Exploring aspects of place through sound mapping

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Abstract: Combining aural and visual elements of a place can be a powerful way of exploring the intersections of time, history and geographical features that exist within a location. One way of combining these elements is through sound mapping and cartophony, where spatial and physical information is used as a way of representing an individual's surroundings and realities of a place, and particularly highlighting personal associations, emotions and memories. This paper details the author's processes in incorporating place into compositional practice through a combination of field recordings and sonification. The Lost (2021) - an audio-visual contemplation of the sensation of loss and the subsequent feelings of dislocation, and how these feelings related to the artist's own life experiences at the time. The Lost is a work partly based on a map of Perth from 1838, detailing many of Perth's now-lost wetlands. This map was then sonified using Iannix (a graphical sequencer), and the sounds were processed and combined in Ableton Live (a Digital Audio Workstation) with a field recording from the still-existing Herdman's Lake and sonified longitudinal and latitude values of these lost wetlands. The Lost is an exploration of connections between artist, history and place, and how these aspects can inform the creation of a work. Through this practice, the author aims to explore how sound and visual elements can combine and resonate with the other, and how such a practice can highlight the connections between artist and place.

1   Introduction

Landscapes can invoke deep and visceral emotions within artists, often acting as a conduit for creative inspiration. Being immersed within a place can be a powerful experience, with past and present memories constantly intersecting as an individual traverses a place. The act of immersion into a landscape can lead to the creation of multiple forms of dialogue - firstly, within the artist themselves as they process thoughts and emotions a landscape triggers within them, then secondly between the artist and the landscape as they forge navigational methods over the land's geography.

My practice has been focused on exploring methods of expressing the relationship between self and place through the creation of digital audio-visual works. I have been interested in combining reflections on my personal experiences with place in the creation of multi-layered work, in order to reflect upon multiple narratives of place. Underpinning my practice is exploring the visceral relationship between observer and the landscape, and how to express personal narratives formed during my time in a place to an audience.

Combining aural and visual elements of a place can be a powerful way of exploring the intersections of time, history and geographical features that exist within a location. A challenge for works based on place are situating multiple sources of information (chiefly, combining visual and aural information) and weaving these sources into a multi-layered narrative. The combination of sound and images can provide a multi-sensory experience of place for people, and allows for the convergence of geographical and cultural aspects.

This paper will be presented in three parts, starting with an introduction to place and self-reflexive practices in music composition, followed by a broad overview of sound mapping, and finally moving onto a discussion on one of my works influenced by these concepts, titled *The Lost (2021)*.

2   Place and Self-Reflective Practice

Any discussion of place requires unpacking of the meaning of 'place', and how such a definition can be applicable universally. In the simplest sense, 'place' is used to refer to either a location or the occupation of said location, differentiated from the concept of 'space' due to its increased specificity. The idea of place covers cultural, social and personal expectations, as well as geographic boundaries and shapes. There is also the symbolic role of place as a metaphor, turning physical reality into a cultural representation (de San Eugenio-Vela, 2014, p. 21) and mediating the relationship between the person and the natural scene through cultural references. Some attempts to acknowledge and incorporate these myriad aspects include John Agnew's definition of place as a threefold process – physical place (as a location), relationship of a site to its spatial boundaries (the locale), and the cognitive and physical interactions between human and site (sense of place) (Agnew, 2011, p 23).

In my work, I view the concept of 'place' in the widest sense, conceiving of it as a layering of narratives encompassing its physicality, ecology, embedded knowledge such as its associated history and culture, and the intersections these facets have with my own personal history and responses. My interest in natural environments and landscape originated from noticing how a place affected me during a visit. As noted earlier, I have been interested in combining reflections on my personal experiences with place in the creation of multi-layered work, combining multiple narratives of place – echoing cultural geographer James Thurgill's observation that works can be both representations *of* a place, as well as representations of the time spent *within* place (Thurgill, 2016). In my audio-visual creative works, there is a blurring of boundaries between different temporalities and narratives. I believe this compositional approach offers a holistic view of a place and offers valuable insight into the internal processes behind the work.

Thurgill also notes the difficulty that inevitably arises when discussing the notion of 'place', particularly the subjectiveness of the idea itself. Seemingly, any discussion of place by an observer is coloured by various external expectations and internal processes:

> Where the work created aims to produce, map out, or provide a reading of what I term the biography of place, that is, its history, encounters, its potential … these types of work are often rooted, locative and even cartographic in nature. Furthermore, it can be suggested that these types of topocentric artworks can occur twofold: firstly, as representations of place and secondly, as representations in place. (Thurgill, 2016)

Edward Relph offers a similar definition of place, conceptualising place as a "centres of our immediate experiences of the world" (Relph, 1976, p. 141). This definition of place acknowledges the immediacy in which 'place' is felt by an individual. If a 'place' can be defined as physical areas that play host to our experiences, then by extension it acts as a framework to understand place-specific and place-inspired works, which strive to replicate, represent and perhaps even invoke these levels of experience.

The landscape shapes much of the human experience of the land - for instance, in the ways in which we use physical demarcations and descriptions for place, and how we determine our movements within these boundaries. Much has been written about landscape and the human experience, particularly in regards to psychological and spiritual connections and landscape as a cultural construct. How a landscape is interpreted is heavily dependent on cultural context, or as Simon Schama describes, "…constructions of the imagination projected onto wood and water and rock" (Schama, 1995, p 61).

In essence, there is a broad duality in how landscape can be viewed - both as an entity to be seen by those experiencing a place, and also as a way of perceiving the world (see Wylie 2007). This concept of perceiving acknowledges the ways in which landscape engages the senses, as well as its emotional affect. Denis Cosgrove, a prominent human geographer, notes:

> In other words landscape denotes the external world mediated through subjective human experience in a way that neither regions nor area immediately suggest. Landscape is not merely the world we see, it is a construction, the composition of the world. Landscape is a way of seeing the world (Cosgrove, 1984, p. 13).

In terms of sound composition, artists have often been inspired by place, creating scores that emulated sounds from both natural and human environments. The advent of recording technology meant that artists were now also able to bring entire soundscapes from one area to another, through field recordings. Regarding the availability of recording technology, British composer David Toop noted how this changed the way composers could relate to sound and place: "The fact that these noises also began existing as recordings suggested you could use them as they were - not by imitating them with an oboe, but by actually bringing in the sounds themselves" (Nichols, 2017). Being able to bring recordings into works also changed the interaction between the listener and place, through developing greater awareness of sounds that occur. Toop continues:

> It's a framing of listening within a particular setting, where you'd normally expect to hear music that's deliberately separate from the environment: a shocking gesture in one sense. But in another, it forces the audience to listen to the world around them, and consider those noises as performance (Toop, in Nichols, 2017).

The idea of how composers can relate to sound and place can also extend to the process field recording itself, and the narratives existing within the recordist. Field recording have largely been perceived as recording-as-documentation or as a process of gathering sonic material, with the focus being on capturing impartial and neutral artifacts of soundscapes. The narratives that exist within the recordist, however, have been generally less acknowledged. Field recordings attain greater meaning for the listener when the personal narratives and motivations of the field recordist are openly acknowledged. Isobel Anderson and Tullis Rennie eloquently outlines the importance of highlighting personal narratives, noting that: "(the) meaning of the sounds within these recordings may have a personal significance to their recordist, which may bring greater meaning to the overall soundscape for the listener, if divulged" (Anderson and Rennie, 2016, p 223). For Anderson and Rennie, these personal narratives should be celebrated and highlighted, as a way of creating deeper knowledge about place.

Field recordist Steven Feld echoes a similar sentiment about his work. For Feld, there is a sense of deep embodiment in his recordings - a presence of his existence as listener, even though his presence might not always be clearly audible to audiences. Feld explains that:

> I am always part of my recordings. I can always listen to my recordings and recover my breath, my bodily presence… the recording is always the audible trace of my presence as a listener. My recordings are always an archive of my history of listening and of the history of listening that is being recorded. You could say that my field-recording praxis is to listen to histories of listening. That is why I am always part of the recording, always present in some way even if that presence is not audibly legible to the listener. (Feld, in Carlyle and Lane, 2013, p. 209)

Sound is therefore a powerful medium for artists to reflect upon their personal reflections of place - the history, the geography, and their own emotive responses. Sound can be the conduit for mediating knowledge and imagination - where concepts of landscape, place and meaning can be situated together. For instance, the contours and resonances of the land can be captured and expressed through field recordings, i.e. the rushing cascade of water onto rocks, the wind through trees, and the animal sounds highlighting its inhabitants. The history of a place can be alluded to through using fragments of historical texts, or by manipulating field recordings to evoke the past. All these aspects can then be used by the artist in the creation of artefacts that channel these emotions and memories.

There have been several composers who have explored field recordings as a form of self-reflexive practice, such as Luc Ferrari's *Presque Rien* series (1967-1970, 1977), where Ferrari weaves narration over field recordings. Ferrari's first foray, *Presque rien, ou le lever du jour au bord de la mer (Almost nothing, or daybreak at the seashore),* recorded in Vela Luka, Croatia and released in 1970, was an early demonstration of a field recording being used both as a part of composition and as auditory memory making.

While in Vela Luka, Ferrari spent several weeks exploring the village and surrounds with his partner, Brunhild Meyer Ferrari. As they explored the area, Ferrari became increasingly drawn to the sonic environment and his responses to what was happening, and recorded for several mornings. As noted by Lawrence English in his essay about the work, "In Presque Rien No. 1, Ferrari perceived that his listening, as an affective and agentive performance within a given horizon, was not absolute or ongoing, but rather highly selective in attentiveness and temporality" (English, 2017, p 17).

Two other artists who have explored field recordings and self-reflexive narrative are Hildegard Westerkamp and Janet Cardiff. Both artists have created work that interwove narration over field recording as a way of explaining to listeners the personal significance of an area for them. In their works, listening is also an act of combining multiple streams of information of place - sonic, spatial and social - into the creation of a work.

Hildegard Westerkamp describes how she uses field recordings and their manipulation as a way to get in touch with her inner self:

> In my electroacoustic compositions my inner voices speak and in that form I have been able to make them public ... Seeing how many people enjoy working in isolated environments ... tells me I am not the only one who needs such a place to get in touch with the inner world ... Such a situation can potentially get us in touch with an inner vitality and creative spirit. (Westerkamp, in McCartney, 1999, p 402)

Westerkamp channels her personal emotions and memories in many of her works. In *Kits Beach Soundwalk* (1989), for example, she explores her affinity with Vancouver's Kits Beach through a combination of field recordings and spoken contemplations. Similar to Ferrari's approach in *Presque Rien*, Westerkamp also offers commentary interspersed throughout the piece. Westerkamp's commentary, overlaid in the studio, explains the significance of certain parts of Kits Beach with the listener, and also openly signposts her audio manipulations. For instance, in one section, Westerkamp informs the listener how she is diminishing the sound of traffic to amplify the sound of the ocean because the view is "beautiful. In fact, it is spectacular" (Anderson and Rennie, 2016, p 227).

In a similar vein to Westerkamp, Cardiff also establishes herself within soundscape recordings through her series of soundwalk compositions, where she narrates over a composed soundscape. In works such as *A Large Slow River* (2000), Cardiff uses Lake Ontario as a setting for discussing memory and time, and particularly how certain geographical features of place act as triggers for personal history. A Large Slow River directs listeners along a certain, specific route, and during the soundwalk, listeners are encouraged to explore and engage with the historical, cultural and natural aspects of place. In some passages, Cardiff's narration is evocative in its shifting of temporality from past to present as a demonstration of the multi-layered nature of place. For instance, in one passage Cardiff narrates over the sound of crashing waves: "I'm at a beach on Lake Huron, my toes squishing into the mud...jumping off my father's wet shoulders into the water. Now I'm at another beach, it's night, the sound of the waves coming in through the screen windows" (Cardiff, n.d., accessed August 17 2022).

All of these works discussed can also be considered examples of sound mapping, as they feature some form of personal insertion into the landscape and mapping the landscape (through sound) as one moves through. Throughout the works, these two elements are often coinciding and reinforcing each other, allowing for shifts in temporalities and perspectives.

3   Sound Mapping

While self-narration over compositions is one way artist can create self-reflexive works, another way where an artist can integrate place and self-reflection is through sound mapping. The practice describes the combination of cartographic (i.e. geospatial information, sometimes presented as a cartographic map and other times through other means such as photographs) and sound activities (i.e. through field recordings) as a way of exploring place. Through this combination, the layers of time, history, and artist present within a place can be represented across both visual and aural domains.

I was initially drawn to sound mapping as it emphasises the representation of personal associations, memories and emotions of place, in relation to a place's physical (topographical) and spatial (geospatial) features. Sound mapping has become increasingly important to my practice, as it has allowed me to both incorporate the physicality of place as part of the composition, through the interpretation of lines from physical maps of a place, and other geospatial information. The combination of sound and images can provide a multi-sensory experience of place for people, and also allows for the convergence of geographical and cultural aspects to create a richer understanding of place and space.

Before further discussion about the concept of sound mapping, it is important to consider how a 'map' is defined. The common view of a 'map' is a series of lines in gridded fashion that accurately plots physical and spatial features onto a piece of paper or a screen. On a broader level, mapping is also about representing an individual's surroundings and realities of a place, and particularly highlighting the personal associations, emotions and memories a person has in their relationships with a place's physical and spatial features (Anderson 2016, para. 3). From this perspective, maps can also be viewed as a subjective abstraction of place, overlaying imagined landscapes with geographical features.

Sound mapping is a practice that utilises sound - most commonly in the form of field recordings - as a way of weaving a commentary about the physicality and cultural associations of a place. Sound mapping is often combined with visual representations of a place as a way of establishing greater context for audiences. It is often combined with visual representations of a place as a way of establishing greater context for audiences. Soundmaps "can be graphic, conceptual, multimodal or digital artefacts that represent sonic locales in different ways, anchoring sonic information such as type, content, characteristics, and relationships between sounds on spatial representations of space" (Droumeva, 2017, p. 337).

Sound mapping expands the concept of "maps" from simply markings of spatial and physical features of a place on a gridded paper or screen, into a commentary about the interactions between place and inhabitants. Sound artist Isobel Anderson discusses the idea of "maps" in terms of personal experiences, or mental images of place through documenting memories and experiences through sound and other features such as image, text and sculpture. When viewed in this way, maps become a way of conveying historical, cultural and geographical narratives of a place.

One example of sound-mapping being used to convey narrative is *Sailortown* (2012), a project by Anderson and Fionnuala Fagan based around the old dockside part of Belfast, Ireland. For Anderson, the project highlighted how place, history and lived history can be deeply intertwined - once a bustling, close-knit community, most of Sailortown was demolished in 1962 as part of the M2 motorway development. This project combined photographs of the area, with recordings from residents discussing their memories of Sailortown prior to the development. Through this project, Anderson and Fagan found themselves uncovering lost buildings and landmarks through these personal stories. Anderson noted the project also, "... voiced great feelings of loss and bereavement. It had been extremely difficult to accept the disappearance of Sailortown from Belfast's physical and psychological landscape, when at one time it had been their home" (Anderson, 2016, para. 31).

While sound maps can be used to document place on a literal level (i.e. documenting how a geographic location looks and sounds), they can also be used to examine the relationship between people, place and temporality through techniques such as layering sounds, all the while using geographic and spatial aspects of place as the base of works. Such an approach allows for a broader approach to place, where real and imagined sonic geographies can move within and from each other.

Sound mapping allows for a method for creatively interrogating the relationships between sound and map, in its broadest definition as a visual representation of place and memory. Not only is there a recreation of geography, but there is also a recreation of the cultural aspects of place. In his paper examining sound mapping practice, Samuel Thulin describes the process as, "An expanded approach to phonography, one that takes in all sounds and their possible transformation... critical and creative approaches to mapping that recognise the malleability and relationality of cartographic forms" (Thulin, 2018, p. 205).

Thulin describes five methods of sound mapping—*sound-as-map*, *sound-into-map*, *map-into-sound*,

maps-of-sound and *map-into-sound* (Thulin, 2018, p 196-7), two which are relevant to this paper: *sound-as-map* and *map-into-sound*. For Thulin, *sound-as-map* have a "thorough engagement with acoustic aspects of places, often exploring an aurally-orientated 'deep mapping' that layers multiple aspects of place" (Thulin, 2018, p 196). Often these works contain one of, or a multiple of the following - a collection of sounds spread over a specific geographical area, and using visitor's movements through sites (aka soundwalks) where their movements are integral to the work.

An example of *sound-as-map* is Annea Lockwood's various works based on river systems. For instance, in *Sound Map of the Hudson River* (1982), Lockwood aimed to communicate the trajectory of the river through sound by recording the river along 15 locations and documenting the various permutations of the river through its journey. In a later piece based on the Danube River titled *A Sound Map of the Danube* (2005), Lockwood wanted to record both the river itself, and the populace that lived along its banks, noting that, "I decided in advance of recording that this time I would acknowledge this interdependence [of river and river-dwellers] by merging voice and river sounds" (Lockwood, in Nagia, 2011, p 215). Lockwood expressed her desire to highlight this interdependence in an earlier piece of writing on the process of making the work:

> The people I spoke with along the river came to seem as deeply a part of the river's being as the geese and the herons, aquatic beetles, carp, alder and willows…here the voices are integrated into the mix… (Lockwood, 2007, p 43).

A Sound Map of the Danube features 59 sites, each of them either on, or near the river. The work combines field recordings taken from these sites, alongside interviews by Lockwood where interviewees were asked, 'What does the river mean to you?' (Lockwood, in Nagia, 2011, p 215). The album version of the work groups these sites into various tracks, which are marked on an included map (also containing translations from all interviews), but without time references. When listening to this work, there is a sense of moving along and with the river, while it winds through the landscape.

An interesting aspect about the work is that Lockwood also focuses on the river as its own entity - one with its own sense of agency. The work ultimately is also about the river itself, asserting its identity. Lockwood notes the point where she made this observation:

> Way down in Russolo, Bulgaria, towards the end of the final field recording trip, we found a mud bank hollowed into an almost complete tube - producing marvellously resonant sounds - and I suddenly realised that the river has agency; it shapes its sounds itself by the way it sculpts its banks. It composes itself. (Lockwood, 2007, p 44)

Map-into-sound is the sonification of certain aspects of maps, whereby aspects such as visual and geospatial information are represented by sound. With this approach, the main intention is not to represent sounds found in an area, but rather to use sound as a way of communicating various information found on a map.

Another example of this is the *Cybercartographic Atlas of Antarctica* (2008) project by Caquard et al., which was created as a digital, interactive resource for exploring Antarctica. The work was particularly focused on the convergence between the Antarctica landscape and human exploration. In this project, sound was used as a way of exploring and representing geospatial information. For instance, one section of the map which explored the research stations present on the continent, features the following sounds to accentuate the information: "a loose depiction of three intersecting components: an exterior frontier (represented by the high-pitched sound of cold winds whistling across a plain); the human-made interior space of a research station (represented by the muffled rumble of winds buffeting a small, enclosed acoustic space); and intermittent bursts of short wave radio activity" (Caquard et al, 2008, p. 14). The artists note that sound can become an important element in these cartographic practices because:

> Sound can create depth and space the way the image can only suggest … sound can provide tactile sensations through an enhanced bass response, thereby 'touching' the listener from

Figure 1: A map of Perth circa 1830, showing the wetlands. (Perth Wetlands Map, 2011). CC0 1.0.

a distance … More fundamentally, the soundscape of audio-visual media is like any other text in that it communicates a narrative (Caquard et al, 2008, p. 4).

4   The Lost

During the course of my practice, I have become increasingly preoccupied with exploring methods of incorporating place and self-reflection into work. I have been particularly intrigued by sound mapping as a pathway to explore the personal through place. My recent practice has involved combining documentation of place (through field recordings) with sonification of geographical features (such as maps and geospatial information) as a way of expressing the relationships between myself and place.

One of these such works is *The Lost (2021),* an audio-visual work contemplating the sensation of loss, and the subsequent feelings of dislocation. The work is based on a map of Perth from 1838, detailing many of Perth's former wetlands (since lost to in-filling and development), which I sonified into a digital autonomous instrument using Iannix. This sonified map was combined with a field recording from Herdman's Lake - one of the remaining remnants of these wetlands - and sonified longitudinal and latitude values of where some of these lost wetlands would have been located.

The Lost was initially inspired by a friend's comment about how some of Perth's lakes were connected before parts were filled in, which made me explore more about how Perth appeared prior to colonisation. Pre-colonisation, the wetlands were inhabited by the Noongar people, served an important part of Noongar life as both as a camping area and meeting ground during Kambarang (spring) and Birak (summer), and as a place of abundance (Western Australian Museum, n.d.). The draining and filling of the swamps, and the marginalisation of Noongar people from their country meant that many of these sites were no longer physically accessible, either through denial of access or the removal of a site's existence. These areas, with their rich histories, became dislocated memories.

Another catalyst for *The Lost* was the experience of losing multiple people in my life over the course of a year, and I wanted to find a way to process and express that sense of dislocation through a composition. What drew me to using the lost wetlands was the idea that something that had existed at one point was no longer there save for fragments - such as memories and remnants. This idea resonated strongly with my personal experience of loss.

In my personal reflections while creating the piece, I wrote a short summary of these personal experiences:

> The first loss was in January 2020. It was my grandmother, the person who helped raise me through childhood. We were close, but like the lost wetlands of Perth, time had faded her memory. Alzheimer's had taken hold, reduced her memories to remnants and scrubbed away her identity and self.

> When I heard the news, I felt disoriented and dislocated. Life was happening around me - yet there was a profound feeling of disruption, that something has irrevocably changed in my life. I was both standing still with my memories, yet going through the motions of everyday life.

> Eventually that feeling of disorientation subsided... but only for a moment.

> The losses continued. 2020 became the year of mourning as friends—near and far—began departing this mortal realm. I began to dread those evening messages and phone calls, telling me of the next person to have passed. Of the condolences on social media. Of people similarly battling with their shock and dismay.

> Some of the losses were not a surprise. Some were sudden shocks. It didn't matter, the effect was still the same. The same dazzled silence. The holding pattern of number emotions as I processed the news.

> I find myself repeatedly standing still with memories of the ones who have left. Trying to process the latest loss. Trying to find a form of catharsis to channel these feelings.

As a way to embed the geographical features of place into the composition, I decided to sonify a map through rendering the image into a digital autonomous musical instrument. To begin the process of creating the work, I firstly used a map of Perth circa 1830 (Figure 1).

To create the digital autonomous instrument, I used a program called Iannix, an open-sourced, real-time graphical sequencer, based on composer Iannis Xenakis's visual approach to composition. I was initially drawn to Iannix because I had been looking for ways to incorporate lines and shapes of a place into a composition. I became increasingly interested in the idea of turning image into sound, in the vein of the UPIC system devised by Xenakis. The UPIC system features a computer being linked to a digitizer table, where a person draws their music using an electromagnetic stylus, which the UPIC system converts the digits into sound through loudspeakers (Nelson, 1997, p36).

Unsurprisingly, Iannix is influenced by UPIC, both by design (using graphical representations to drive scores) and its name (a play on Xenakis' name)(Coduys and Ferry, 2004). Iannix can be used to create autonomous digital instruments where lines and curves can be played using cursors and triggers, with the horizontal positioning of these triggers corresponding to pitch, so the lines and curves of the map became the basis for the triggers and cursors that would operate the instrument - a note would sound as each cursor (in red) moved across a trigger (white dots). Using Iannix, I traced the map into the program, using the shapes of maps as pathways for the cursors.

Figure 2 shows how the piece appears in Iannix. The program features line and shape tools which allow users to draw images into the program. On the left side are options to change the speed and size of the cursors, the behaviour - such as the movement of the cursors, ranging from steady, linear forward movement to more pendulum movements - and also looping patterns and gaps between loops. All these options combined can give the digital autonomous instrument variety in sound, as each cursor is interacting differently in the space.

I also considered other ways of incorporating place into the work. One of the ways was to include a field recording that I recorded at Herdsman Lake, which is one of the remaining remnants of the wetlands system. I wanted to use a field recording as a way of aurally anchoring the listener to place, by giving listeners an aural touchstone of what, and where they were listening.

Another way of incorporating place was to see where some of the vanished lakes would have existed in relation to modern-day Perth, then turning the latitude and longitude values into Hertz via Adobe
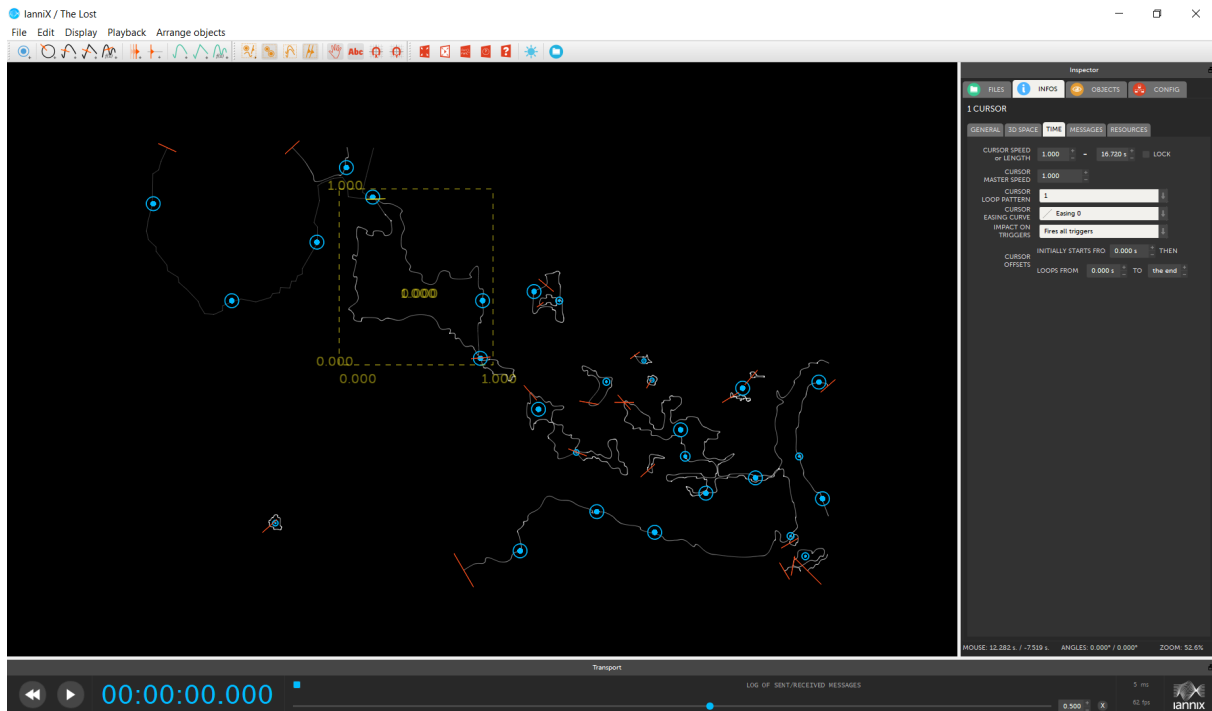
Figure 2: How the rendered map appears in Iannix (author supplied).

Audition's tone tool. To locate the wetlands, I turned to an interactive map of the Perth CBD called Gnarla Boodja Mili Mili (Figure 3), made to map Noongar places of significance in relation to current-day Perth. For the purposes of this work, it was very useful because it provided an overlay of a map of Perth from 1838 with modern-day Perth, and this overlay gave a very clear idea of where the lost lakes (and its accompanying lost history) formerly existed.

I assembled all the above sounds together in Ableton Live, a digital audio workstation that allows for composition and audio editing. I added various effects to tracks, such as echo, reverb and panning. I also linked Iannix and Ableton together via LoopBe1 - a free virtual MIDI driver that allows the transfer of MIDI data between programs – so that Iannix would be driving a virtual synth.

An important component of making the Iannix instrument was selecting the type of virtual instrument that would be driving the sound, as the sound of the sonified is both supporting and complementing the work as a whole. In considering this, I asked myself the question: "What does this sound represent?" For *The Lost*, I wanted to give the Iannix instrument a sound that would highlight the fragility of place and memory. The sound I ultimately chose was one that was bright, but also brittle.

The completed piece (Figure 4) features the sonified map as the visual element of the work, with the piece beginning with an interplay of the map with the field recording from Lake Herdsman to establish place for the listener. As the piece unfolds, it becomes increasingly abstract and dark, with the field recording also warping – achieved through a combination of echo and reverb effects. The piece also gradually introduces the sonified latitude and longitude coordinates, bringing a evel of dissonance into the sound. This culminates around the middle of the piece where the sonified longitude coordinates are playing together and are just slightly different from each other enough to create a pulsating, phasing beat. I wanted this effect to create a sense of dislocation that can happen from loss - a paradoxical feeling that time is both standing still yet moving.

The full piece can be heard here: https://doi.org/10.5281/zenodo.5596343

Figure 3: A map of Perth from 1838 overlaid on a map of current-day Perth, from Gnarla Boodja Mili Mili. (Department of Local Government, Sport, and Cultural Industries (n.d.)).
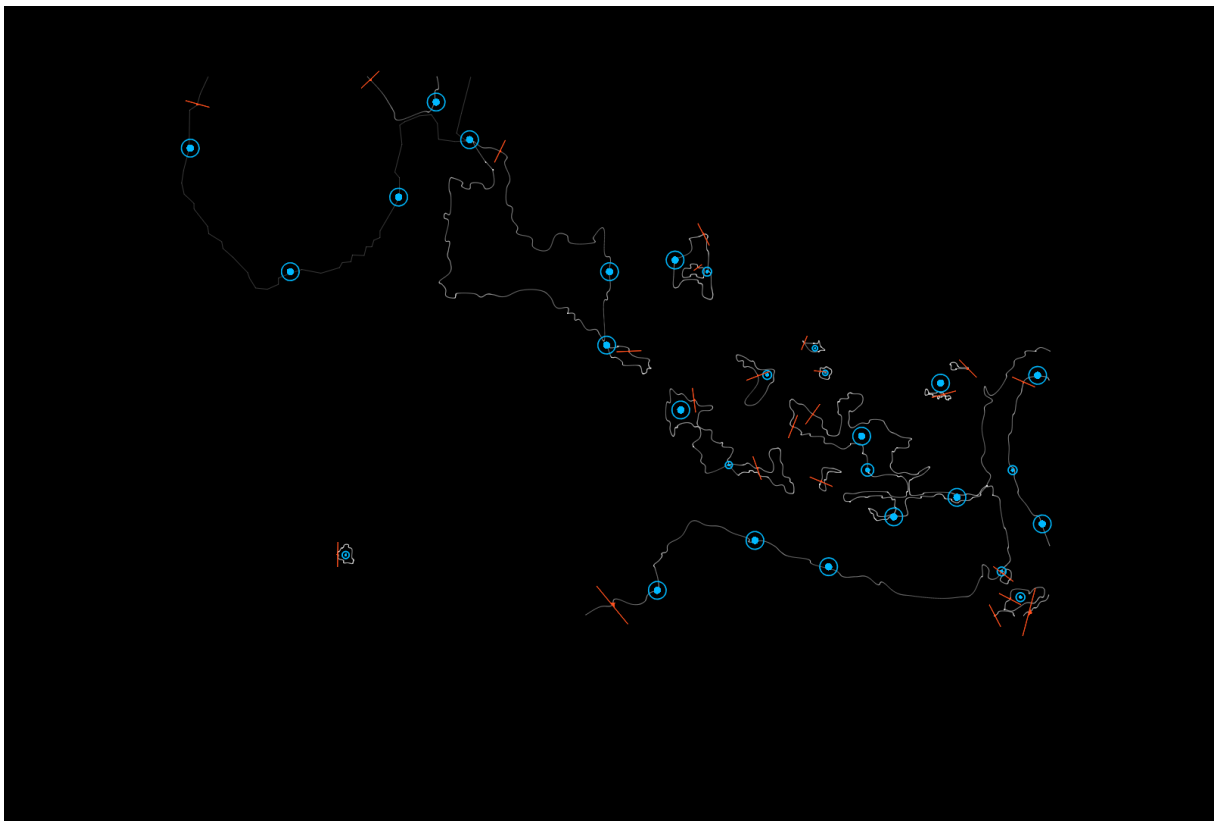

Figure 4: A still image of The Lost. (author supplied).

5   Concluding thoughts

Through sound maps, the sound and structure of place can both be deeply intertwined within a composition. I believe that this approach to composition, where multiple elements of place are incorporated into a work - and particularly where the physicality of place can be incorporated as an active part in the creation of the soundscape - can be a valuable way of exploring the history, geographical aspects and personal connections to place. The significance of this method of composition – combining field recordings and cartographic information into a sound map - is its ability to enrich understanding of both self and place through finding emotional connections, and acknowledging the embeddedness of humans with the land. The combination of sound and image can also offer new perspectives of places.

The Lost was a work that not only gave me a sense of catharsis about my personal experiences, but also allowed me to explore a relatively overlooked part of Perth history in its former wetlands. I found that this method of approaching composition offered a multi-layered perspective of place where various perspectives can co-exist. By incorporating aural and visual elements into a composition, it can open a dialogue about the history and meaning of place.

6   References

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