#chronicled: Two realtime concert reviews sonified

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ABSTRACT

#chronicled is a multi-disciplinary musical work that critically explores contrasting media used for the dissemination of information. The work is a live electronic music piece with an equal stage component. Two performers present simultaneous reviews, in text, of a live electronic music performance. One review is typed as a long form essay on a mobile device while the other is a series of tweets performed on a manual typewriter. Each performer's typing is used as the control or sound input for the creation of the sound work. This paper describes the music, stage, and software components of *#chronicled* while illuminating the critical perspective that informed the creative choices. Composed by Christopher Jette and Keith Kirchoff, the work was commissioned by the Ammerman Center for Arts and Technology at Connecticut College for the 14th Biennial Arts and Technology Symposium where it was premiered.

Keywords
Twitter, typewriter, smartphone

1. INTRODUCTION

The state of music reviews, criticism, and discussion is ever changing. For much of the 20th century, music review was left to professional critics who published their opinions in magazines, newspapers, and journals. However, with the rise of the internet, digital media, the blogosphere, and finally social media, the 21st century has seen a steady transition away from professionally-written, print-published criticism towards criticism that is enthusiast-written and digitally-published.

#chronicled explores this evolution in criticism through the creation of a theatrical and sound composition. In the work, we heighten the contrast between traditional print based culture and digital culture by juxtaposing two reviewers: one commenting in essay form and the other communicating in tweets. The input methods further reinforce the contrast by superimposing the new writing style on old technology and visa versa. We create a visual incongruence that is apparent to the audience as the stage component of an electronic music work. This serves as a context around which and imbedded within, a sonic work is created.

2. THE THEATER:
WHAT THE AUDIENCE SEES

The two performers (Kirchoff and Jette) sit upon the stage and comment upon the same event: the real-time performance of *#chronicled*. One performer uses a traditional essay format commonly associated with that of 20th century journalism. The other performer comments on the event in a series of tweets. We observe the Wikipedia definition of a tweet, "text message limited to 140 characters" as a formal constraint on the typing of the second performer.[1]

The first performer will be using a smartphone a a medium more commonly associated with the disseminated reporting of social media - to compose an essay of the live experience. This essay will be streamed and publicly viewable on the audience's personal mobile device via a Google document. The smartphone is linked wirelessly to a central computer - positioned center stage - which in turn will generate sound based upon the addition of characters to the whitespace of the document. These sounds will be composed vignettes drawn from a bank of sounds that will have been collected at the local New London newspaper: The Day.

Conversely, the second performer comments on the same live sound creation through a series of tweets composed upon a typewriter, the sound of which is filtered and projected into the hall. The sounds of typing associated with each tweet is recorded and played back. The sonic tapestry generated by the audio loops and ongoing typing gradually accumulates into an undulating mass of sound, analogous to a stream of tweets revealing a trajectory. While the text of the first performer is viewable on a personal mobile device, the text generated by the second performer is viewable by video projection. A small video camera is focused on the text output of the typewriter, the signal of which is projected onto a screen. This allows the tweets to be viewable as a fixed, non-interactive display. The static nature of the display contrasts the usual ways in which tweets are encountered and serves to highlight assumptions regarding the social nature of Twitter.

3. THE MACHINES:
INSTRUMENTS OF SEMANTIC AND SONIC CREATION

To illustrate the differences in journalism culture of print and digital, we chose to perform the piece on a typewriter and a smartphone: arguably two of the more important disseminators of information in their respective eras. The typewriter used is a 1937 L. C. Smith *Superspeed* (Figure 1) and the phone is a Samsung Galaxy Nexus running Android version 4.2.2. (Figure 2)

In his book Noise: The Political Economy of Music, Jacque Attali remarks: "Music runs parallel to human society, is structured like it, and changes when it does."[3] *#chronicled*

Figure 1: L.C. Smith *Superspeed* manual typewriter

reflects this position with the use of communication devices - a smartphone and typewriter - as performance devices.

Each device creates a unique interface for performance. The manual typewriter requires more than the touch of a single key, but rather the decided commitment and physical displacement of a key. The typist must plan each keystroke so as not to tangle the arms of the keys, which demands mental consideration. Conversely, modern typing - in an era with autocomplete, spell check, and the ability to easily edit and delete - has become a comparatively passive activity, virtually unconsidered by the creator of the text.
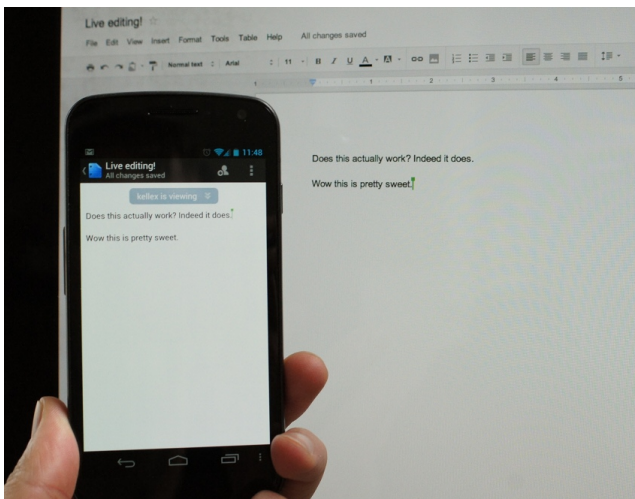
Figure 2: An Samsung Galaxy Nexus and a computer monitor displaying the same Google document. Image courtesy of Kellex of droid-life.com

In contrast to the clacks of the typewriter (and even the modern computer keyboard) is the silent gliding of fingers on a smartphone; with tools such as Swype input, the creation of words is reduced to almost precognitive shapes. The user begins to not think of words as combinations of keystrokes but rather as a series of contours. Even when entering text without Swype, the rapid pecking of nimble thumbs, with no mechanical resistance and the use of autocomplete, yields a rapid, nearly stream-of-consciousness rate of entry that is so ubiquitous to mobile devices. The autocomplete choices ensure a retracing of well worn trails of verbiage: under the influence of the autocomplete options, each word choice is not a unique consideration - as it is in the analog domain - but rather is influenced by the series of choices offered by the autocomplete component. These choices are the result of software that attempts to predict patterns, based on past usage. Fitcher describes how Swype "can learn both its user's vocabulary and his habits."[2]

Bringing these devices together and reversing the writing style that they represent turns the act of typing into a performative one. No longer are the cognitive assumptions of a device taken for granted; instead the device provides a sort of barrier, and the performer must practice in the manner of an instrumentalist. Even something as simple as ensuring that only 140 characters are typed per tweet demands an extra layer of concentration as the analog typewriter has no character counter. This practicing requires the user to come to terms with the device, exploring its strengths and weaknesses. These strenghts and weaknesses are translated into the sonic tapestry of the work and serve to reflect the different eras of human society that overlap within this work.

4. THE MUSIC:
WHAT THE AUDIENCE HEARS

The compositional design of this work creates a space for a novel concept of instrument and an open approach to performance. In selecting a smartphone and a typewriter we have two instruments that both visually and aurally represent their respective eras. Being non-traditional instruments, it is important that their sonic application amplify the unique aspects differentiating the two different modalities of typing.

The composition is comprised of two sonic layers, each generated by the typists. The sound material of the first performer is drawn from a series of pre-composed sound files that were created using recordings of the acoustic environment of the offices at the local newspaper (The Day). This material is a series of sonic vignettes composed in the style of classical acousmatic music. However, while traditional acousmatic music is commonly exported as an AIFF or WAV file (a file type which enables an uncompressed signal), these musical miniatures are exported as a SDIF (Sound Description Interchange Format) file, thus enabling each frame to be advanced or frozen and enabling a nonlinear reconstruction. The playback of these sound files is based upon the visual presentation of text in the Google document: with each visual change of the document (changes of which are the result of text entered on the smartphone), the application sends a bang to a series of filters which reproduces a single frame of the original acousmatic material (see "The Software" below for a further explanation of the application). The playback is not unlike a series of video stills activated with the flashing of a light, which, in this case, is triggered by a change in the canvas of the typist. These sampled field recordings, assembled as short acousmatic compositions, function not only as the sound source for the live performance, but also as an acoustic archaeological curation of an evolving (and possibly disappearing) physical landmark: the newspaper plant.

The second performer similarly activates a series of filters but in a very different manner. Gone is the digital transmission of typing; rather, each clack of the typewriter serves
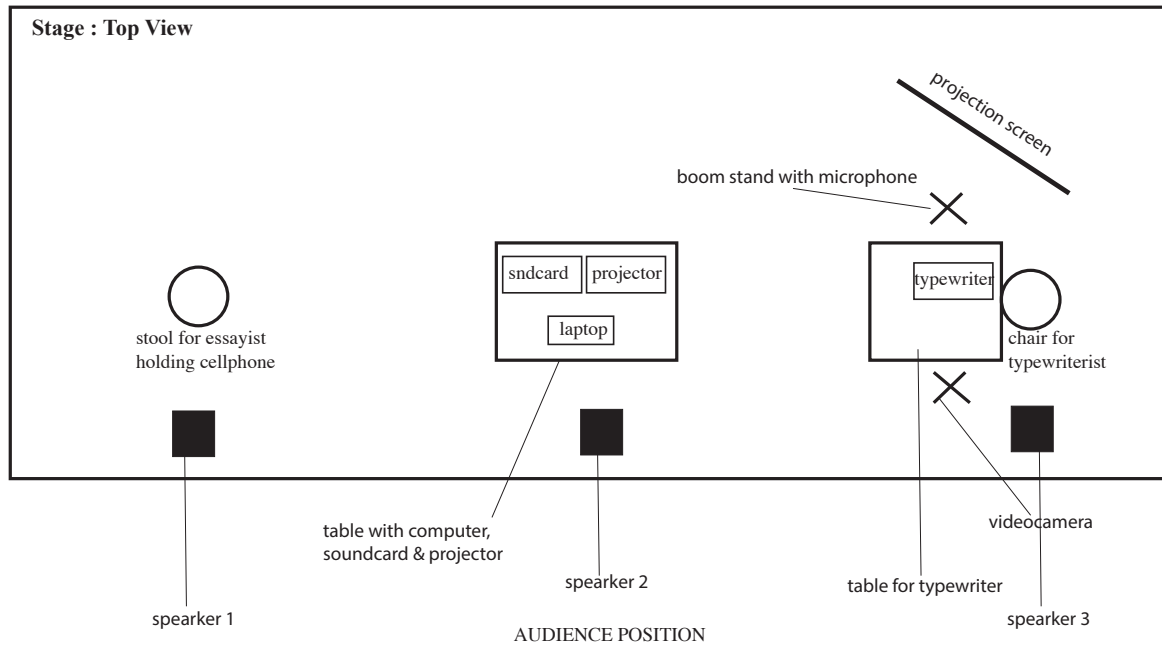
Figure 3: A diagram of the staging.

as a percussive event that is used to activate a filter. These sounds are added to a repeating loop, while a SDIF file is gradually reconstructed one sinusoidal track at a time. Unlike the filter bank of the first performer, the looped sound file has one filter placed upon it, triggered by the sound of the typewriter. After a multitude of iterations, the individual lines merge into a unified sonic mass with the percussive attacks enabling momentary perception of the constituent components. Together, these layers interact, their percussive unfurling patterns mixing and converging into moments of pitch and devolving into individual elements.

5. THE SOFTWARE:

WHAT ENABLES THE INTERACTION AND COMPOSITION.

Software plays an increasingly important role in our daily lives, be it the Global Positioning System (GPS) in our car routing around an accident, the intelligent ice machine in our home refrigerator that knows when to stop making ice, or the onboard regulatory system of a pacemaker. We reflect this emerging prominence of software in *#chronicled* by creating a third performance station (a laptop running custom software) and locating it in the center of the stage (Figure 3). The software developed for this project collects, aggregates, and displays information, as well as translates movement into sound.

The role of aggregation and visual display is performed differently for the two performers. The first performer, typing an essay on a smartphone, is inputting text into a webpage (a Google document) which is then viewable by the audience on their personal mobile devices. The text is captured by a program running on the central computer which is focused on the performer's Google document. Each character that is input - be it as small as punctuation or as large as an entire word appearing immediately via Swype - then triggers a sound.

This sound is drawn from one of several SDIF files that are pre-composed acousmatic vignettes. As described by Matthew Wright et al. in *Analysis/Synthesis Comparison:*

"SDIF is a general-purpose sound description format framework. Each data element (a frame or a matrix) has a type identifier, and each kind of sound description, i.e. each different kind of sound model, is represented in SDIF by frames and matrices of appropriate types. There is a library of standard SDIF frame and matrix types."[4]. For this application, we utilize the CNMAT implementation available in MaxMSP for purposes of providing the frequency amplitude pairs necessary to resynthesize the sound file. These sinusoidal elements are programmatically given a decay rate and used to set the arguments for a bank of resonant filters.

In contrast to the digital signal being sent from the first performer, the information being sent from the second performer is of the analog domain. The analog source demands a different mode of capture and shares a congruence with electro-acoustic music that is based on the manipulation of audio recordings. An audio signal, recorded by a microphone, is sent to an audio buffer, long enough to capture the sound generated by typing a single tweet. The layers of typewriter clicking and bell ringing form a sonic mass that, like the keystrokes of the first performer, produce a sonic representation of the process of creating text.

The microphone signal is sent to the central computer where each tweet is recorded into an audio buffer. The recorded typewriter sounds are fed into this a filter, the frequency and amplitude of which are set by an SDIF file. Adding each sinusoidal track, the SDIF is reconstructed sinusoid by sinusoid. Instead of the sonic impulse activating a bank of filters as in the first performer's software, the sound activates a single filter. This single sinusoid is but one frequency component of the SDIF file that filters each tweet. In this way, the individual tweets sonically amass to create a representation of the original SDIF loop. However, the file can never be correctly resynthesized due to the arbitrary input times of the keystroke impulses (as the SDIF file is not advancing frame by frame with each event, but rather playing back continuously), their near fixed amplitude, and the gaps according to the space between keystrokes. The result is a hybrid of the process of typing and the ideal of the reconstructed signal. This acoustic "trending" is deriva-
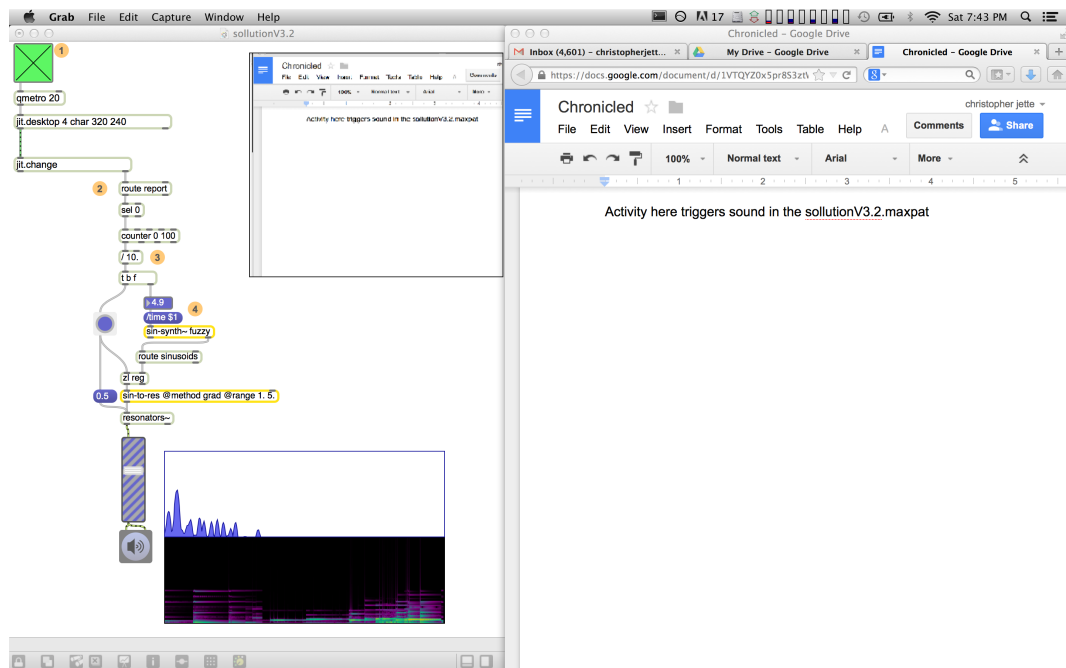
Figure 4: A screenshot showing a MaxMSP prototype on the left capturing movement in the text component of a Google document on the right.

tive of the Twitter experience: thousands of tweets about an event provide poignant unique perspectives but are limited by the descriptive powers of language and the physical limitations of the interface.

6. CONCLUSION

#chronicled reflects and amplifies the reality of changes in communication that are occurring in the early 21st century, and provides a space for the audience to consider and reflect upon these changes. This work combines a soundscape created from the act of typing with a visual display of the text, thereby employing the semantic component into the concert space. *#chronicled* is positioned as a performative work where no one modality of communication - sonic, visual, or cognitive - is dominant, but rather all work together to form a single cohesive multi-media work. The temporal arc of this piece enables the audience to interact, observe, and listen to the various elements in a personal way, guided by the pre-composed design of the work, the moment-to-moment choices of the performers, and the natural shifting attention and interest of the audience.

Our goal is to bring the audience from a position of considering the act of typing, as revealed through audition, to an awareness of the contrasts in style as mandated by the machines. Moreover, these style differences are indicative of distinct cognitive patterns that can be held to represent a transition between past and future human psyches. As convergence of contrasting forms of news dissemination is transpiring, it is our hope to use this as a lens for considering the ways in which human thought is changing and illustrate the ways in which we hold one foot in the past and one in the future.

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