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Research Report

MINOTAUR: AN EVOLVING INTERACTIVE MULTIMEDIA PERFORMANCE-INSTALLATION

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ABSTRACT

Since May 2012, I have been involved in the production of *Minotaur*, a multimedia performance-installation for dance, live video, live painting, sculpture, and music/audio. Drawing from versions of the myth of the Minotaur by Borges, Swiss playwright Friedrich Dürrenmatt, and contemporary Russian novelist Viktor Pelevin, the Minotaur's labyrinth is re-cast as the modern urban metropolis, replete with ever-changing stimuli and a vortex of unfulfilled dreams and desires. The Minotaur assumes the form of a sonified sheet-metal sculpture at the center of a physical Plexiglas-paneled labyrinth, onto which a virtual labyrinth of feedback-induced images and sonic vibrations is projected. The first incarnation of the project was performed at the Center for New Music in San Francisco in July 2013. Flexible in nature, subsequent iterations of *Minotaur* are to be presented in gallery, stage, and outdoor public space settings in the near future.

In this paper, I discuss the creative process, the principal modes and mechanisms of interaction amongst media and participating artists, the technologies and materials employed, and the role of site-specificity in extant and in-progress versions of *Minotaur*.

1. INTRODUCTION

Minotaur was launched in May 2012, in the context of an artist residency at the Paul Dresher Ensemble Artist Residency Center in Oakland, CA. In collaboration with choreographer Erika Tsimbrovsky, visual artist/sculptor Vadim Puyandaev, and video artist/lighting designer Lucas Krech, our point of departure was Swiss playwright and novelist Friedrich Dürrenmatt's illustrated *Minotaurus*. In Dürrenmatt's re-telling of the myth of the Minotaur, the Minotaur's labyrinth is constructed entirely of glass. As such, he inhabits a universe replete with reflections of himself, with which he continuously interacts.

In our interpretation, Dürrenmatt's glass labyrinth is mapped onto the contemporary glass-and-steel metropolis —a maze of unfulfilled dreams and desires. No contemporary urban center would be complete without a vast, convoluted communication network—which lies at the core of *The Helmet of Horror*, Russian novelist Viktor Pelevin's 2005 adaptation of the Minotaur myth. In the novel, characters are locked in individual rooms and respond to a "thread" posted to a chat room by a character writing under the screen name "Ariadne," thereby generating a web of associations and cyberspace entanglements. Further influence was derived from Borges' famous short story "The House of Asterion," a tale told from the Minotaur's perspective. In the story, the narrator—having once experienced the world of humans (the doors of his "house" are all unlocked)—reveals a preference for his constructed habitat, due to the reaction of common people to his appearance. He also gives tours to his imagined double, "the other Asterion." In both the Pelevin and the Borges, the identity of the Minotaur becomes diffracted, and the roles of protagonist and antagonist are conflated.

2. PHYSICAL AND VISUAL LABYRINTHS

It was decided at an early stage that the labyrinth would be fabricated from Plexiglas panels, due to their thickness and durability. Onto these panels would be grafted multiple virtual audio-visual labyrinths. At the center of the labyrinth are situated hollow sheet-metal sculptures that are animated by video/light projections and sonified via small sound exciters (transducers).

In the visual domain, the Plexiglas serves as a canvas for live painting, as well as projection surfaces for multichannel live video. Through the strategic placement of contact

microphones, motion sensors, and transducers onto the labyrinth surfaces, this constructed environment is transformed into a sonic "minefield" of audio haptic controllers and resonators. The dancers within the labyrinth thus activate and contribute to the audio input, while reacting to the audio output transmitted by the transducers. As such, the sound surfaces produced and physical actions induced by boththe dancers and vibrating surfaces/equipment are essential to the audio dimension of the work.

Both the audio and visual stimuli are generated by multiple feedback loops. In the case of the video, images captured internal and external to the labyrinth are subjected to feedback and delay and superimposed upon several layers of morphing labyrinthine geometric patterns. These processes are controlled primarily in Quartz Composer. Likewise, as pre-recorded sound material and processed sounds recorded in real time from sources outside of the performance space are projected into the labyrinth (as triggered by the dancers), sonic activity within the labyrinth is processed and projected via the performance space PA system. In general, the two media operate according to similar principles, but do not interact with each other in any rigidly predetermined way. Consequently, there may be significant variation in visual and sounding results from one performance context to the next.

3. MINOTAUR MODULARITY: EXTANT AND IN-PROGRESS VERSIONS

Intended to adapt to gallery settings, stages of varying sizes, and public spaces, *Minotaur* has thus far been presented in an expansive studio and a relatively small concert venue. In addition, two derived projects have been realized: a networked audio-visual-kinetic performance and a "portable" enclosed sonified sculpture-installation. The configuration and performance/installation details of each version are described and illustrated below.

3.1. Version 0: Open Studio, June 2012

In June 2012, we presented an interactive preview performance of *Minotaur* at the conclusion of our residency at the Paul Dresher Artists Residency Center. Given the generous dimensions of the studio, we employed four sculptures, a handful of long Plexiglas panels, multiple projectors, and several dancers. During the performance, the audience was encouraged to explore the labyrinth and contribute to the looping video feed that was projected onto the panels and sculptures.

Given the hollow interior of the sculptures and the diverse resonances produced by striking different points along their surfaces, these sculptures served the role not only as visuo-spatial element and video/lighting projection canvas, but also as a percussive sound source pregnant with possible materials. As such, I created a bank of samples derived from "playing" the sculptures with various implements and objects (e.g., a metal beater, screws, paint brushes, a contrabass bow...). In the performance, these samples were transformed, looped, distorted, fused, and projected back into the sculptures via transducers. I attached contact microphones to two small Plexiglas plates, placed on the floor. When dancers came into contact with (or in close proximity to) these plates, different sets of routines were triggered. Besides these haptic "interfaces," the electronics were activated at irregular intervals within a Pure Data patch. In addition to the electronically-generated audio, I improvised using a variety of objects, a condenser microphone (as both "mallet" and percussion instrument), and the sculptures themselves in response to the electronics, dancers' actions, and visual stimuli.

In Figures 1-3[1] [2] [3] images from the Open Studio session are presented.

3.2. Version 1: *LAByrinths*

After one year of further development on the project, we presented a "chamber" adaptation of Minotaur at the Center for New Music in San Francisco in July 2013. Entitled *LAByrinths*, the performance was confined to a compact ca. five-meter-wide space. Furthermore, there were no available means of holding glass panels in place. Under these constraints, it was decided to use only one video projector and one sculpture. Rather than live painting, a series of labyrinth designs were rendered in real time using colored adhesive tape and tracing paper (see Figure 4). [4]

This constricted space enabled us, however, to maximize audience engagement in the performance. The boundary between the public and the performers was blurred, the behaviors of spectators would at times be

[1] http://www.lxsigman.com/minotaur_article/figure_1.html (accessed 06 August 2013).
[2] http://www.lxsigman.com/minotaur_article/figure_2.html
[3] http://www.lxsigman.com/minotaur_article/figure_3.html
[4] http://www.lxsigman.com/minotaur_article/figure_4.html

incorporated into the live audio and video streams, and dancers would alternate between active and passive (spectating) roles.

As audio designer and improviser, my live performing was far more visible and influential on the dancers than was the case during the Open Studio session (see Figures 5 and 6).[5] [6] Actions performed on the surface of the sculpture were processed and layered with samples derived from both the Dresher Ensemble studio performance and transport/industrial equipment—not direct input from the venue's physical environment, but reminiscent of its rather gritty urban setting. The audio output, in turn, was transmitted to the video artist's laptop, directly influencing the nature and rate of the video elements, thereby closing the auditory-visual-kinetic circuit.

3.3. Audio-Visual-Kinetic Networked Performance

We were offered the opportunity to present our work at Spectrum, a venue in New York. However, it was not feasible at the time (July 2012) for all parties involved to travel to the East Coast. The only available solution was to collaborate over a network. The California-based participants (Lucas Krech and Erika Tsimbrovsky) streamed video via Skype to New York, where I performed on laptop and piano. As in *LAByrinths*, the video was responsive to the audio output. Given the gradual rate of change of both the video and audio components and the relatively fast network speeds on both ends, the event proceeded without any loss or delay of information.[7]

See Figures 7 and 8 for performance photos (taken at Spectrum).[8] [9]

3.4. Portable Sculpture-Installation

Another incarnation of *Minotaur* (currently in progress) will assume the form of a sculpture surrounded by Plexiglas panels, onto which continuously morphing video will be projected. As in the Open Studio session, the sculpture will also function as a resonator. The audio material will consist of spoken text (derived from the aforementioned Borges and Dürrenmatt stories), sculpture percussion samples, and live-processed sounds derived from the immediate environment of the installation.

Intended for outdoor or indoor public spaces, this compact representation of the project will, in comparison to the performance versions, exhibit a heightened sensitivity to real-time visual and auditory data. The installation format of the piece will permit video and sonic feedback loops to accumulate over a quite extended period.

4. FUTURE WORK

Over the course of the next two years, it is our intention to adapt *Minotaur* for galleries and large performance venues (e.g., similar dimensions to Z Space in San Francisco).[10] In addition, performance possibilities in a broad range of public spaces—corporate/institutional lobbies and urban parks in particular will be explored. Besides maintaining continuous video, photo, and audio documentation of the project, we expect to produce a short film addressing *Minotaur's* themes and incorporating and extending its dance, visual, and music/audio materials.

5. AUTHOR'S PROFILE

Alexander SIGMAN

Alexander Sigman's award-winning instrumental, electroacoustic, film, multimedia, and installation works have been featured on major international festivals, exhibitions, institutions, and venues across Europe, Asia, the US, and Australia. In June 2007, Sigman was Composer-in-Residence at the Musiques Démesurées festival in Clermont-Ferrand, France. Subsequently, he was awarded residency fellowships by the Akademie Schloss Solitude (Stuttgart, Germany), the Djerassi Foundation, and the Paul Dresher Ensemble Artists Residency Center. In 2013 and 2014, he is undertaking a musical research residency at IRCAM.

Since 2008, Sigman has been Co-Editor of the *Search Journal for New Music and Culture* and Managing Director of Ensemble Modelo62, an 11-member Dutch contemporary music ensemble, among other leadership roles. Since that time, he has published and presented his research and creative work extensively at international conferences and institutions.

[5] http://www.lxsigman.com/minotaur_article/figure_5.html

[6] http://www.lxsigman.com/minotaur_article/figure_6.html

[7] A full video of the performance (with reduced audio quality) captured by Lucas Krech may be viewed here: https://vimeo.com/46066079 (accessed 06 August 2013).

[8] http://www.lxsigman.com/minotaur_article/figure_7.html

[9] http://www.lxsigman.com/minotaur_article/figure_8.html

[10] For information on and images of Z Space, visit http://www.zspace.org (accessed 06 August 2013).

Sigman completed his doctorate in Music Composition at Stanford University in 2010. Prior to Stanford, he obtained a BM in Music and a BA in Cognitive Sciences from Rice University. Further postgraduate studies were undertaken at the University for Music and the Performing Arts Vienna, as well as the Institute for Sonology of the Royal Conservatory in The Hague (Netherlands). He is currently Assistant Professor of Composition at Keimyung University in Daegu, South Korea.

More information may be found at the composer's website: `www.lxsigman.com`.