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Note: Audio Samples (http://soundingmuseum.com/soundscapejournal) include (1) Noisefloor, (2) Two Weeks in Alert Bay (Walk-in Edit), (3) Kewei, (4) Shipibo Party (technical progression) and (5) Transformation.

Wayback Sound Machine: Sound Through Time, Space and Place

Article & Photos by Maile Colbert *(except where noted)*

Abstract

Two years ago I found myself in a location and situation that brought to mind the connections between sound and memory, which lead to considerations about sound and history. Upon thought and research, then experiments within my own practice, I have since been exploring what can come from recreating or creating sound from back in time. I have been excited about what this research has meant to my own work, as well as exploring the work of others who I meet of other disciplines engaged in similar lines of practice.

Introduction

Frank Vanclay said nicely in Place Matters, "*Place* is generally conceived as being *space* imbued with meaning. Thus, it refers more to the meanings that are invested in a location than to the physicality of the locality" (Vanclay 2008). He goes on to state, sometimes it is the biophysical characteristics that establish the foundation for those personal meanings.

When I travel to an unfamiliar location to create a work, I have become accustomed to bringing my VLF receiver, hydrophones, and underwater camera for exploration. Whether what comes out ultimately becomes part of the work or not, my interest in these particular tools stems from a fascination with capturing obscure events around me, real and happening, that I could not otherwise perceive. It also marks my wonder at events and elements in our world that have been, while evolving, continuous in a time line extending much further than my own. Similar to the sense one may garner from varied surroundings, such as a desert, or an ocean, with time and patience, what might at first seem bleak, barren, or monotonous, begins to give hint to a rich world hidden from our day to day experiences.

Fig.1: Joshua Tree State Park, California. Photo by Vahid Sadjadi

Fig. 2: Saint Michael's Mount, Marazion, Cornwall

Two autumns ago, finding myself with a day off from a project I was working on near Penzance in Cornwall, I decided to take a hike through the lesser known British arm of the Santiago Pilgrim Route: the St. Michael's Way. Dating back tens of thousands of years, some pilgrims and missionaries traveling from Ireland or Wales might have chosen to abandon their ships and walk across the peninsula, rather than navigating the treacherous waters around Land's End. Back then, the way was fraught with all sorts of dangers, and the path itself splits a few times, veering off towards a church near the harbor where they might have secured a boat to cross them. There they would meet a guide who would offer safe passage from the many thieves and pirates along the way. Still marked with the iconic scallop shell symbol of the pilgrim route, the path was nevertheless neglected, and overrun with all sorts of modern obstacles such as busy roads and farm irrigation systems.

Fig. 3: Gulval, Cornwall

As I got lost time and time again making my way towards Saint Ives, I found myself marveling at all sorts of new and heretofore unknown sensations. My ears tuned from the project on which I had laboured; I was especially taken back by the sound. Towards the middle of the path, located atop the hill of the inland of the peninsula, the wind from both sides carried sonic pieces of the day to day from the villages; a tractor, grazing animals, bits of conversation in Cornish, and church bells wisping past as quickly as they came, fleeting like ghosts. It is fitting that St. Michael, after whom the route was named, is the patron saint of high places.

I began to wonder what this path may have sounded like back in the time of thieves and pirates, back when its soundscape was composed of shared occasions celebrated with the voices of people, priests, prayers, and populated markets and fairs along the way that ignited all this activity. As I continued walking, I began to wonder how it may have sounded even before then, before the hills were blanketed with crops and cattle, before the many battles that must have been waged, and villages built and grazed. Such were my musings. Were there more birds then? Were there more trees? Were there more boar and foxes? What about even before these hills were hills; could there be a way to sonify these hills forming? I started to dream of a wayback machine for sound. What if as you walked this path, you could listen to time spinning back, listen to how it might have sounded, listen to its history? And what could you take from that experience? *Could* something be taken from this? In the two years since that happenstance, this idea has since resonated with me, consuming my thoughts. Beginning tentative research and practice to apply this thought in various ways, I continue to unearth more questions than answers, so I begin to seek out others experimenting in a similar vein. While acoustic ecology is a growing field, I still have not found many researchers working with sound in time. One person who has come close to this idea is soundscape ecologist, musician, and sound recordist Bernie Krause, whom last year I interviewed in an article on the sound of disaster about disappearing sounds as a signal of impending crises. The prelude of Krause's book *The Great Animal Orchestra: Finding the Origins of Music in the World's Wild Places* (Krause 2012), is the beautifully written "Echoes of the Past", which takes a meandering listen to how the world might have sounded 16,000 years ago. With that time travel in mind, perhaps something could come from working with people in various fields of statistical analysis to predict or speculate what sounds might be projected to become extinct from any analysis of sorts dealing with time specific soundscapes, and what this could mean in terms of how the sound line might be extended into the future. In the section "First Notes", Krause describes working with a graduate student, Kristin Junette, who reasoned that based on fossil records and the known sounds of insect species today, one might be able to recreate the insect ambience of approximately 65 million years ago. Then, based on acoustic physiology of the skull of a Hadrosaur, a dinosaur of the time, Krause and Junette were able to recreate a representative vocalization of its call to place in this early soundscape.

I was excited to learn of the research of Miriam Kolar, who has been working with various techniques and with people in various disciplines on a team studying and "recreating" the acoustic architecture of Chavín de Huántar, a 3,000 year old ceremonial center, predating the Inca in the Peruvian Andes. The architecture of Chavín de Huántar encloses a complex maze of rooms and twisting corridors connected by air ducts. Recently, archaeoacoustics researchers noticed that gallery architecture played strange acoustic tricks on them. "This environment is not only a physical maze, but it's a sound maze," says Kolar (2013). For one example, some spaces are interconnected and multiply echoes, bouncing them back to the ear so rapidly that the sounds appear to emanate from all directions at once, while other areas seem designed to clearly direct sound. The team has been using 3-D computer modeling and specialized recording equipment to try and recreate the auditory effect. "If you have archaeology and no acoustics, you're deaf," says archaeoacoustician David Lubman. "And if you have acoustics and not the other, you're blind. You need *both*" to understand ancient places like Chavín" (cited *in* Kolar 2013).

Passageira em Casa (The Traveler at Home), one of my projects from the two years since my walk in Cornwall, begins to explore

Fig. 4: Ludgvan, Cornwall

the notion of the wayback machine with sound in geography. *Passageira em Casa* is an intermedia and interdisciplinary performance inspired by the journey to define the concept of home. The narrative is a partially fictionalized and personalized account of the maritime history of Portugal, enacted by a dancer, vocal performer, live video, and live sound composition that creates a geography through the narrative and space of the project. From a bird song 'dawn' chorus in Lisbon to underwater earthquakes in the Pacific, field recordings along a maritime navigation route flow throughout the performance, giving a soundscape to the narrative's location. The more recent Australian version, *Passageira australis* begins to explore sound in time. Developed at the iAir residency at RMIT, *Passageira australis* holds a focus on the debate behind whether the Portuguese were the first Europeans to arrive in Australia, based on the 16th century *Dieppe* maps of *Jave la Grande* and the myth/history of the Mahogany Ship. The soundtrack reveals a sound-line based on the impact on flora, fauna, and overall soundscape on both countries. As a two channel composition, different than stereo, one speaker represents Europe; the other Australia. As the dancer, our sailor, moves from one end of the space to the other, the sound in each channel is changed based on her approximate location to each "country". With this experience, my hope is the audience comes away thinking about interconnectivity of the world, and how we impact the places we touch. Although I will continue to research when I return to Australia, already the project had me working with a map historian at the Victoria State Library, as well as consulting the thesis of geologist Andrew Pickering on using GIS technology to search for the location and story behind the presumed mythological Mahogany Ship.

Naturally this approach has me thinking about history, and I find myself as I walk along often trying not only to imagine what the place I am experiencing sounded like at different points of time, but also trying to put that imagined soundscape side-by-side the current one I am experiencing. Then I imagine it layered on top of that sound, super-imposed, progressively fluctuating back and forth through a time line in a comparative experience. Another project that does just this, scheduled at this writing to be presented in Lisbon for a festival called, appropriately, Echos, is *Radio Terramoto (Earthquake Radio)*. In collaboration with artists and researchers Jeff Cain from Los Angeles and Rui Costa from Lisbon, *Radio Terramoto* is a radio-based soundwalk in which audience members walk down a path from Convento do Carmo through one of Lisbon's winding hills to the river. At key moments and specific frequencies, they listen on portable radios to an imagined "broadcast from back in time" of the great and horrible earthquake of 1755 that destroyed most of the city and killed up to 100,000 people with its subsequent fires and tsunamis after the initial quake itself.

Working with Rui Costa and discussing his native city's history has also spawned another project along this same vein called *Um Rio e Uma Rua (A River and a Road)* about the historic Estrada de Benfica in the neighborhood of Benfica on Lisbon's border, where

Fig. 5: Still frames from one of the underwater videos in *Passageira em Casa*

'purportedly' a set of doors to the city still exist. A downloadable map and audio file will be made available, and through headphones the listener could experience traveling this instrumental route, once along an important waterway. As they walk down the busy and primarily pedestrian path, shared with occasional buses and taxis, many café terraces and shops, an active church often adding its bells to the mix, they will aurally experience its history … the road becomes a river again, with all of the human activity

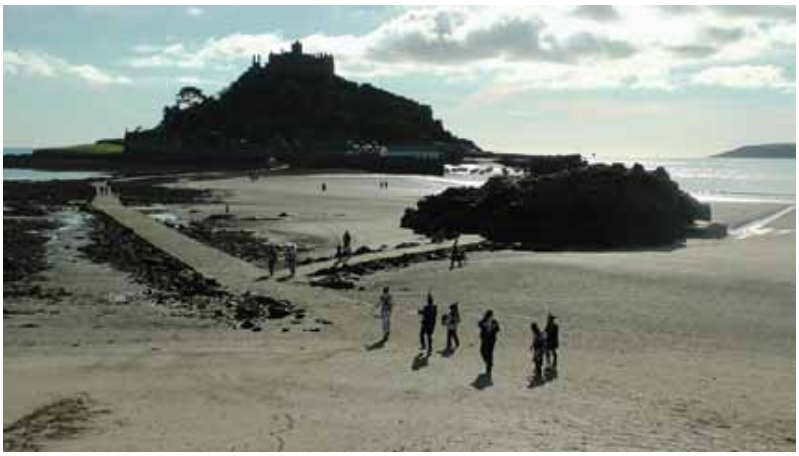

Fig. 6: Saint Michael's Mount, Marazion, Cornwall

and non-human activity that comes with that. With the possible addition of binaural microphones leading into a small mixer, the audience can choose to experience the mix in real-time and at their discretion what stage in history they want to hear and how much they choose to experience of the soundscape surrounding them.

Sound has a special relationship to emotion, instinct, and memory, both individual and historical. Tapping into the oldest part of our brain, sound provides immediate information telling us where we are, whether it is safe, and how we should feel about it. "Based on hearing, listening (from an anthropological point of view) is the very sense of space and of time..," states Roland Barthes (1985) in *Listening*. Drawing from Georg Wilhelm Friedrich Hegel, he continues, "[B]y her noises, Nature shudders with meaning: at least this is how, according to Hegel, the ancient Greeks listened to her. The oaks of Dodona, by the murmur of their boughs, uttered prophecies, and in other civilizations as well. Barthes further notes, "[N]oises have been the immediate raw materials of a divination, cledonomancy: to listen is, in an institutional manner, to try to find out what is happening".

It is my hope that the wayback sound tool I am researching could

not only build a new kind of living archive, but also have listeners' experiences of that archive one of wonder and sensation, a sonic database that would not only help us to remember and learn about the past, but also to create new experiences within the complexity of changing soundscapes over a period that usually defies our human comprehension. I see this tool being helpful to researchers in many disciplines, and also having a place in libraries, museums, centers, and perhaps "in the field" along paths such as the Santiago's Way, where one could download an audio file from the map online; then listen as they walk back through history.

About the Author

Maile Colbert is an intermedia artist with a concentration on sound and video, living in Lisbon, Portugal and teaching at Faculdade de Belas Artes, Universidade Porto. She spent the last four years collaborating with the organization Binaural/Nodar, and is an ongoing contributor of articles on soundscape ecology and sound studies at "Sounding Out," the award winning sound journal, and has performed and screened widely in Japan, Europe, Australia, and the Americas. More on her and her work can be found at www.mailecolbert.com.

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Machine Listening to Soundscapes: Playful Discovery of Sound Languages

By Iannis Zannos

Abstract

This article looks into the possible repercussions of massive availability of data in Soundscape research and creation. The problem posed by large amounts of sound data is that it becomes no longer possible to review the entire sound collection of a project manually, due to practical time limits. Machine listening techniques can help to search through large sound databases, and to identify those parts of the sounds which have desired properties, or categorize sound segments into groups that share certain characteristics. However, introducing the machine as a quasi-active component in the perception, understanding and manipulation of sound requires a fundamental re-thinking of the way in which sound is perceived. The article traces some of the implications of machine listening from a general philosophical and culture-theoretical view. It identifies concepts, practices and thought movements that foreshadow the idea of machine listening, such as the concept of navigation as a fundamental component of the understanding, interpreting, and constructing of both real and virtual environments. The discussion traces existing connections between pre-historic concepts such as the labyrinth and ideas that appear in the history of technology, leading to the digital computer. It is suggested that examining these ideas in relation to machine listening and contemporary soundscape practices can help both in the understanding and creative application of machine listening techniques.

Introduction

The present article originated from a simple practical question: How can the artist or the researcher deal with the ever growing amounts of recorded sound data? In the early days of soundscape studies, recording technology as well as sound storage media imposed a limit to the total duration of recorded sounds that a project could collect. Today, this limit lies easily beyond the amount of time available to the researcher or artist in a project. Several factors contribute to this situation: first the high capacity and low cost of digital storage media. For example, the total duration of uncompressed stereo sound at 44100 KHz and 24 bit resolution that can be stored on a hard disk of 1 Terabyte (with an approximate cost of less than 100 US dollars) is more than 1,000 hours).