Click: an Audiovisual Sound Sculpture

Paul Dunham, Mo H. Zareei
Victoria University of Wellington,
Wellington, New Zealand
paul@dunham.co.nz, mo.zareei@vuw.ac.nz

Abstract

The paper discusses the use of obsolete or out-moded technologies in object-based sound installations. Various approaches and strategies within this context are outlined and a number of significant cross-disciplinary works are surveyed. Developed by the first author, *Click*, an audiovisual sound-sculpture utilising Brownie Box cameras is presented as an example for this creative appropriation.

Keywords

Sound-sculpture, mechatronic art, sound installation, creative appropriation, audiovisual technology, media archeology, brutalism.

Introduction

If the incessant march of technological advancement is victory, this force has been determined in its control and suppression of the defeated – the detritus that is filtered out to "keep the medium distinct from the message." (Auner, 2000).

> If Benjamin said that history had hitherto been written from the standpoint of the victor, and needed to be written from that of the vanquished, we might add that knowledge must indeed present the fatally rectilinear succession of victory and defeat, but should also address itself to those things which were not embraced by this dynamic, which fell by the wayside - what might be called the waste products and blind spots that have escaped the dialectic (Adorno, 1951: 151).

In proposing an emergent post-digital genre of electronic music, Kim Cascone (2000: 1) observes that the "tendrils of digital technology" are a ubiquitous part of the Western world. In this post-digital music, the focus on the sounds of failure – glitches, errors, clipping, distortion, etc. – are incorporated into the music. If the outmoded or the obsolete are considered as failing in the advancement of technology, then another perspective of Cascone's post-digital aesthetic can be considered. This parallel aesthetic arises from the use of obsolete technologies in the creative production of sound art – the antithesis of technological advancement. Both perspectives of this aesthetic can be considered a subversion of technology. The first one can be perceived as subverting the embodiment of the modern with the modern's rejection of old technologies, and its criticism and contempt of the obsolete. Second, by subverting the traditional power dynamics of the victor over the vanquished, Cascone shifts the listeners' focus to the background.

This paper presents how *Click* – an audiovisual sound-sculpture developed by the first author – appropriates obsolete technology (i.e. the vanquished) and repurposes it within a quasi-digital context. The next section discusses contextual and aesthetic elements through which a number of cross-disciplinary works can be connected. A brief survey of artworks sharing similar appoaches towards creative appropriation of media and material is presented. Following this, *Click* is introduced as an example of an audiovisual work in this context. An overview of the design and development of the work is discussed, followed by compositional strategies and aesthetic approaches employed to further strengthen the work's audiovisual connectivity. Lastly, the paper concludes by considering past and present cultural and technological relationships through this creative practice.

Background and Related Works

As consumerism consigns outmoded objects to the technological junkyard, media artists are looking beyond the utilitarian function of these objects, beyond the gaze of nostalgia, seeing ways of creatively appropriating them to produce artworks that use and reference analogue and/or mechanical technologies as an aesthetic and structural element (Huhmato, 1995: 1). In describing the artist Christian Marclay's work in *Cracked Media*, Caleb Kelly (2009: 171) states that rather than utilising the latest technology, Marclay is "using the creaky old device that has been left on the shelf and devising a new aesthetic practice for it", not as a "nostalgic picture of an outdated and obsolete technology", but as a reinterpretation of the technology into something new. Kelly's words echo the writings of Laszlo Moholy-Nagy and Siegfried Zielinski. Moholy-Nagy (1922: 289) stated that "creative activities are useful only if they produce new, so far unknown relationships." Zielinski (2006: 255) wrote;

> Many art and design activists choose to create something original by establishing unusual connections between existing means of expression and/or material; such work stands out significantly from the media products we encounter every day.

Every object has a purpose assigned at creation. However, an object's use can be transformed and placed in different contexts thus establishing new connections and forms of expression. Zielinski (2006: 3) suggests "we need a different perspective" to find something new in the old. One way of doing this is to find new ways of utilising the objects' electromechanical qualities, a practice that is not new in sound-based creative practices.

Just as Cascone wrote that his sounds of failure were often buried beneath perception, the electromechanical object has, at times, shared similar treatment by being pushed into the technological hinterland, in deference to the idealised neutrality of the studio (Piggott, 2017: 278). A number of contemporary sound art practitioners are exploring, manipulating, and foregrounding the use of appropriated and out-moded electromechanical devices for the purpose of creating sound installations and performances. The creative appropriation of everyday objects and the recontextualising of their purpose creates a new cycle of life outside that which was originally intended. Such works typically "engage an audience by actuating a visibly present object", in what Ethan Rose (2013, 65) describes as the object-based sound installation.

In electromechanical sound art, Jon Piggott identifies two distinct approaches; process-driven and robotic. He describes a process-driven sensibility as exhibiting unknown sounding, non-linear and unpredictable material behaviours. He sees the robotic sounding behaviour as being reliable, repeatable and playable with works being composed and organised. In making these distinctions Piggott (2017: 277) notes the difficulty of finding meaningful connections and a common ground across the different genres within which these works exist. However, such a connection has been made with a set of aesthetic principles. Coined by the second author (2016), "sound-based brutalism" is an aesthetic approach encompassing a diverse range of audiovisual works connected through common elements: a radically stripped down focus on basic sound-generating mechanisms and material, and their presentation through grid-based structures and repetition. In addition, exposure of the raw materials provides a visual emphasis on the sound producing source. No longer hidden in the background or listened to as sound "divorced from the context of visual meanings", works by such artists as Zimoun, Martin Messier and Stephen Cornford are foregrounding the sound producing object reduced to its raw material form as a key aesthetic element of their work (Rose, 2013: 66). Alongside this exposure of the basic physical unit is its iterative presentation as a building block for the resultant audiovisual output. Using brutalism as an aesthetic frame of reference is in part an effort to establish a meaningful connection and find common ground across genres that Piggott found difficult to make.

An explicit realisation of this aesthetic approach is *The Brutalist Noise Ensemble* (Figure 1), a series of sound sculptures developed by the second author (2015). The reductionist, raw, and minimalist features of the sculptures, as well as the harsh, monotonous, repetitive clicks, clacks and whirs of the motors and actuators are reminiscent of Brutalist architecture's non-decorative and "anti-beauty" approach towards raw material (Zareei, 2016: 57-58).
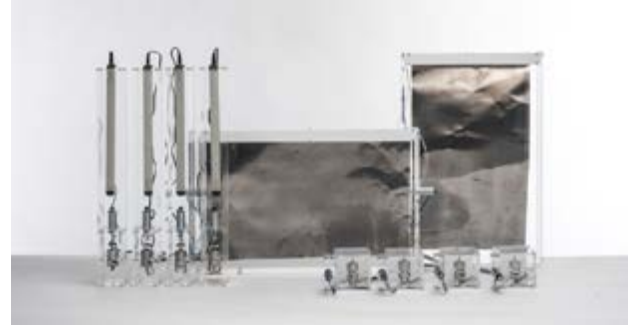

Figure 1. Mo Zareei's Brutalist Noise Ensemble © Mo H. Zareei

Exemplars of object-based sound installations using out-moded technologies include installations by Martin Messier. *Sewing Machine Orchestra* (Figure 2) is a striking audiovisual work utilising Singer sewing machines (Messier, 2011).

Figure 2. Martin Messier's Sewing Machine Orchestra © M. Messier

As an installation piece, the work gives the impression of new life occuring in old technology as the light and early sounds seem like a quickening heartbeat. Similarly, Messier's appropriation of 8mm projectors in *Projectors* allows him to use the rhythmic sounds of their mechanics, whilst presenting them in skeletal form against a stark backdrop (Messier, 2014). The projectors do not project as Messier utilises their sonic artefacts in a coordinated audiovisual performance.

Another example can be found in Nicolas Bernier's *Boite*, which exposes Luigi Russolo's mysterious intonarumoris in response to the black box architecture of today's electronic music (Bernier, 2008). Stephen Cornford's work with dictaphones utilises the sounds of the mechanisms and electrical cracks. *Migration* creates the sound of a flock of birds but as you draw closer to each object the individual sounds are exposed (Cornford, 2015). This spatialisation of each object exposes the differences of each object's sound whilst encouraging the audience to explore these as they move along the work. Cornford's work

reflects on consumer culture, obsolescence and the shorter lifecycles between technological generations.

As previously stated, while not incorporating out-moded technology in their work, a number of media artists incorporate explicit references to old technology as aesthetic and structural elements of their works. Paul de Marinis' *Messenger* (1998/2005) is an Internet driven installation based on the concept of historical electronic communication. The work examines the metaphor encoded within various technology and social relationships through the receipt of emails and sending them "to their demise" letter by letter to various audiovisual outputs. Another example is Dimitri Morozov's (2017) recent project *Ivy* (Figure 3), an interactive sound installation using a 240 step sequencer that acknowledges the archaic method of programming analogue synthesizers through audience interaction of manually changing sliders to control patterns. The large scale of the installation turns a simple sonic element into a series of rhythmic and visual patterns.

Figure 3. Dmitry Morozov's Ivy © D. Morozov

As object-based sound installations, these works share a connection with the first author's work, *Click*. What differentiates these works is Piggott's process or robotic approaches[1]. As a robotic work, *Click* shares a connection with Messier's sewing machines and projectors, Morozov's *Ivy* and Zareei's brutalist sound sculptures. This connection is extended through common elements of Zareei's brutalist sound aesthetic; the use of 'extra-musical' sounds, harsh sonic byproducts or artefacts, generally iterative, pulse-based rhythms and stroboscopic visuals.

Click: Analogue or Digital?

The introduction of the Kodak Brownie Box camera brought photography to the masses and, in the process, democratised the art of photography. With the advent of digital photography, the film camera was consigned to the background. An outmoded memory repository whose digital successors primarily attempt to capture information encoded in 0s and 1s.

[1] The term robotic in the context of this work is primarily a reference to Piggott's definition of the word. Through the use of mechatronics and microcontroller programming, the system is capable of robotic behaviour.

Nevertheless, there are some characteristics of this old technology that have been retained in the new technology. In this case, it is the sound of the film camera's shutter, providing a connection between the past and the present. There is also a subjective visual beauty in the rawness of the camera's materials and its simplicity of design and construction, of function over form. This simplicity of function and form made the Brownie camera an interesting source material for *Click* (Figure 4).

Figure 4. Click

Click is the creative appropriation of analogue and mechanical technologies and the reinterpretation of the use of the Brownie camera in the production of sound art. The primary motivation for *Click* is the exploration of sonic artefacts associated with out-moded or obsolete technologies and the creation of a connection with the present. The choice of the Brownie camera was primarily inspired by its modernist technological simplicity that has long been superceded, and not by a sense of nostalgic sentimentalism or retro impulse. The work speaks to the ubiquity of digital technology in current photographic practices represented through one of the early mass consumer products. *Click* uses audiovisual elements to provide a different perspective for representing and experiencing the digital through a juxtaposition with an analogue technology. In a wider context, the work speaks to the increasingly short lifecycle of consumer products in a commodified society. A Moore's Law of obsolescence (Sandborn, 2008).

System Overview

Click is an object-based sound installation that consists of a series of eight Brownie cameras metaphorically representing a digital byte. Each camera has been augmented with a solenoid actuator which operates the shutter. The actions of the solenoids are powered through and programmatically controlled by a microcontroller (an Arduino board) and a driver board. Figure 5 shows the interconnected driver

boards and circuits. The communication is accomplished via MIDI messages that are generated in Ableton Live.
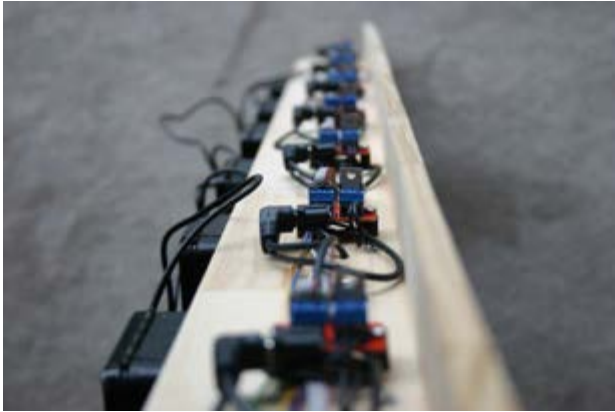

Figure 5. Click Solenoid Electronics

The Arduino uses custom MIDI firmware, HIDUINO[2], to present the microcontroller as a MIDI device to Ableton Live. Ableton Live sends MIDI notes to the Arduino, which translates these as digital pulses that trigger the respective solenoid. A high-level system overview is shown in Figure 6.
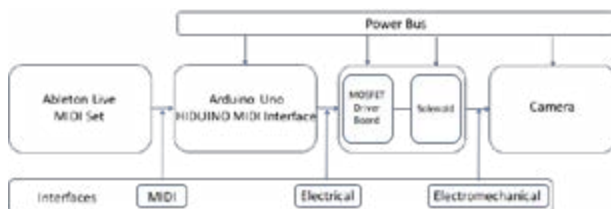

Figure 6. Click System Overview

Click's primary sonic material is provided by each camera's shutter mechanism. A white LED placed in the lens of each camera is exposed when the lens shutter is opened. At the same time as exposing the LED, the sonic artefact of the shutter is heard. By arranging a series of binary-based patterns to a rhythmic grid, sequenced with the visual elements of the LED and the pulsing of the solenoid plunger, the work brings an audio-visual musicality to binary sequences.

Compositional Strategies

At its minimalist prototype state, *Click:Bit* (Figure 7) is a composition for a single camera that can play either a 1-bit loop or a random 1-bit sequence as an installation. The reduction of the work to its basic unit aligns with a minimalist aesthetic that inspired the work. This minimalism acknowledges the digital bit as the smallest unit of data and exposes the nuances of the camera. The physicality of the work can be seen as the camera responds to the body blow from the solenoid. The sonic quality of the object's sound is heard as the shutter resonates in the camera body. *Click[3]* is both a

performative and installation work for playing a series of rhythmic grid-based binary compositions.

Figure 7. Click:Bit

This raw building block was then extended to eight cameras, allowing for compositional exploration of audiovisual possibilities within a digital byte of number sequences (Figure 8). An iteration of a single camera unit is an effort to create a richer audiovisual experience, while exposing the characteristic nuances of each camera.

The primary compositional strategy for *Click* is the use of time and space in each composition. Time does not change within a composition as tempo and note length are fixed for the duration. Each composition is set to a fixed grid to accentuate the rhythmic patterns tying together the audio and visual aesthetic elements. Space blurs the boundary between each number by using a fixed musical time for each number. For example, 1 is played as 00000001, with the 0s being rest notes, and plays for the same musical length as 10000001 (decimal value 129). Space is also used to perceptually disrupt the rhythmic pattern and the density of the sound. Rest notes contribute to sound spatialisation as aesthetic elements. This strategy has been used in *Click:Byte*.

Figure 8. Click: Eight Cameras

Click:Byte is composed of number sequences from 00000000 to 11111111 (0-255). Eight bits is a

---

[2] Diakopoulos, Dimitri. "HIDUINO (2010+)". Retrieved from http://dimitridiakopoulos.com/hiduino.html

[3] A short video of *Click:Byte* can be found at https://youtu.be/66qRHIm9GC0