people in the Calderdale borough of West Yorkshire in the UK. Sitting high on a hill above the town of Hebden Bridge, it is a small place with a rich history; the village being mentioned as far back as the Domesday Book in 1087. Heptonstall is a beautiful place, but the more I read about it, the more I discovered that much of its history had a dark edge to it. The village is probably most famous as the final resting place of the poet Sylvia Plath, who was buried in the New Graveyard in 1963 following her suicide. In the adjoining Old Graveyard lies ‘King’ David Hartley, leader of notorious local counterfeiting gang, the Cragg Vale Coiners. Hartley was hanged in York in 1770 for forgery and diminishing the coin, but retains a reputation as something of a folk hero in the area; people leave coins on his grave to this day. Legend has it that the Coiners were responsible for the torture and murder of labourer Abraham Ingham in The Cross Inn pub, just a few meters from the Old Graveyard. Ingham was supposedly burned alive in the fireplace of the pub, then known as The Union Cross, for threatening to implicate the Coiners in the murder of a local official. The fireplace in question was uncovered during the renovation of the pub in 2016.<sup>13</sup>

The Old Graveyard alone is thought to contain more than one hundred thousand bodies; a remarkable number for such a small village. Although exact numbers are impossible to confirm, burial registers from 1594 to 1812 account for over twenty-five thousand. The numbers are so large as burials in the Upper Calder Valley could only take place in Halifax or Heptonstall until the 17th Century.<sup>14</sup> The Old Graveyard is actually shared by two churches. St Thomas à Becket Church (more commonly known as Heptonstall Old Church), a striking ruin, dates back to the thirteenth century in places, while the newer Church of St Thomas the Apostle was completed in 1854. The village also has a Methodist chapel; the oldest in existence to have been continually in use since its inauguration. The Methodist leader, John Wesley, laid the foundation stone of the chapel, which was completed in 1764.<sup>15</sup>

### **Lyke Wake Dirge**

Given the history of the village, I was drawn to the idea of using a funereal folk song as the melodic basis for my composition. ‘Lyke Wake Dirge’ seemed like an extremely good fit. The song is written in an old form of Yorkshire dialect and is therefore thought to have origins in the area. In 1686, John Aubrey recorded accounts of the song being sung as far back as 1616, but it is likely to be much older than that. It is both a prayer for the dead, and an account of the soul’s journey to purgatory.<sup>16</sup> The song

is therefore thematically appropriate, and has at the very least been in existence for the majority of the historical period to which I aim to draw people's attention.

There are two versions of Lyke Wake Dirge, each with a different melody. The best known version has been recorded by the likes of Pentangle (1969) and Matt Berninger with Andrew Bird (2014). I was drawn to the lesser known version however, for which I was able to find sheet music.<sup>17</sup> To the melodic basis provided by the song, I began to flesh out a harmonic arrangement.

## MAPPING MUSIC TO A PHYSICAL LOCATION

The mapping of Lyke Wake Dirge to Heptonstall ties musical structure to real, physical locations. As participants wander through the village they are essentially 'remixing' the song in real time. In order to provide participants with an immersive experience, the mapping had to be done in such a way that the musical passages empathised with the physical locations they were mapped to.



*Figure 1. The mapping of audio over the village of Heptonstall*

Participants in 'Soundpaths: Heptonstall' do not have to take a set route through the village. Instead, the work encourages a mode of discovery based on exploration. Hight explains of experiences like this, that "in a sense, the ultimate end-author in locative narrative is the movement and patterns of the person navigating the space. The narrative is dictated by their choices, aesthetic bias in the physical world toward certain sections, buildings or objects to move toward and investigate and their duration and breadth of movement. The narrative is composed in sections, but is edited by the movements of the person with the locative device."<sup>18</sup> The work is designed in this way in order to make the experience more engaging. Allowing for unrestricted exploration results in a less linear experience, which in turn makes a work feel more interactive.<sup>19</sup>

In total, 41 audio passages were mapped over Heptonstall, covering the entirety of the oldest part of the village. A number of different compositional techniques were used in order to make the experience both musically cohesive and empathetic to its surroundings.

## Marking locations through instrumentation and melody

One of Green's requirements for AAR experiences is that virtual and real objects are aligned in space, but he goes on to say that "the contextual alignment of an augmentation with reality is of equal or greater importance than spatial alignment. For contextual alignment, a conceptual link between the virtual and

real realms is needed.”<sup>20</sup> The three graveyards in Heptonstall (the Old Graveyard, New Graveyard and the graveyard of the Methodist chapel) are important locations in the village and are also thematically significant to this work. They are the only three locations in the work where voices are used. This ties the locations to one another in the context of the work, while also acting as an echo of how performances of Lyke Wake Dirge would have once been enacted; sung over the body at a wake.<sup>21</sup>

Landmarks in the village are musically annotated in other ways too. The Cross Inn pub, the supposed site of Abraham Ingham’s murder, is marked with a particularly aggressive drone along with scraping atonal strings; perhaps more reminiscent of a folk horror film score than traditional folk music.<sup>22</sup> The door to a cell, in use until the early 19th century and known as the ‘lock-up’ or ‘dungeon, is also marked with sinister tones. The ruins of St Thomas à Becket Church feel like a real focal point of the village, and for this reason I chose them to host the only rendition of Lyke Wake Dirge that features lyrics. They therefore become a focal point for this work in turn. As the church is entered, all instrumentation falls away and the song is taken up by a solo voice that is treated to sound as though it is reverberating through the ruins. Gradually the single voice is joined by others, along with a drone that helps to gradually build the song towards a climactic ending.



*Figure 2. The ruins of St Thomas à Becket Church are a focal point of the work*

### **Underpinning with drones**

The work is underpinned with musical drones – sustained tones, “usually rather low in pitch, providing a sonorous foundation for a melody or melodies sounding at a higher pitch level.”<sup>23</sup> Drones are common in folk music, and so make sense in this musical setting. They also provide a constant bed out of which different melodic elements can emerge and disappear. This was a useful compositional tool; the drones sustain in between various melodic passages – passages that were often tied to landmarks. As participants approach these landmarks, the corresponding melodic element will begin playback, and as they leave, these elements sink back into the underlying drones. Hazzard outlines a further benefit in the use of this kind of technique in his Guidelines for Composing Locative Soundtracks; he suggests that upon leaving an area of focus “the soundtrack tenders a stepping down of auditory activity to indicate to the user that they are not in areas of interest, but maintains the auditory stimulus to signify continuation of the experience.”<sup>24</sup> The audience are thus subtly fed information regarding where they should focus their attention.

### **Harmonic variation**

In order to sustain interest in the experience, it was deemed that some harmonic variation would be desirable. Two different chord sequences were therefore composed to accompany the Lyke Wake Dirge melody. The first of these chord sequences (A.) is mapped to the southern part of the village, while the

second (B.) is mapped to the northern part. The idea is to further embed the song structure into the geography of Heptonstall; as participants move into a new part of the village, the music takes on a different feel. The mapping of these chord sequences can be seen below.



*Figure 3. The mapping of chord sequences used in the work*

The two chord sequences were written in different keys. This provides a more obvious and dramatic musical change than if both would have been written in the same key. However, this posed a problem as they needed to be underpinned by drones of different keys and if these drones overlapped, the result would be dissonant. A ‘transition zone’ was therefore created in which no drones are featured. The music featured in this area was designed to work harmonically with both chord sequences so that the transition zone could overlap with both. Seamless playback of musical material was thus maintained.

### **Building musical development into a walk through Heptonstall**

The importance of musical development when it comes to holding audience attention has already been discussed. Different portions of the village play host to different chord sequences for this reason. A further opportunity for musical development lies in the way that the Lyke Wake Dirge melody is introduced to participants.

A decision was made to mark the two main entrance points into the village with intro/outro passages. These two passages tease fragments of the Lyke Wake Dirge melody; hinting at it and introducing it gradually. If entering the village along the main road from either east or west, one of these passages will therefore act as the introduction section of the work. If leaving the village along the main road, then one of these sections will act as an outro, before fading into a drone that itself fades away as the village is left behind. Of course, it is impossible to know exactly where participants will start their walks; they may well press play for the first time in the middle of the village. Nonetheless, it still seems to make sense to mark the physical boundaries of the work in this way; whenever a participant leaves the area marked out by the work, there should be a satisfying musical conclusion. If they re-enter, they will hear the melody and chords gradually coalesce around the edges of the village, before coming together at the centre of Heptonstall.



*Figure 4. The zones containing intro/outro passages are highlighted*

### Use of field recordings

Alongside traditional folk instrumentation, numerous field recordings – gathered from Heptonstall and the surrounding moors - have been incorporated into this work. Some of these recordings are played back unprocessed, while some have been manipulated into drones or melodic motifs that, in their timbre, still recall local soundscapes. Examples of this are the two drones that have been created from the sounds of crows in the Old Graveyard, sinister rumbles generated from the sound of grouse on the moor, the sound of the bells from the Church of St Thomas the Apostle that have been woven into the music that surrounds it, or synthetic bass tones that have been shaped using bird calls captured at the edges of the village.

The intention is that these sounds add an organic quality to the music. The sounds recorded in the village appear to be embedded in the soundscape of the location; rising out of it and creating moments of interplay with the sounds of the real world. The sounds recorded on the moors evoke older, wilder times and themes of nature, death and rebirth.

### CONCLUSION

‘Soundpaths: Heptonstall’ draws attention to specific moments in the history of the village by annotating landmarks with sound, but the aim of the work is not necessarily to draw attention only to a few notable historic events. The nature of the experience dictates that only the bare minimum of detail surrounding these events can be imparted to participants in any case. Instead, the intention of the work is to encourage a meditative exploration of this intriguing place. An opportunity to be immersed in a piece of music and contemplate the meaning of this specific song in this specific location.

The duration of the experience is dependent on the participant, but to explore all of the material provided by the app would take half an hour or more. This is a sustained period of time to explore Heptonstall, during which the participants are encouraged to contemplate the history of the village from a certain perspective. It is hoped that through the provision of an immersive experience that makes use of AR and placed sound, a “deeper engagement”<sup>25</sup> (Behringer and Kastel 2016, 197) with the location is fostered; one that will lead to further research into Heptonstall and its history once the experience is over.

## NOTES

- <sup>1</sup> Quoted in Tia DeNora, *After Adorno: Rethinking Music Sociology*, (Cambridge: Cambridge University Press, 2003), 3.
- <sup>2</sup> Martyn Hudson, "Archive, Sound and Landscape in Richard Skelton's Landings Sequence," *Landscape* 16, no. 1 (2015): 63-78, doi: 10.1179/1466203515Z.00000000041.
- <sup>3</sup> The term is interchangeable with the more common phrase "locative audio" but is perhaps more useful in this context as it indicates the intentionality in the audio design.
- <sup>4</sup> Frauke Behrendt, "Locative Media as Sonic Interaction Design: Walking through Placed Sounds," *Wi: Journal of Mobile Media* 9, no. 2 (2015).  
[https://www.researchgate.net/publication/279536284\\_Locative\\_Media\\_as\\_Sonic\\_Interaction\\_Design\\_Walking\\_th\\_rough\\_Placed\\_Sounds](https://www.researchgate.net/publication/279536284_Locative_Media_as_Sonic_Interaction_Design_Walking_th_rough_Placed_Sounds).
- <sup>5</sup> Julian Bleecker and Jeff Knowlton, "Locative Media: A Brief Bibliography And Taxonomy Of GPS-Enabled Locative Media," *Leonardo Electronic Almanac* 14, no. 3 (2006). <https://www.leoalmanac.org/wp-content/uploads/2012/07/Locative-Media-A-Brief-Bibliography-And-Taxonomy-Of-Gps-Enabled-Locative-Media-Vol-14-No-3-July-2006-Leonardo-Electronic-Almanac.pdf>.
- <sup>6</sup> Anton Nijholt, "Weaving Augmented Reality into the Fabric of Everyday Life" (paper presented at ISEA 2022: Possibles, Barcelona, Spain, June 10-16, 2022).
- <sup>7</sup> The term "Aural Augmented Reality" can also be used.
- <sup>8</sup> Reinhold Behringer, "Augmented Reality," in *Encyclopedia of Computer Science and Technology*, ed. Allen Kent and James Williams (New York: Marcel Dekker, 2001), 45-57.
- <sup>9</sup> Rick van Krevelen and Ronald Poelman, "A Survey of Augmented Reality Technologies, Applications and Limitations," *International Journal of Virtual Reality* 9, no. 2 (2010): 1-20, doi: 10.20870/IJVR.2010.9.2.2767.
- <sup>10</sup> Matt Green, "Sounding Out Aural Augmented Reality" (paper presented at the 1st Fascinate Conference: Thoughtful Technology and Beautiful Interfaces, Falmouth, UK, August 28-30, 2013).
- <sup>11</sup> Green, 1.
- <sup>12</sup> Reinhold Behringer and Thiemo Kastel, "Augmented Reality in Cultural Context," in *Kultur und Informatik: Augmented Reality*, ed. Carsten Busch and Jürgen Sieck (Berlin: Verlag Werner Huelsbusch, 2016), 197.
- <sup>13</sup> "Old Fireplace Discovery Stokes Up Coiners' Legend," Halifax Courier, June 3, 2016.  
<https://www.halifaxcourier.co.uk/news/old-fireplace-discovery-stokes-up-coiners-legend-1233654>.
- <sup>14</sup> Diana Monahan, Paul Monahan, and David Cant, *Heptonstall Trail*, (Hebden Bridge: Pennine Heritage and Hebden Bridge Local History Society, 2005), 11.
- <sup>15</sup> Monahan et al., 27-28.
- <sup>16</sup> Jacqueline Simpson and Steve Roud, ed. "Lyke Wake Dirge," in *A Dictionary of English Folklore* (Oxford: Oxford University Press, 2003). <https://www.oxfordreference.com/view/10.1093/oi/authority.20110803100120525>.
- <sup>17</sup> "Lyke Wake Dirge: Version 2," The Yorkshire Garland Group, accessed May 22, 2022,  
[https://yorkshirefolksong.net/song.cfm?songID=86&as\\_qdr=y25](https://yorkshirefolksong.net/song.cfm?songID=86&as_qdr=y25).
- <sup>18</sup> Jeremy Hight, "Views From Above: Locative Narrative and the Landscape," *Leonardo Electronic Almanac* 14, no. 7-8 (2006). [https://www.leoalmanac.org/wp-content/uploads/2012/09/09\\_JHight.pdf](https://www.leoalmanac.org/wp-content/uploads/2012/09/09_JHight.pdf).
- <sup>19</sup> I am encouraging an approach to place known as "Topos" to the Ancient Greeks. See Parmar's "Geos, Topos, Choros" more information. He defines Topos as being "less concerned with directed travel than peripatetic wanderings and the experiential nature of the journey." (234) It is thus hoped that, by dispensing with a map or signposts, the experiential nature of this experience is foregrounded.
- <sup>20</sup> Green, "Sounding Out", 5.
- <sup>21</sup> Simpson and Roud, "Lyke Wake Dirge".
- <sup>22</sup> Recent folk horror soundtracks that have used a similar sound palette include Mark Korven's score for *The Witch* (2016) and Bobby Krlic's score for *Midsommar* (2019).
- <sup>23</sup> Mark DeVoto, "Drone," in *Encyclopedia Britannica* (Chicago: Encyclopædia Britannica, 2011),  
<https://www.britannica.com/art/drone-music>.
- <sup>24</sup> Adrian Hazzard, "Guidelines for Composing Locative Soundtracks," PhD diss., (The University of Nottingham, 2016).
- <sup>25</sup> Behringer and Kastel, Augmented Reality, 197.

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