# Rethinking Technology & Creativity in the 21st Century

# Historical Soundscapes for Creative Synthesis

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*The sound of colors is so definite that it would be hard to find anyone who would express bright yellow with base notes, or dark lake with the treble*
*— Wassily Kandinsky*

*Being creative does usually involve playing with ideas and having fun; enjoyment and imagination. But creativity also is about working in a highly focused way on ideas and projects, crafting them into their best forms and making critical judgments along the way about which works best and why. In every discipline, creativity also draws on skill, knowledge and control.*
(Robinson, 2011, p.5)

## Introduction

This column series for TechTrends (from the Deep Play Research Group and coauthors) has, over the past few years, focused on varied issues and examples at the intersection of creativity, technology and education. More recently we have honed in on transdisciplinary thinking – or meta-level cognitive skills for creativity that cut across disciplines. In these articles we built on Mishra, Koehler, & Henriksen's (2011) list of seven transdisciplinary skills and explored their instantiation in multiple disciplines as well as provided examples of how these could be used in educational settings. These skills, in order have been covered are: perceiving, patterning, abstracting, embodied thinking, modeling, play and synthesis. Our last column on the skill of synthesis (Henriksen, DeSchryver, Mishra & the Deep Play Research Group, in press) examined multiple aspects of synthesis – both in the way that the skill represents some combination of the previous six skills, and in the way that creative production often requires us to synthesize multiple things or ideas. In that piece, we pointed to some examples of music production, such as "mashups", "medleys", and other examples of creative synthesis, to reflect the way that the skill of synthesis lets us combine existing and/or different elements into a unique blend of the new.

For this article, we follow up with a specific case of how some of these transdisciplinary ideas (particularly synthesis) have been put into play in history education. Guest authors for this column, John Lee and David Hicks share the idea of *historical soundscapes*, along with some examples of how this idea works in the teaching of history. These historical soundscapes are some of the most engaging and powerful examples we have seen, of how technology and creativity can come together to teach content through acts of creative synthesis and transdisciplinary skills. We hope you will find the work by Lee and Hicks to be as inspirational and creative as we did – in their discussion below.

## Historical soundscapes: Telling stories with sound

History, with its ever present gaze backwards, and history teaching with its reputation of being little more than a simple aggregation of facts transmitted to students via lectures, textbooks and worksheets, does not typically lend itself to discussions of creativity, engagement, and play. Of course, we contend learning history does not have to be staid, predictable and reduced to little more than a memorization game. History is the story of the human past; wrapped in all the complexity, beauty, and wonderment that is the human experience. History is an

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inferential discipline that at its core requires deliberative and critical inquiry that challenges us all to engage with historical records and relics to construct evidence-based accounts of past events and ways of life. As Baron (2012) reminds us, these records and relics of the past should not simply be seen as text based, rather "artifacts such as clothing, tools, and buildings are also critical" for understanding the past (p. 833).

Historical soundscapes build on Baron's widening view of the range of historical sources that can inform our understanding of the past by opening new spaces for examining, communicating, and understanding the past using sound. Our shift toward playing with the idea of sounds to tell the story of history was guided by the following questions: What do sounds have to do with history? What if stories about the past were told exclusively through sounds, and the sounds were produced by human activity and in nature? What would these representations of the past "look" like / sound like? Is such a creative move within the discipline of history and history education useful or even possible? We think so, and in this column we describe a creative approach to using sound in history that is both imaginative and highly focused.

## Historical Soundscapes

So, how are historical soundscapes creative? To answer that question, let us first examine the intersections of history and creativity. History is an academic discipline where we try to make sense out of what we have done in the past so we might be better in the present. History is not just what we have done in the past; it is what we have aspired to do. History is memory and consciousness. It is how we choose to remember the past and how we collectively hold those memories to give our present-day experiences meaning. History is what can see in the past and what we aspire to be in the future. We believe that history offers just the right stage for creativity in education. Creativity in the grasp of a student of history means a way of knowing and doing that is unique and unencumbered by regular practice, but attentive to what has come before.

Historical soundscapes are the application of a theoretical approach to representing the past through sound. As a creative practice, historical soundscapes enable a form of play that is engaging and energetic, but bounded by theory. As with all intellectual applications, our creative practices with historical soundscapes are framed by ways of understanding the world, and in this instance those ways of understanding take form through three unique intellectual and creative fields; musique concrète, acoustic ecology, and auditory history.

These three theoretical frames informed all of our work, from the establishment of an intellectual argument for developing historical soundscapes, to the construction of a form for representing historical soundscapes, to development of an activity in our educational methods courses. We describe each of these below followed by some consideration for the challenges and changes needed to bring historical soundscapes in the regular practice of social studies educators and teachers.

### *Historical soundscapes as an intellectual field*

The intellectual origins of historical soundscapes can be found in electroacoustic music, specifically the unique genre of music known as musique concrète. Established by Pierre Schaeffer in the 1940s, Musique concrète emerged as an experimental compositional form that used new audio recording and playback technologies to induce music from natural and human made sounds that might otherwise be thought of as simple everyday environmental noise. "It starts from the concrete sounds and moves towards a structure. In contrast, traditional classical music starts from an abstract musical schema" (Hodgkinson, 1986). Musique concrète approaches all sound as potential music, thus disrupting traditional forms of music defined by tonality and timber.

Acoustic ecology is an emerging academic field, closely associated with musique concrète that seeks to examine the relationship between humans and their environment as mediated by sound (Wrightson, 2000). The field developed from the work of composer and professor of communication at Simon Frazier University, R. Murray Schafer. In the 1970s, Schafer established the World Soundscape Project to systematically study acoustic environments that Schafer argued were being overwhelmed by an increasingly visual culture. To emphasize his concern with the erosion of our capacities to interact with and manage our acoustic environment, Schafer would challenge his students to recall five non-musical sounds they had heard in the past day. More often than not, students were unable to complete the task (Wrightson, 2000). In an effort to help his students understand their auditory experience, Schafer began to build a collection of recorded natural and human-made environmental sounds. With these auditory collections as a foundation, Schafer rounded out the intellectual foundations of acoustic ecology in his 1977 book, *Tuning of the world* where he proposed three types of environmental sounds; keynotes, sound signals, and soundmarks.

Keynotes are background sounds that frame the other sounds produced in an acoustic environment for instance, birds chirping, the sounds of cars on the road, the murmurs of conversations, or sounds of waves crashing on the beach. Sound signals are the non-musical foreground sounds that attract human attention for example, a car honking as you step into the street, a school bell to signal the end of class, a police siren, or a ringtone on a cell phone. Soundmarks are analogous to landmarks in that they are distinctive and are often representative of traditional human activities. Classic examples of soundmarks include the sounds of church bells or the sounds of factory whistles. The distinctions among keynotes, sound signals, and soundmarks are, in practice, quite porous. For instance, a crowd applauding at a sporting event may be a keynote sound for some listeners who are focused on other aspects of the events, but also could be a soundmark

for an athlete participating in the event. The fun comes in working with students to challenge them as they articulate acoustic ecology theory in practice by trying to identify and classify sounds in their environment

The use of sound in history, or what we might call auditory history, is an emerging construct and field of work. Sound is of course a vital part of the human experience, but it is rarely represented as historical source material, despite the increasing abundance of audio recordings of the past. As historical sources, sound sources hold great value for understanding human experiences. Historian Richard Cullen Rath (2008) provides an example of how historians can use sound as source material in his research on 17th century Protestant churches. Writing about the importance of sound at the time, Rath says, "seating patterns in Puritan churches that make no sense when considered visually clearly show the rank and status of the churchgoers when we factor in acoustics" (Rath, 2008, p. 23). Even with such a clear example of the historical value of sound, using sound as historical evidence is not with challenges. One problem is the ephemeral nature of sound, but as Rath (2008) points out all history is ephemeral and, as with all sources of our material cultural, any past event can be reconstructed.

*Soundscapes as an interpretative form*

A soundscape is a collection of sounds produced and heard in a particular place at a particular time. Soundscapes exist in nature, but might be thought of in some ways as experiential and thus defined by the act of listening. While all environments are full of a rich array of sounds that may have recurring patterns and a foundational structure, it is the act of listening that calls a soundscape into being.

Artists and scholars in acoustic ecology have been carefully recording soundscape for decades. Some of the better known of these efforts include;

- Sounds of Europe - http://www.soundsofeurope.eu
- World Soundscape Project - http://www.sfu.ca/~truax/wsp.html
- Western Soundscape Archive - http://westernsoundscape.org
- Sounds from the British Library - http://sounds.bl.uk

All of these recordings are records of the past. They are faithful efforts to document events and represent human experiences. As historical records, they hold great value for understanding how human experiences have been mediated by sound. Descriptions of soundscapes, like all sounds described in historical sources, are also records of an auditory past. For that matter, any description of sound ought to have potential value as historical evidence, yet sounds as a source in history and in history education are rarely used and poorly understood.

*Historical soundscapes as pedagogy*

Given our understanding of musique concrète, acoustic ecology, auditory history, and soundscapes as an interpretive form, we developed an activity for teachers to create their own historical soundscapes. By historical soundscapes, we intended to stretch the notion of a soundscape across academic boundaries by in a sense matching acoustic ecology theory with disciplinary practices in history for using sound as source material. The resulting project involved teacher education students creating original historical soundscapes from research on local history topics. For this project, the concept of acoustic ecology was adapted by imagining soundscapes as a compositional form for communicating conclusions from historical inquiries where sounds served as the sole source of historical evidence.

This activity involves teacher education students researching historical topics and locating or capturing audio sources for use as evidence in an acoustic interpretation. Over the last four years, students involved in the project have created over 100 historical soundscapes. The project requires students to rethink how historical source material takes form and then to represent their ideas about history through an auditory composition. The pedagogical goal of the activity is to broaden teachers' perspectives on disciplinary history and to encourage creative pedagogical approaches to historical inquiry. The requirements for the project include.

- At least one original recording.
- At least four sound tracks (some may be pre-recorded).
- Clear representation of the elements of a soundscape - keynote, sound signal, and soundmark.
- An interpretation through sound of some historical topic (event, person, place, etc.) in the local area.

While students' work on the project is focused mostly on historical research, technology plays an important supporting role. Technological issues come to the forefront in this project. One issue concerns editing sound. For this project, students typically use an open-source sound-editing program called Audacity. This software enables students to edit soundtracks, mix tracks, and create a final version of the soundscape. Students are required to write up an annotation for their historical soundscape as well. The annotation includes information about the following.

- A general description of all the tracks on the historical soundscape.
- Information about how and when the original track(s) was recorded.
- Citations for materials located online or taken from other published or shared work.
- A summary of the messages that being communicated through the work.
- A statement reflecting an interpretation of the work.

## Student examples

Over 100 students have completed this assignment over the last several years. The quality and style of these products has changed over time, but when looking across the work three qualities stand out.

1. The composition of the final products.
2. The quality of the soundscape elements - keynote, sound signal, and soundmark.
3. The ways in which the sources are used as historical evidence in an interpretation.

Below are examples of how students' work represents each of

these three areas. These examples are available online at http://soundscape.dhpp.org/.

*Compositional quality*

The compositional quality of students' historical soundscapes reflects the artistic blending of sounds and the electroacoustic origins of acoustical ecology. Students' capacities for selecting sounds, layering sounds, fading sounds in and out, and sequencing sounds were markers of compositional quality. One student product focused on changes in a local community over time. In a three minute and thirty second historical soundscape, the student layered rural farm sounds that included livestock, birds chirping, and wind blowing alongside urban mechanical noises including a train and the 'dial-up' sound of a computer connecting to the Internet. On top of these natural and mechanical sounds were additional keynotes and sound signals representing historically concurrent language dialects from African American Vernacular English, Appalachian English, Chicano English, and General American. The compositional effect was to juxtapose natural, mechanical, and human made sounds across an expansive period of history.

*Quality of sounds*

In a project on Ava Gardner, another student compiled eight tracks representing Ava Gardner's rise to fame from a small town to super-stardom. The assembled tracks represented a mix of soundscape elements. The student blended non-musical sound abstractions of Ava Gardner's life with more explicit musical representations. The non-musical abstracted sounds are a good example of how soundscape elements can be used in an historical soundscape. As a keynote (background sounds for frame other sounds), the student carefully selected city sound effects from Gardner's rural home and her increasingly urban and even cosmopolitan life. As a sound signal (non-musical foreground sounds), the student used a camera flash sound that became a ubiquitous part of Ava Gardner's life. As a soundmark (sounds distinctive of traditional human activities), the student created the sound of a lion roaring to represent the MGM movie studio where Ava Gardner worked.

*Dispositional shift in history*

Some of the historical soundscapes produced have qualities that demonstrate students' understanding for how sound sources represent a fundamental shift in how sources can be used in history. In a project about the importance of a local river on economic activity, another student created an historical soundscape that consisted of six sounds she recorded or recreated that together represented an interpretation of the economic history of the river. The sounds included an original recording of flowing water in the river, the recreated sound of a water wheel for a grits mill, the simulated sound of a diversion dam for a small power plant, sounds of trucks going to a paper mill powered by the diversion dam, an original recording of power turbines for generating electricity, and an actual recording of cars passing the river. Collectively, the sounds tell the story of a once quiet and undisturbed river being put to work, in a sense, by human activity, first by powering a grits mill, then in providing power for a papermill, and most recently in generating electricity for the local community.

Each of these examples is representative of how we can learn history with sound. Historical soundscapes provide a deeper understanding of the power of situational and social context to support how we remember and how we develop historical understandings. Historical soundscapes also serve as an active process for learners to connect new information to their prior knowledge of historical events by working with very different forms of evidence to represent what they know about the past. Historical soundscapes create a playful way to engage with or process knowledge meaningfully in order to comprehend and elaborate on students' understandings of the past. The creation and sharing of historical soundscapes, we contend, provide a powerful opportunity to construct knowledge by engaging in socially mediated activities that forefront culture and context (Hicks, van Hover, Doolittle, & VanFossen, 2012).

## Challenges and Opportunities for Refining

A number of challenges and opportunities emerge from our work with historical soundscapes. For one historical sound sources are sometimes difficult to locate and work with. We live in a textual and increasingly visual culture. We often take sound for granted. The turn to sound as source material for understanding the past requires that we grapple with how we use source material in history. For example, if an authentic recording of a 17th century church is not available, can we use technologies to recreate those sounds? English professor John Wall has done just that through his Virtual St. Paul's Cross project (http://vpcp.chass.ncsu.edu/listen-ambient-sounds/), a digital recreation of John Donne's sermon for Gunpowder Day delivered on November 5, 1622.

While simulated historical sources may unnerve some teachers, teachers and students must understand that all historical sources carry the burden of representation. Every time we use information from an historical source we expect the source to represent something that it would not otherwise do. With such representation comes responsibility. Students have to account for their judgments about how sources represent the past through interpretation. When using sound as source material, the burden is particularly tricky. Historical soundscape blend artistic representation with historical interpretation in creative ways, but also in ways that may misrepresent the past.

The discipline of history lacks systematic procedures and practices for collecting sound sources, but there is a growing body of collected sounds that can be utilized. Perhaps the dearth of sounds sources reflects our tendency to take for granted the sounds that we are trying to account for. Too often we fail to pay attention to what is around us. Because of these lapses, maybe we have not recorded as well as possible our memory of what a steam engine sounded like, or the sound of footsteps on cobble streets, or a whistle that ends work, or church bells, or the sounds of the outdoor market. But all

is not lost, historical soundscapes can help awaken our appreciation for an auditory past and do so in a creative and engaging manner.

## Conclusion

In this column entry, guest authors Lee and Hicks have described a creative approach to the exploration of historical periods and contexts through the use of a sensory input (sound) that is perhaps not as common as the visual cues and stimuli that proliferate popular culture. Yet as they point out, auditory inputs are all around us, woven into the fabric of the information that we take in about settings and culture – and they are as vital to historical information as any other cues. The fact that they have not always been explored as deeply as the more obvious forms of information may lie in the fact that they are simply not always as obvious. Sounds can seep into the background or become part of the ambient noise that we take in. Also, throughout the past, the tools to capture auditory cues have not been as readily available (or available at all) as they can be now.

The notion of historical soundscapes is both novel and effective in its examination of history, because it does so from this unique (and relatively uncharted) historical perspective of sounds associated with time, place and events. This provides value by letting students reconsider, feel, learn about and sense historical settings and events in a manner or mode that they may not have been possible previously. In earlier columns (Mishra, Henriksen, & the Deep Play Research Group, 2013) we have laid out a definition of creativity that is not only Novel and Effective, but also Whole (NEW) in that it has an aesthetic component that is tied to context. In historical soundscapes, Lee and Hicks have hit upon these aspects of novelty and effectiveness, along with the whole – or the aesthetic qualities tied to the teaching of history. The fact that this is a creative approach that draws upon the affordances of technology (through audio files and editing tools like Audacity) makes it an interesting example to consider – at the intersection of creativity, technology and teaching.

This also follows up nicely on our existing work on the transdisciplinary skills. In particular it comes on the heels of our discussion of synthesis (Henriksen, DeSchryver, Mishra, & the Deep Play Research Group, in press), which highlights the way that creativity often takes place through blending or fusing different elements, which come together to form something new – a creative synthesis. The soundscapes created by students here do just that, creating and imagining existing or past sounds, and then reimagining how they might come together in a new landscape of sound – to give us a snapshot of an historical time and place or even of historical transience.

We also have noted how the skill of synthesis is unique in that it speaks to the fact that creativity and transdisciplinary thinking is often a blend of more than other of the whole set of seven skills. So when students create soundscapes, they are not just using the skill of synthesis, but pulling on other elements of transdisciplinary thinking. They also may need to use close observational skills in perceiving subtle differences in sound, and understanding how best to combine the tracks for different effects. They may have to use abstracting, to figure out what sounds could best represent an idea or experience from a place or time that is not in front of them. They may have to draw upon embodied thinking, to empathize with people, places or times past, and understand what sounds "feel" physically, mentally or emotionally right in describing something.

Any subset or combination of transdisciplinary skills is possible, or may be necessary, based on the demands of the creative task and context. So its important to note that while the skills have unique identities in definitional terms, they often work together and overlap when directed at creative processes. Transdisciplinary thinking is not always the discrete use of one thinking skill, but is often a complex blend of them in practice. So understanding what they are and how they operate becomes valuable for the act of creating and constructing – this particular case just happens to be sound and history, but the possibilities for powerful learning feel limitless.

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