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Curation: A Multimodal Practice for Socially-Engaged Action

Listening at the Seams: Curating a Relations-Based Audio Narrative of the Schuylkill River

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Abstract

The Schuylkill River is a biologically diverse feature of the place now known as Philadelphia; its inhabitants have long used its waters for transportation, recreation, and food gathering. The river carries with it a living biochemical memory reflecting vast interconnected socio-technical practices informed by a legacy of industrialism that have shaped the contours of the river's ecology and the dynamic engagements between human and non-human cohabitants. Researchers and governmental agencies may consider the health of the river by analyzing the morphology of its aquatic species, especially its fish (Sun et al., 2009; Harris, 1995; Norris, 1999). Though many narratives surrounding the river are not limited to health or pollution, they often tell their stories through objects in much the same way. Researchers have investigated how oil refinery complexes serve as sites of understanding and the ways in which the Schuylkill River shaped cultural, social, and economic practices through the prevalence of catfish consumption. While the list is long and varied, each narrative relies on some object, or constellation of objects, to express these stories. We consider the selection of these objects an important methodological concern.

As creative-critical scholars and Philadelphia residents, we began to wonder about alternative methods of telling stories about the river. How might we employ listening methods to understand, experience, and share interpretations of the river by leveraging the voices of artifacts as narrative conduits, spokesthings and translators. Peter Coats noted that most scholarship investigating the histories of places and geographies have been overwhelmingly visual in nature, or "soundproofed." Expanding on this, Christopher Caskey suggests that as we investigate rivers and their histories, we should allow our ears to help us make sense of the spaces

and relationships within. We therefore began to craft a narrative of the Schuylkill river through a method of sound, a method of listening. As part of an ongoing project (see www.listeningobjects.com) this installation provides viewers and listeners a hands-on opportunity to engage with the river through the listening objects that served as translators in this project.

Link to Installation:
https://listeningobjects.com

Introduction

The river now known as the Schuylkill flows approximately 130 miles across Eastern Pennsylvania, originating in the anthracite coal mining region of the state and terminating in Philadelphia where it meets the Delaware River. Originally the home of the Lenni-Lenape peoples, the river has been given many names, from its indigenous name *Tool Pay Hanna* (Turtle River) to later colonial names like *Manayunk* and *Tulpehocken*. The river has long been used as a source of food and water and a site of recreation, industry, and transportation. It is also a place of many stories. Like many natural resources, the Schuylkill's river bed and many of its residents still possess a sort of biochemical memory of 20th century industrialism. Researchers and governmental agencies may consider the health of the river by analyzing the morphology of its aquatic species, especially its fish (Sun et al., 2009; Harris, 1995; Norris, 1999). Several species of fish inhabit the waters of the Schuylkill, but most store in their bodies high levels of polychlorinated biphenyls (PCBs), toxic and carcinogenic industrial chemicals used until the late 1970s. Annual fish consumption guidelines currently recommend that humans eat no more than one Catfish per month, and recommend against *ever* consuming some other species of fish ("2019 Fish Consumption Advisory"). Other narratives of river health also turn to the bodies of fish as biomarkers to tell the story of change. Local fishing communities and press issue reports of species, size, and location of fish caught to indicate improvements in water quality and river health (Schneck, 2018).

Narratives of and around the Schuylkill River are not limited to health or pollution, of course, yet many tell their stories through objects in much the same way. Bethany Wiggin's (2016) work on telling stories of the Schuylkill centers primarily on oil refinery complexes in operation since the mid-1800s as sites of understanding. Teagan Schweitzer's work, "Historic Philadelphia Foodways" (2013) in many ways helps us understand the Schuylkill River as a shaper of cultural, social, and economic practices involving food over time through the prevalence of catfish consumption evident in periodicals. Surely, we could expand the list of Schuylkill River narratives for some time, and each narrative would rely on some object or constellation of objects to tell that story *through.* In other words, narratives of complex spaces often rely on objects through which stories are told, and the selection of those objects is an important methodological concern. We might refer to these objects or bodies through which narratives are situated and told, as *listening objects*.

We are both residents of Philadelphia, both interested in audio composition practices and the affordances of designing interactive and generative works that allow us to co-compose with nonhuman objects and environments. For instance, Sieber has designed and performed projects that measure and sonically express biodata from dying plants. Hammer has long been interested in field recording methods that present listeners with unusual, [anti-environmental listening experiences](). We began talking about the river and its lore, its stories, and the way that despite the popular opinions we encounter about the toxicity of the river that we encounter daily, we also witness other stories about the river via local fishing communities. In other words, we began talking about how the stories of the Schuylkill varied so wildly based on not only methods but also the objects we choose as interpretive bodies.

We therefore began to wonder about alternative methods of telling stories about the river. Instead of measuring pollutant concentration in fish bodies or following anecdotal observations of resident species and behavior, how might we employ *listening* methods to understand, experience, and share

our interpretations of the river? And which listening objects might we listen *through* as narrative conduits*?* We say listen here both because we have a predisposition toward sound-based research and creative practice. Further, we agree with Caskey (2017) who argues, extending the work of Coates (2005), that most scholarship investigating the histories of places and geographies have been overwhelmingly visual in nature, or "soundproofed." Caskey suggests that as we investigate rivers and their histories, we should allow our ears to help us make sense of spaces and relationships within: "Whether as a storytelling device, as part of an analysis, or even as an inclusion for the sake of posterity, the sounds of a river, both past and present, are worth documenting as part of the historical record." We therefore began to craft a narrative of our river through a method of sound, a method of *listening*.

When we propose a method of listening, what do we mean? First, we mean to differentiate between the involuntary physical action of hearing, wherein humans with typical hearing ability are able to detect sonic phenomena, and listening, which implies active attention. Here, we find Pauline Oliveros' work on Deep Listening to be useful. She writes, "complex waveforms continuously transmitted to the auditory cortex from the outside world by the ear require active engagement with attention. Prompted by experience and learning, listening takes place voluntarily. Listening is not the same as hearing and hearing is not the same as listening...very little of the information transmitted to the brain by the sense organs is perceived at a conscious level" (xxi). Oliveros proposes a practice of Deep Listening to more fully and consciously attune oneself to auditory phenomena and their effects. Not surprisingly, such awareness is most evident in Oliveros' work as part the Deep Listening Band with Stuart Dempster, David Gamper, and Panaiotis. Their first self-titled album, released in 1988, was recorded in the Fort Worden Cistern, an underground water tank with a measured reverberation time of 45 seconds. The artists played and recorded the album in this space, and began to articulate what it meant to play along *with* a space. In this case, to return to the notion of the listening object, the Cistern itself became the listening object through which the Deep Listening Band composed, responded, and performed.

Further, as Peter Szendy argues in *Listen: A History of Our Ears*, field recordings are never mere documentation or collection, but are instead subjective accounts of a *listener's listening*. Field recordings are, then, a kind of curation of aural space and time. Further, we must not forget the subjectivity of our listening technologies, our prosthetic ears that allow us to extend, alter, and record our listenings. As sound artist Yan Jun argues, "To choose equipments, choose position and push record button are acts of composing" (Qtd. in English, 2014). In other words, situated and subjective composition is taking place when one decides to record with a certain constellation of microphones, filetypes, headphones, recorders, compression algorithms, digital audio workstations, etc.. And further, situated and subjective composition is taking place when we decide to *record anything at all*. Hence, we frame our work here as a listening method: an active, situated, and collaborative act of sonic composition.

Creative-critical scholarship, like other emerging modes of inquiry such as research-creation (Cohen), centers on both the application (Anderson, 2014) and performance (Wysocki, 2004) of creative methods in and as scholarly inquiry. We might also suggest that one of the unique opportunities afforded by creative-critical work is *anti-environmental* work. For McLuhan, the role of the artist in society is to expose, explore, or otherwise probe existing environments created by media. He writes, "Art as an anti-environment is an indispensable means of perception, for environments, as such, are imperceptible. Their power to impose their ground rules on our perceptual life is so complete that there is no scope for dialogue or interface. Hence the need for art or anti-environments" (1966). Here we see one of the real affordances--and demands--of creative critical scholarship: that it be sufficiently strange, or removed from typical experience in order to reveal something new about previously invisible environments. In our case, yes, we could record sounds of the river in a way that sounds natural to the listener (e.g., using traditional stereo field recording techniques), but instead, we wanted to use listening techniques that situate the listener strangely, to hopefully invite a sense of curiosity, puzzlement, or unease. Drawing from Lanham's At/Through

framework for understanding digital media--in short, that the affordances of digital media and interfaces lies in audiences' tendencies to oscillate between looking *at* and looking *through* interfaces--we argue that these moments of oscillation between perceiving narratives (sounds of each river "scene" including recognizable sounds and events) and perceiving the medium (hearing unfamiliar sounds, or sounds in unfamiliar ways, such as underwater, through a small tube or aluminum can) are opportunities for composers and audiences alike to become (re)situated and (re)aquainted with an environment in a new and hopefully illuminating way.

This, then, is a story about developing a creative-critical method of listening to the Schuylkill River, to understand the space especially through its relationships to human-based production and waste, and to present this listening in a sufficiently anti-environmental fashion so as to prompt a new or alternative awareness in listeners. Our album visits six locations on the Schuylkill River that have been historically significant in terms of human pollution. The liner notes of each track provides data on the site as well as its documented history as it pertains to the impact of industry and pollution on the river. The audio of each track performs our method of *Listening at the Seams*, which we begin to articulate below but might briefly describe as a method of listening to a space through seams of relation and listening objects.

Seaming: Toward A Relations-Based Listening Method

Seaming is a term typically associated with textile work, denoting a line at which two pieces of fabric are joined together with thread. This metaphor implies a few conditions. First, we should recognize that the seemingly distinct fabrics to be joined together are themselves made of woven fibers. Thus, no fabric exists without relational weaving or seaming, or put another way, *it's seams all the way down*. Such arguments have been at the forefront of various flavors of object-oriented ontology, actor network theory, and new materialism for a few decades, but have also been at the root of indigenous philosophy-practices for much, much longer (Powell, et al. 2014; Hammer, 2019). Perhaps the best articulation of the centrality of

relationships to reality and space is Shawn Wilson's *Research is Ceremony* (2008), in which research is framed as a ceremony that carefully and responsibly attends to these relationships. We might think of seaming (or seam-finding) as an active survey of perceptible relationships in a time and space, and a careful attention to the way that those relationships express themselves. In our case, we actively sought seams that were audible, listened to and recorded them as relationships, and then curated a mix that immerses listeners in an anti-environmental soundscape--one rooted not in naturalistic ambience but rather in carefully selected points of relationality.

Regardless of one's situatedness to the notion of relationality, however, this first realization is important: when we listen, we are always already listening to relationships, listening to seams. Thus, we must approach the act of listening through an understanding of and appreciation for the nature of sound as inherently relational. We have already written about listening objects, and it is important to note here that none of these objects themselves produce sound--only when they are put in relationship with other objects or forces do they produce sound.

Second, seaming as a metaphor implies an active selection (and therefore, rejection) of interactants on which to focus. We made selections of listening objects at sites, such as an empty aluminum cans and bridges and drainage pipes. In doing so, we actively chose to tell a narrative of that space through its relationships with anthropogenic materials, therefore ignoring a virtually infinite amount of alternative objects. Here, our own situatedness comes to light, just as any research endeavor must come to terms with why it investigates what it does, how, and why. Clearly, we are attuned to existing narratives of the Schuylkill as a natural resource often in conflict with industrialism and consumerism, and in fact, we chose listening sites based on such narratives. Further, we chose listening objects based on their existence as artifacts of industry, infrastructure, and discarded consumer goods. We do not think this detracts from the importance or impact of such work, but instead acknowledges its perspective and bias, and contributes to the transparency of the work which we will discuss and

expand upon later when we describe the importance of documentation of methods to this work.

Seaming then, to finally arrive at a kind of description of our work here, is the method of recording--and thereby listening to--a place through and between its borderlands. Borderlands are regions of ontological slippery-ness, the (non)lands of chimeras and hybrids. The spaces where traditional methods and symbolic systems may do less than arts-based methods. Borderlands may be physical as in a shoreline, fence, or door. Borderlands may be ideological as in artificial/natural, indigenous/colonial. Borderlands may be political or colonial, ecological or chemical. They may be visual or aural or tactile. Borderlands may be a number of things, but they exist as sites of collision and entanglement, and our method begins by perceiving the world and its places not as distinct and separated by borders, but as always already borderlands, porous and fluid. We then ask where we might find evidence of these collisions and entanglements, which listening objects might allow us to experience the place anew. Here, it is also of practical concern here to attend to the aural affordances of borderlands, i.e., if these collisions can be successfully heard and recorded.

Seaming, at least as we have initially developed the practice, occurs in at least two compositional spaces. First, in what we will call "field," denoting the sites of listening and recording audio. Secondly, in the "studio," denoting the mixing, editing, and composing of the audio after its initial recording. Field and studio sites may vary greatly, of course, and one should certainly be aware of and intentional about her choices regarding these spaces, from the selection of physical space (including recording technologies used to listen/record) to selection of software spaces (in which certain types of sound composition are encouraged/enforced). While we will spend some time articulating our studio practices, this project is very much meant to primarily focus on developing field practices. We hope to build on relational studio practices in our next article. Yet we did want to briefly address those processes for the sake of transparency and thoroughness.

In the Field

After deciding on a site to engage with and listen to--the Schuylkill River, in our case--and after research on its history and features, and after choosing site visits based on narrative landmarks, we began to assemble our recording kit. Many field recording philosophies and techniques exist for listening to a place, but most employ tool-methods such as MS, ORTF, XY, or Ambisonic. These tools and techniques are predominant in field recording practices due to their sense of realism. But our aim here is not to simply re-present a space from the perspective of a typical human listener-- instead, we want to focus tightly on borders, on relations. Therefore, our recording methods and tools should reflect our purpose.

As such, we employed three types of microphones and specific methods for each. First, because our primary context is water, we used a hydrophone, a microphone designed to record in/under water. This allows us to present the sonic world from an unusual/anti-environmental perspective. Second, we used contact microphones on objects such as the can of insect repellent. Contact microphones detect and express sound as transmitted through solid material instead of air-based vibrations, allowing us to listen *through* specific object interactions. Third, we used very small lavalier microphones mounted in objects, traveling where our ears cannot, and thus providing an unusual perspective and scale not otherwise available. For instance, we mounted one of these "lav" mics inside of an empty and crumpled aluminum Mountain Dew can, allowing us to hear the place from inside an aluminum can. This practice has precedent in the work of Toshiya Tsonuda, from whom we took much inspiration, particularly from pieces such as "Bottle at Park" from Extract From Field Recording Archive #2.

We arrived at each site and took our time to investigate the place. What was there that made the place usual? What made it unusual? What was there that should not be there? What objects provided listening opportunities or challenges? How could we curate the space to provide listening opportunities? The selection of listening objects was a negotiation

between our knowledge about the affordances of our equipment and the constellations of objects and artifacts present in the space during our engagement with it. Principally, we sought out objects with a strong narrative voice that reflected the questions above in some way. Then, through exploring the material relationships between the objects, the space and the recording equipment, we searched for ways to listen through those objects that amplified their narrative voice and highlighted their unique sonic footprint. Since the pieces would ultimately exist together in a series, it was important to us that these objects provided sonic contrasts between the sites we visited, which meant looking for new sonic textures and palettes at each location.

Plastic bottles are something we unsurprisingly encountered at many of the sites we visited. However, the origins, context and conditions of the bottles varied widely across sites, affording different narrative and sonic inquiry. Our first location, for example, features a warped and burned Sprite bottle which was found outside a fenced off mine shaft at the mouth of the river. We elected to use a contact mic on the bottle which, tethered by a hair-tie, translated the vibrations of the river, a small stream at this point, reverberating against the plastic into a soft, persistent hum (figure.1). Our next site featured a performance by a half-filled plastic milk jug outside a residential area. Because the water here was hardly moving, it didn't act upon the bottle in a way that the contact mic was suited to translate. We instead opted for a lav mic, which was placed inside the mouth of the bottle, to capture the slow undulations of the river cradling the jug and softly, relentlessly, tossing it against the rocks lining its banks (figure 2). These negotiations, ongoing and different at each site, shaped how the listening objects we selected served as spokesthings and translators for the seams we found ourselves at the intersections of.

Figure 1: Contact microphone placed on plastic bottle found at Tamaqua site.

Figure 2: Lav microphone placed in plastic jug found at Leesport site.

We used an audio recorder with 4 XLR inputs, establishing our listening constraints at the offset to work with predetermined simultaneous "ears" in each scene. We opted for one track each of a hydrophone and contact microphone, and two channels of lav microphones. However, any

arrangement of microphones would suffice and would presumably be informed by the knowledge or expertise of the researcher and the types of objects they intend to listen through. At each site, we tested sounds from an initial group of possible isolated listening objects, then mixed them together into a single stereo output to get a sense of their sonic entanglements. Once the final listening objects were chosen and the appropriate levels set, we recorded continuous takes for approximately fifteen minutes. This time suited our aims as, first, we knew we wanted to keep the tracks relatively short and, second, that the initial studio component would not involved collaging the sounds together any further. Recording time, like the arrangement of microphones, could be widely variable to suit the needs of a project. Choices made in the field, which equipment to use or how much time to spend recording, will take on further compositional potentialities when brought into the studio.

In the Studio and Flowing-Forward

It is difficult to overstate the impact of post-production tools and techniques on audio compositions. From soundwriting interface design (Hammer, 2018) to compression algorithms (Sterne, 2012), composers' decisions in studio environments are as situated and political as those made in the field. In keeping with our tendency in this work to look to field recordists for methodological inspiration, we think here that the work of Luc Ferrari is instructive in helping us articulate our editing and mixing philosophy. In 1970, Ferrari released the now-influential *Presque Rien No 1 (Le Lever Du Jour Au Bord De La Mer)*, recorded in a small fishing village in what is now Croatia. The work contrasts sharply with most electroacoustic works of its time, namely those produced in the philosophy-method of Pierre Schaeffer's *Musique Concrete.* Ferrari called these works "anectdotal compositions" and, insead of Schaefferian techniques that tend to remove or obscure the link between the sound and its source and context, Ferrari "thought it had to be possible to retain absolutely the structural qualities of the old *musique concréte* without throwing out the reality content of the material which it had originally. It had to be possible to make music and bring into relation together the shreds of reality in order to tell stories"

(Pauli, 1971, p. 41). Yet Ferrari did not mean to imply that one can simply record objective reality. Instead, his work, argues LaBelle, more closely resembles Cagean philosophy "whereby the composer 'becomes a member of the audience,' composing as a 'contextualized' listener" (p. 31). Therefore, Ferrari's compositions' titles reflect his studio philosophy-practices; Presque Rien translates to "Almost Nothing." Ferrari made only minimal edits to these works.

Our compositions in this work reflect the same philosophy-practice, leaving the majority of composition to have been done in the field. When we returned to the studio, which in this case consisted of Adobe Audition, Sennheiser HD25 Headphones, and KRK Rokit Monitor Speakers, we first adjusted each track of audio to the same loudness setting of -18 LUFS. We then imported each track into a multitrack session and adjusted levels to achieve what sounded to us like a balanced mix in terms of frequency, volume, and space. We used slight panning of lav microphone tracks to create a greater sense of space between sounds, and any transitions between individual tracks were crossfaded to make these transitions gradual. While our studio compositions do impact the published track, we hoped to do very little (or, almost nothing) to invite the listener into an experience of open listening of slowly changing sounds and events, in which meaning might be found, refound, or changed depending on the *listener's listening*.

Finally, we wanted to allow listeners to make their own studio decisions if desired, or to simply have access to all of the unmixed and untreated recordings. Therefore, our composition includes all of our recorded files from each site, encouraging further exploration, remix, or interpretations. When combined with writing liner notes, we find this practice to be important as a gesture of transparency and vital to our listening method. When we provide our raw materials, our rough drafts, our outtakes, we demystify listening methods and make them accessible to as many people as possible.

We hope to have done well in articulating the theoretical influences and specific methods of listening at the seams, or at least well enough for others to try, respond to, improve, and adapt it for their own creative-critical projects centered on listening. There are many directions forward from this beginning. Our own next steps involve incorporating our recorded listenings into modular composition environments, allowing the recorded relational phenomena to dictate and modulate the form and texture of musical compositions. We also intend to follow our methods into other environments and thus, investigate new seams and listening objects and their attendant themes, politics, and histories.

But now, we would like to present our first work of listening at the seams, titled *Listening Objects No 1: The Schuylkill River*. We invite you to listen, re-listen, remix, reimagine, and respond.

Tuscarora

Background

      A practical question concerning this project emerged as we planned our first field recording outing. Where would we go to listen? The Schuylkill reaches 135 miles across Southeastern Pennsylvania, and it would be impossible to listen everywhere. So, at least for this stage of our project, we needed to select listening sites. Because most narratives of the Schuylkill River that we encountered--from government documentation and reports to social media content--focus on some aspect of the river's history as it pertains to industry, pollution, or health, we began researching historically significant locales along the river. Locales with a history, that might still have stories to tell. A resource we found valuable in the process of understanding these histories was Chari Towne's [A River Again: The Story of the Schuylkill River Project](), in which the author tells the story of the river in relationship to periods of industrialization and colonization, as well as attempts to heal the damage caused by these pursuits. As such, we should make explicit here that we entered these listening spaces with these stories, positioned as listeners concerned with pollution and trash. Listeners could just as easily enter these scenes looking for, say, the presence or absence of flora or fauna, demographic information of nearby communities, weather patterns, or any other number of narrative frameworks depending on one's positionality and bias. Stories told, after all, are little more than the relationship of shared memory and situated storytellers. Towne's book tells many stories of the Schuylkill through its industrial-colonial traumas, and these stories guided our selection of sites.

      Our first site selection emerged as we struggled to both a) pinpoint where, exactly, the river begins, and b) whether or not its origin is accessible to the public. We pursued the East Branch (there is also a West Branch near Minersville, PA), an area still heavily mined by the Tuscarora Coal Company, and thus much of the land is private property, causing us some difficulty in accessing the river's headwaters. Nonetheless, we wanted to begin by listening to the origins of the river, the place where it

begins to move and flow, to carry and deposit relations, to collide with and caress and shape the earth now known as Pennsylvania.

Seamfinding

Seeking the headwaters of the Schuylkill River near Tuscarora, PA, we parked alongside a busy road and found a trail that led us, at least approximately, to the river's origin. As we walked, we were immediately struck by the large amount of trash along the trail and in the water. We found large deposits of old electronics, books, and other household items, and as we ventured further from the roadway, we found items more closely related to machinery and automobiles, including tires, hoses, and empty containers of various automotive fluids. We hadn't necessarily expected this area to be so populated with trash, but based on the reputation of the river and its relationship with trash nearer to its terminus in Philadelphia, perhaps we should not have been surprised that this theme--one of the river as a space of waste disposal--would extend beyond historical research of mining and other industrial dumping and into contemporary practices of disposing of consumer waste.

We got as close to the origin of the Schuylkill as we could (some of the land is restricted to visitors, owned by a mining company), and found a seam site, which we might describe here as a place where borders blur, where objects are in apparent and audible relationship. This seam site was a water crossing on the walking path we traversed, where nearby objects such as shotgun shells, auto parts, and soft drink containers created a kind of scene of interactive potential. Here, by an active selection of both site and objects, we began to curate our listening method. We probed the sonic affordances of these objects in relationship with one another, placing microphones on and in trash-objects (e.g., affixing a contact microphone to a plastic bottle that had apparently been melted or warped by heat), and then placing the trash-objects into the scene in relationship to other objects and features of the space (e.g., placing that bottle in the moving water of

the stream so that it would rest on the bed of the stream but rock back and forth to create audible results).

We continued our curation of the space and its objects, monitoring results in headphones for a mix of the space that was sufficiently dynamic and even. And then, we sat and we listened to the relationships that comprised this scene, and noted how this listening was vastly different than a so-called ambient or environmental listening method. A scene still existed in the mix insofar as there existed a range of frequencies, rhythms, and objects, yet this listening provoked in us an attention to the arrangement and curation and interconnectedness of objects.

Figure. 1 (left) Lav mic in shotgun shell
Figure 2 (center) Contact mic in distorted bottle
Figure 3 (right) Lav mic in insulated tubing

Leesport

Background

      We were drawn to a story in Towne's book about a 1948 survey of the Schuylkill river conducted by the Limnology Department of the Academy of Natural Sciences of Philadelphia. One researcher named Thomas Dolan recounted a notable observation near Leesport, PA: "As a survey entomologist, I was searching for aquatic insect species. In spite of rigorous collecting efforts, I found only one adult beetle...The fact that no aquatic insects were found living at that location on the Schuylkill was indicative of the presence of acid mine damage…[and] coal culm (silt)" (137-8). This story was notable in our research not only because it documented specific pollutants in relation to specific river life, but also because it occurs to us that for Dolan, listening to the river was as systematically and specifically relations-based as our own practice. In other words, Dolan's analysis was rooted in specific and narrow relationships, presence, and absence. He seemingly understood the river (or at least articulated his story of the river's health) via listening objects of aquatic insects. We decided to return to Leesport, to see if we might find any insects (out of sheer curiosity) all these years later, but also to see what kind of bodily presence/absence might help us understand the place in 2019.

Seamfinding

      We arrived to Leesport and found a single bridge that reached across the Schuylkill on Wall Street. We walked beneath the bridge and began assessing the space, again, for both thematic objects (e.g., litter/trash), objects/bodies that reverberated past observations (e.g., beetles), or other objects that presented sonic and thematic potential. As with every other site along the river, we found no shortage of consumer waste/litter, including a perhaps ironic can of insect repellant. We also found some physical features of the bridge to be of interest, including a large drainage tube that passes beneath the bridge that carried and echoed the intermittent passing of vehicles above. As the recording progressed, a gentle rain began to fall,

which can be heard tapping on both the plastic milk jug and the can of insect repellant.

Figure 4 (Left) Lav mic in milk jug, Figure 5 (Center-left) Contact mic on raid can
Figure 6 (Center-right) Lav mic in drainage tube, Figure 7 (Right) Hydrophone in water and gear
Norristown

Background

The primary pollutants of the Schuylkill upstream of Norristown are byproducts of coal mining, but here the (hi)stories and objects of pollution seem to shift. According to Wenner (2013):

> Silt was not the only pollutant ruining the Schuylkill. During the latter part of the nineteenth century, sixteen municipalities drained sewage and waste into the river. Norristown, Montgomery County, with a population of 14,500 in 1884, discharged foul water from oil refineries, slaughterhouses, woolen mills, iron factories, and breweries into once pristine waters. The Philadelphia Water Department continues to cite a tributary, the Stony Creek, as one of ten priority water systems in the country to monitor.

We chose as our third listening site the intersection of the Stony Creek and the Schuylkill River. This confluence occurs at Riverfront Park in Norristown, PA.

Seamfinding

We arrived to Riverfront Park in Norristown, seeking some kind of borderspace where the Stony Creek empties into the Schuylkill River. We found an area where there was boat dock access, where small groups of people gathered as the daylight threatened to wane. A small family fed a large group of geese bread they tore from a large loaf. Men fishing on the dock smoked cigarettes. We found a small floating dock near some canoes that were tied to the shore. It moved and creaked as we walked across it, and in keeping with our observations at other sites, there was plenty of discarded trash to be found. We used microphones on and around the

noisy dock, and used empty drink containers through which to listen to the near-dusk scene of ducks, passing cars, and nearby laughter.

Figure 8 (Left) Lav mic in water bottle, Figure 9 (Center) Lav mic in crushed soda can, Figure 10 (Right) Contact mic on dock post
East Falls

Background
        The East Falls neighborhood in Philadelphia is a site long associated with the Schuylkill River and its inhabitants, especially the catfish. Regardless of the health of the river and the safety of eating fish taken from the water over time, this area has been a popular fishing site since at least

the early 1800s by colonists, and certainly prior to European colonization by the Lenape people. In fact, the abundance of fish led to a now-forgotten culinary staple of Philadelphia: Catfish and Waffles. The dish headlined many taverns and tourist stops along the Schuylkill until many of these establishments were closed due to prohibition in the 1920s. Even after the age of Catfish and Waffles, however, in a time when the Pennsylvania Boat and Fish releases annual "Fish Consumption Advisory" documents to warn residents about the safety of eating fish from the Schuylkill, the fishing community on and around East Falls remains robust and evident, especially if one happens upon the bridge during summer nights.

Seamfinding

We explored a few sites in East Falls, including the Falls Bridge, a popular fishing site. We settled on a site just Northwest, where the Wissahickon Creek feeds the Schuylkill. Not only did this site present seams as two waterways converged, but just above us, on Ridge Avenue, sits the Wissahickon Transportation Center, a major hub for public transportation in the city. We parked near the transportation center and walked to the riverbanks, where we found, again, an abundance of listening objects and seams of material relations. A traffic cone serendipitously sat on the rocks, which we used as a kind of amplifier over the water. There were jagged pipes protruding from concrete slabs, half in the water. We also developed a bit more courage to actively curate objects as sound sculptures. We had previously tried to listen to objects in situ as much as possible, but here we sculpted a listening object from a crushed aluminum soda can and an empty pill container.

Figure 11 (Left) Contact mic in crushed soda can with pill box, Figure 12 (Center) Lav mic in traffic cone, Figure 13 (Right) Hydrophone in rusted metal piping

Fairmount Dam

Background

The oft-photographed Fairmount Dam in Philadelphia was constructed from 1819-1821 in order to provide and store drinking water and water power, as well as create a recreational area for rowing, which continues today (see also: Boathouse Row). Yet at many points in time, it

also served as a kind of dumping ground for pollutants and waste. In the late 1800's, Dr. Charles Cresson, a chemist with the Philadelphia Board of Health, performed analyses of the river and concluded that the outbreaks of cholera, yellow fever, and typhoid at the time were partially due to the amount of discharge from nearby cesspools and slaughterhouses that made its way to the drinking water supply. Aforementioned pollutants from upstream such as coal silt, oil from refineries, and so on were also present, and the river was reported to have accidentally caught fire on more than one occasion, first in 1892 (174). The more one reads about the chemical history of this place, the stranger the juxtaposition becomes with its public image of health, recreation, and architectural mastery.

Seamfinding

It was a characteristically hot and humid day in Philadelphia. We arrived to the dam, which might better be referenced to current residents as Boathouse Row. Today it is a kind of hub of recreation and outdoor activity, from frequent rowing events to both tourist and local traffic on the bicycle path. You will also find some folks fishing there, as well as casual pedestrians coming from the nearby museums. We climbed some fences and scaled a bridge to capture vibrations of cars driving atop the Martin Luther King, Jr. Drive bridge. We then walked to the Fairmount Water Works, now a historical site.

As we lowered the hydrophone into the rushing, falling waters of the dam, of course intending to focus listening on the water, we began to hear the electromagnetic signals of the dam, and we explored these invisible seams instead. This became perhaps the most interesting listening experience of all of our site visits, and certainly the site best suited for an audio representation. We then walked to some areas with benches, where we found a small sculpture dedicated to the significance of the river to the Lenape people. We had not encountered many nods toward the indigenous peoples of the river, and this one was unfortunately small. We used our small lavalier microphones to listen through that sculpture, as a reflective moment of gratitude, recognition, and imagination of what the area may have been like prior to the trauma of colonization.
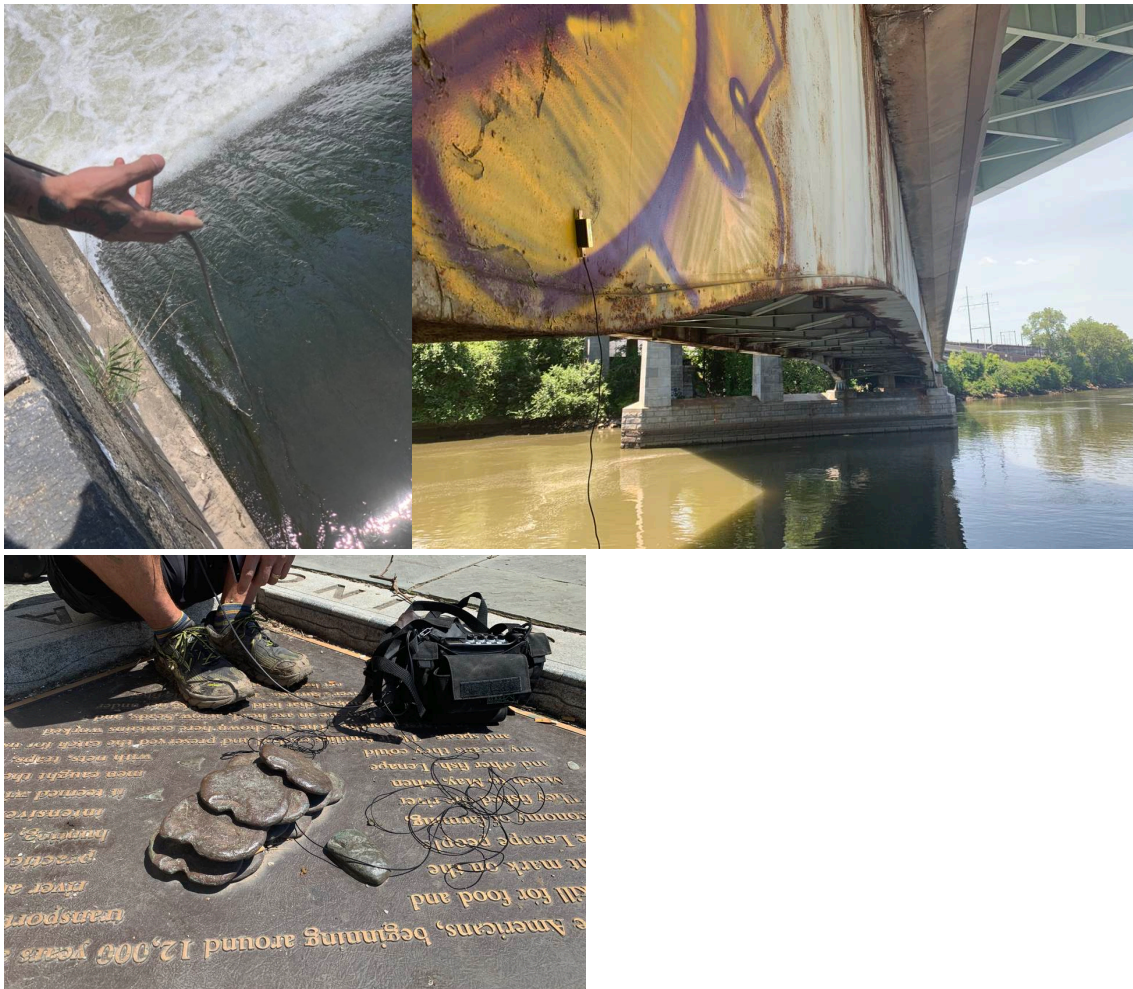
Figure 14 (Left) Hydrophone in Fairmount dam, Figure 15 (Center) Contact mic on bridge, Figure 16 (right) Lav mic in Lenape Sculpture

Navy Yard

Background
     The Navy Yard in Philadelphia is the birthplace of the U.S. Navy (in 1794) and the terminus of the Schuylkill River as it feeds the Delaware

River. The site served as a naval base until 1996, and is now "a thriving, 1,200-acre business community where 150 companies occupy over 7.5 million square feet of office, industrial/manufacturing, and research and development space" ("History"). Its transition from a military complex to an industrial one was a massive undertaking of hazardous material removal and management on land, though much less has been documented about its relationship to the Schuylkill. Waterway-based reports of the area tend to focus instead on the Delaware River, which while not our focus here, has its own memories of colonial and industrial trauma that are still expressed through its relationships with humans and other residents. Visiting the Navy Yard now is a strange juxtaposition of highly-guarded naval research facilities, the presence of several retired naval battleships, and the trendy campus of URBN (the parent company of brands such as Urban Outfitters, Anthropologie, etc.), a company who has a complicated (at best) political and material relationship with capitalist colonization.

Seamfinding

We arrived to the Navy Yard, and with the help of a friend employed at a company there, found a space on the water with dock access that was seemingly open to the public (security passed several times but didn't seem to mind our presence). Behind us, on land, were buildings in which product and catalog photo shoots were likely taking place. In front of us, the converging waters of the Schuylkill and Delaware Rivers. Several ships sat in the harbor, many reported to have come there to be disassembled. Along our position on the dock floated an assortment of trash. We dipped the hydrophone into the water and heard intermittent blasts of noise--a later conversation with a person familiar with the Navy Yard led us to believe that the noise may have been work being done on or in the nearby ship. We placed our contact microphone on pieces of plastic trash, settling on what seemed like an employee's abandoned or forgotten lunch container. Finally, our lav mics hung into the hollow beams of the dock, catching the air blowing over the opening and, of course, the frequent air traffic from Philadelphia International Airport, only a few minutes away by car.

Figure 17 (Left) Lav mics in dock support beams, Figure 18 (Center) Contact mic in debris, Figure 19 (Right) Set up at Navy Yard

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Footnote: Dempster, Panaotis, Oliveros, "Deep Listening," in accompanying booklet, The Deep Listening Band, *Deep Listening*, recorded November 7, 1987, Leo LR 174, 1988, compact disc.