LOOP - An Interactive Sound Object

Marius Schebella
Salzburg University of Applied Sciences
Urstein Süd 1
Puch/Hallein, Austria
marius.schebella@fh-salzburg.ac.at

Gertrud Fischbacher
University Mozarteum Salzburg
Mirabellplatz 1
Salzburg, Austria
gertrud.fischbacher@moz.ac.at

ABSTRACT

LOOP is an interactive sound object made from green polyester strapping tape. The sound that arises from the interaction with the object is picked up by a contact microphone and amplified. Due to the material qualities of the polyester tape which allows sound to travel through the tape (approx. 100 meters) it is possible to sense the acoustic interaction through one single piezo-microphone. The sound is composed of a low rumble that derives from the length of the tape. Combined with some higher pitched and rich blended interaction sounds from scratching and hitting the LOOP. The object combines haptic, tactile, visual and acoustic qualities.

It can be touched, squeezed and "played" by the audience.

LOOP was created within the Textile and Sound research project by Gertrud Fischbacher and Marius Schebella.

https://www.textileandsound.org/portfolio/greenloop/

Author Keywords

NIME, proceedings, LaTeX, template

CCS Concepts

●**Applied computing** → **Media arts;** Performing arts;

1. PROPOSAL

We would like to propose the Installation LOOP - An Interactive Sound Object to the NIME conference.

Find the space requirements in the beginning and then a description of the installation and a short resumé of the artists.

1.1 Artist names and website

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1.2 Space Requirements

The object needs to be hung from the ceiling or a rig mount. The height is variable but should be between 3,50m and 5m. The space dimension are 3m * 3m. The object is made for indoor applications and fits a university environment as well as a gallery space.

1.3 Technical Requirements

For the installation we would need a sound mixer with XLR input and a sound amplifier and stand. Additionally, a LED spot light, which is placed below the object for lighting.

1.4 Set Up

The setup requires one day of rebuilding the object from polyester strap and hanging, lightin, calibrating and testing.

2. INTRODUCTION

LOOP is an interactive sound object made from green polyester strapping tape. Interaction contact sounds are amplified through a piezo microphone. It can be touched, squeezed and "played" by the audience.

LOOP was developed within an artistic research project that deals with the question: "How can we create conditions whereby the interaction of textile and sound is productive of new and unexpected insights and knowledge?" With LOOP we describe a combination of textile and sound that results not in an interface in the traditional sense, but represents an artistic object that meets qualities of fine arts as well as music and performance.

3. TEXTILE AND SOUND

Our research explores the Nexus of Textile and Sound producing new and unexpected insights and knowledge. It can be defined as a strategic and fully monitored exploration of the creative potential of textile/sound interdisciplinarity. In the combination of the two disciplines we search for novel ways of artistic expression. Textiles surround people, their living space, form frames and shells, skin, architecture. Sound adds an emotional layer to the scene. In its basic physical form it sets things in oscillation, resonance, and creates vibrations, same does the physicality of sound: it resonates and creates vibrations. The sense of hearing is evolutionary quite close to the sense of touch with its mechanical receptors. Textile in its form of presentation and interpretation is an interactive medium and metaphor. The two domains - the physical object and sound interact and necessitate each other. The object is not only the interface for the sound and the sound is not only an add-on to the sculpture, it is part of how the audience experiences the whole interactive installation.

4. OBJECT AND SOUND DESCRIPTION

LOOP is an interactive sound object made from green polyester strapping tape. The sound that arises from the interaction with the object is picked up by a contact microphone and amplified. Due to the material qualities of the polyester tape which allows sound to travel through the tape (approx. 100 meters) it is possible to sense the acoustic interaction through one single contact-microphone (piezo). The sound is composed of a low rumble that derives from the length of the tape. Combined with some higher pitched and rich blended interaction sounds from scratching and hitting the LOOP. The object combines haptic, tactile, visual and acoustic qualities. LOOP is an interactive object. It can be touched, squeezed and "played" by the audience and will create real-time sound output.

5. INTERDISCIPLINARY DEVELOPMENT PROCESS

The aesthetic concept of the object tries to achieve a coequal and complementary nexus of textile and sound. There are different approaches to reach this goal.

5.1 Material as a Starting Point

In the case of LOOP we got engaged by exploring the polyester strapping tape through touching, interacting, bending, trying to bring it into shape, etc. All this already revealed the acoustic sound quality of the tape, especially the good sound transmission through the material along the long strap. Many textile materials have acoustic qualities of their own, another example would be Tyvec, also known as paper textile which produces sound by squeezing, crumpling, etc., If the material would not have had this sound quality the process would have stopped at that point.

Another quality that originates in the material are the ways of interaction. The polyester strap is quite reactive and somatic sensitive in the way that when it is pulled off the coil it will try to untwist and flatten. To bring it into a three-dimensional shape the material has to be stapled together and will then form a loose ball made of loops. At the same time the sound spectrum is expanded into the low frequencies when the unrolled strap becomes longer. This also meant the strap could not be cut into small pieces.

5.2 The Form Factor

In this case form follows sound and sound follows form. The form and shape of the object was reached through an interdisciplinary approach. To reach a 3-dimensional shape like a ball, the material had to be forced into its shape and kept there by stapling. But it still retained its floating and lightweight character. When the Loop was hung from the ceiling it evoked associations of a cloud which correlated with the rumbling low sound that was created by the interaction with it.

5.3 Audience Interaction/Performance

The third aspect of the interdisciplinary development process was the interaction design to achieve a meaningful and approachable playability for audiences within an exhibition context. Often, people are not allowed to touch exhibition objects. But by interactively touching the object, contact is not only made haptically tactile, but also on an audible level, thus expanding interaction to multiple senses. When they were encouraged to interact with the object they started softly, gently scratching, exploring the interaction possibilities. The object hangs also like a punching bag and when people embrace or squeeze or punch and kick it, it will regain its original shape through the material and form qualities and robustness. People develop their own idea of how to interact and perform with the LOOP.

6. DISCUSSION

The object was exhibited twice, the second version was built for a longer exhibition duration and hence more robust. The sound that is picked up by the contact mic is rich and diverse, but also raw and noisy and there is some potential to build upon the acoustic sound to extend it into a more digital processing domain.
(Figure 1)

Figure 1: Loop - Interactive Object

7. RESUMÉ

Gertrud Fischbacher and Marius Schebella have been collaborating on Textile and Sound since 2019.

Awards

2022 PEEK Programme for Arts-based Research FWF Austrian Science Fund 2022 Advancement award for science and research, Kulturfonds Salzburg 2019 RCM Research Competition Mozarteum Award

Shows 2022 Nexus ,Textilgalerie Rössler, Wien European Researchers' Night, Universität Salzburg, HCI Textile and Sound Lab / show Schmiede Hallein Lange Nacht der Forschung, Universität Mozarteum, Orff-Institut 2021 Hautnah, Museum Fronfeste Neumarkt Hallein ist Me(h)r, Alte Saline Hallein Textile and Sound Lab / show Schmiede Hallein

2020 „Silver" presentation of an interactive Textil and Sound Sculpture, Ynselzeit, Hallein, Austria ORTung Group Show, Kunstraum pro Arte, Hallein, Austria

2019 Idiosynkrasia, KunstWerk Mozarteum Studierendenausstellung

Conferences and Presentations 2023 ETHO/ELIA Presentation and Workshop 2022 Vielfältige Stadt - Good Practice für Kunst, Kultur, Wissen | Kulturstrate-gie Salzburg goes Pecha Kucha, Stadtgalerie Salzburg 2021 Ditact: woman´s IT studies Workshop and Lecture to Smart Textiles 2021 SubnetTALK Online: Nexus of Textile and Sound 2020 NIME Conference New Interfaces for Musical Expression, Birmingham (online) presentation of the Installation „Idiosynkrasia" Research and/in the arts, Lecture „Textile and Sound", University Mozarteum Salzburg and Innsbruck Transfer Talk No.1 Sound and Textil, Wissenstransferzentrum West, Hallein, A „Interferenz" Textile and sound lab / show,

Schmiede Hallein, A Ars Docendi - Atlas der guten Lehre
https://www.gutelehre.at/ Federal Ministry Republic of Aus-
tria Education, Science and Research ELIA Conference Bi-
ennial Expanding the Arts, Zürich (online) Workshop 2019
RCM Research Competition Mozarteum Award winning project:
„The Nexus of Textile and Sound" „Idiosynkrasia" student
exhibition at University Mozarteum Salzburg interdisciplinary
classes from University Mozarteum Salzburg and University
of Applied Sciences Salzburg