SOUND TOSSING: Audio Devices in the Context of Street Art

Reinhard Gupfinger
Kunstuniversität Linz
Interface Culture
Kollegiumgasse 2
4010 Linz, Austria
reinhard.gupfinger@ufg.at

Martin Kaltenbrunner
Kunstuniversität Linz
Interface Culture Lab
Kollegiumgasse 2
4010 Linz, Austria
martin.kaltenbrunner@ufg.at

ABSTRACT
Street art opens a new, broad research field in the context of urban communication and sound aesthetics in public space. The primary focus of this article is the relevance and effects of using sound technologies and audio devices to shape urban landscape and soundscape.

This paper examines the process of developing an alternative type of street art that uses sound as its medium. It represents multiple audio device prototypes, which encourage new chances for street artists and activists to contribute their messages and signs in public spaces. Furthermore, it documents different approaches to establishing this alternative urban practice within the street art and new media art field. The findings also expose a research space for sound and technical interventions in the context of street art.

Keywords
SOUND TOSSING, audio devices, street art, sound interventions, urban sound

1. INTRODUCTION
A new phenomenon of recent years is street art created by the use of electronic devices and digital media. These developments appear to be an adequate means of increasing critical thinking and encouraging discussion of public space and its problems. Activists from different disciplines are transforming urban environments into a lively scene, constantly developing new forms of expression with technological interventions.

This paper and the practical project provide a further contribution to electronic street art, with particular interest given to the use of sound as a medium in this area. Different prototypes for these practices and their concept applications are presented. Based on the performed actions, exhibitions, workshops, and the feedback we received, we discuss the opportunities and problems arising from the application of *Sound Tossing*. Furthermore, we answer the question of how this is of interest to the public, street artists, media artists, and urban thinkers.

2. THE CITY AS INTERFACE
In connection with the project presented here, the city can be viewed as an interface. Within the context of city research, the term interface describes how individual citizens in collective rhythms and practices, with their urban environment instill or changing it. According to Manuel Castell, cities have always been an interface between individual and collective identities and shared social representations. The city operates as an interface as collective practices and values are embedded physically in the city and its social context. If this existing and well-established practice and structure is modified by interactions, it also changes the city. [1] All urban experiences require interpretations, reactions and impulses to be translated into a variety of interactions. *City Human Interaction* (CHI) is based on how humans interact with questions in the city, and raises questions as to how artistic strategies circumvent limitations in urban space, and open up methods of rethinking the concept of urban space. [2] The city as experimental and field research is of increasing interest for artists. They are leaving their protected institutions, proving their concepts in public space and confronting a broad audience. As a physical interface, the city provides a built infrastructure and established ways of using it creatively. [3] New media has changed urban areas, and in spite of some negative effects such as light pollution or electrosmog, there still is great potential in their creative application and use as communication channels to establish a new urban public.

3. RELATED WORKS
Of particular relevance and interest in this study is the direct and creative use of electronic equipment for the development of new street art techniques. Technical devices and their systems can shift from being tools for reproduction to creative tools and aesthetic design elements of the works. This is done through the direct use of electronic devices and components or the use of the visual characteristics of these technologies as a source material for artwork. New protagonist from the new media art scene joined the field of street art and implement their knowledge and concepts in urban space. Starting research on interventions with electronic equipment, components and projections in the context of street art in the city, we quickly come to the Graffiti Research Lab, or GRL for short. Evan Roth and James Powderly founded the GRL during a research fellowship at Eyebeam in 2005. The purpose of the project was to rethink how people make and

look at graffiti and street art, not only by making things, but by developing tools that graffiti writers could potentially use.[1]

They experimented with various technologies for recapturing public space, put many of their new methods of self-expression into practice in cities all around the world and documented these activities with short videos. As part of the open-source movement, they followed the philosophy of idea sharing and made their developments, documentation and detailed building instructions available for free on the GRL website as well as various DIY platforms. With the aim of addressing a broad audience and removing the negative connotations of street art, the GRL projects are often easily and cheaply recreated and are generally not considered to be vandalism. The projects range from complex computer programs for analyzing graffiti tags to a variety of digital and mobile projection techniques such as *Laser Tag* or the famous LED-based art project known as *LED Throwies*.

For the project *Urban Parasites*, Vincent Van Uffelen developed several prototypes for electronic street art. Van Uffelen references the content of the GRL *LED Throwie* project, and pursues similar goals. Urban Parasites aims mainly at the critical exploration of technology used in urban space by making use of artistic methods to reveal inconsistencies and/or alternative uses for the ubiquitous technological devices surrounding us.[2] A particularly interesting approach Van Uffelen pursued was the use and modulation of radio waves. His concept for the *Radio Modulator Parasite* provided the following functions: the receiving of radio waves, the modulation of these waves by means of audio filters, and the sending of these waves modulated by a transmitter.

Benjamin Gaulon is also known as Recyclism – his work the *Light to Sound Device,* or *L.S.D.* for short, uses light as a stimulus for sound generators. Gaulon reclaims LED displays and neon signs that increasingly shape our present day. *L.S.D.* feeds on light via two light sensitive resistors mounted on a suction cup, allowing the sensors to be mounted on any screen surface. An analog synthesizer converts the light input into sound waves. This device can be used in many different configurations, and can feed from any light source. Even if *L.S.D.* can be controlled by any light source, its design is aimed at screen reading/listening.[3]

In 2011 the British artist Mr. Underwood was invited to develop *Sonic Graffiti* for a project in Birmingham. The eight devices included various interactive sound generators that could be played by users. By pushing a button or by simultaneously touching two metal contacts, the audio players were activated. Mr. Underwood has installed equipment in cracks in walls and other objects in public spaces. The playback of the sounds either came from installed speakers or by headphones brought by the visitors. In addition, Mr. Underwood identified his *Sonic Graffiti* units with markers in the form of small round buttons.

The project Audio Bombing: Magnetic Cassette Tape Graffiti was developed in 2007 by students Mike Flemming, Kang Chang and Kyle Millns from the University of Illinois. The group used the already successful random access method work by Nam June Paik from 1963, where one audiotape is stuck to a wall and then painted over, and can play individually with modified head tape recordings. In the context of street art, the use of cassette tapes as a medium is particularly attractive and interesting due to its long tradition in hip-hop culture. In reading an audio bomb tag, the reader is put in the same position as a traditional graffiti writer instead of being a traditional (i.e. passive) audience. The reader needs to actively engage with the content to receive the content of the tag. [4]

4. DESIGN CONSIDERATIONS

The development of mobile audio units for urban interventions and their contextualizing with street art and open design technology will require fundamental design considerations. The general guidelines for the implementation of the different prototypes are discussed below.

4.1 Sculptural Layer

The visual design of the audio units follows the visual codes of *Shoe Tossing*. This means a visual approach to the traditional practices in the context of street art and includes certain brand recognition in the public domain. The *Shoe Tossing* objects, two shoes whose shoelaces have been tied together, are also templates for *Sound Tossing* audio units mainly because of its practical application as missiles. The transformation of the visual codes of *Shoe Tossing* onto *Sound Tossing* appears as two boxes that are connected by a cable. This form allows and encourages hooking up and twisting the audio units on overhead wires, trees, sculptures and other objects in urban areas. In order to illustrate on a visual level that it is a sound object, the audio units are primarily built by using small speaker cases.

4.2 Outdoor Devices

The audio units are designed to be thrown or hung on street furniture in public spaces. It's possible that a device misses its target and falls to the ground. To avoid the audio unit being broken after just one impact, the most rugged yet lightweight housing is used during assembly. In outdoor space, the devices are also subject to environmental factors such as wind and rain. To maintain a long lifetime, the electronic components of the audio units are made to be water resistant. Another important aspect to be considered is how to route power to the devices in public spaces. The use of batteries proved to be unsatisfactory due to their short lifespan and environmental impact. As the energy produced by solar cell is not enough to power the audio unit at night, a combination of solar cells and storage batteries were used. Another consideration was the use of the existing city power supply by tapping into the lines or by induction in a coil, but this alternative was not further investigated.

4.3 Sound Diversity

Sound Tossing works primarily with sound as an artistic medium. The various audio units covered support many acoustic modes of expression for interventions in public space. For example, voice messages or sounds are recorded, electronic circuits generate sounds, or non-audible frequencies are transformed into the audible range. The audio units are designed for subtle intervention in urban areas. The sound is meant to lead to the discovery of the devices and should not be primarily perceived as a nuisance. Compared to the perceived sound, the visual appearance of the audio units remains in the background. Public sound art, as an unusual element in the environment, must be particularly sensitive to

[1] http://www.nytimes.com/2006/06/25/arts.html 26.07.2012

[2] http://vincentvanuffelen.com/urbanparasites/ 26.07.2012

[3] http://www.recyclism.com/lsd_sonicgraffiti.php 26.07.2012

both noise levels and qualities of sound to avoid becoming a source of distraction or annoyance for the public. [5]

4.4 Open Design

The project uses an open design strategy and provides easy access to technology and procedures. The audio units can be built with a few simple electronic components. To keep the cost of the individual devices as low as possible, a large part of the necessary electronic components on all the modules can be removed from old electronic equipment. Basically, all the parts and materials used are inexpensive and easy to get. The proposed audio units can be adapted to individual needs by relatively simple modifications and extensions. By experimenting with different components and their sizes, good results can be achieved. The controls of each audio unit are very simple, and have been reduced to the essentials. This allows for the simple and intuitive use of the devices. *Sound Tossing* was developed as an open design project with the goal of easing the entrance requirements to working with audio electronics and to reach as large an audience as possible. This procedure became a competitive advantage in the distribution of this alternative type of street art and motivated participants around the world. The disadvantage of this approach is that there is only limited influence on the artistic work, which is carried out by others.

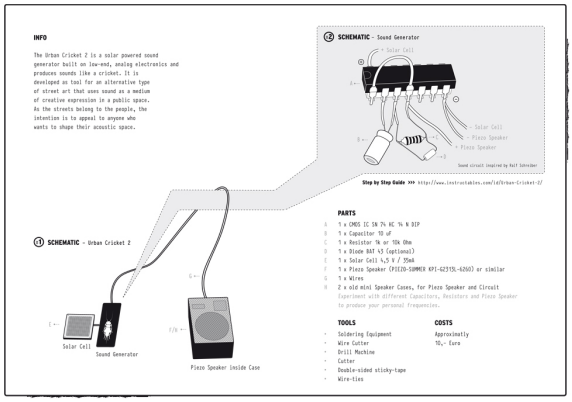

Figure 1. Building instruction for Urban Cricket

5. PROTOTYPES

The development and testing process of several prototypes for sound interventions, in the context of street art, took place over a period of two years. The experimental work was done under different conditions: in the studio, in public space, in mediation work in workshops, and as part of active participation in media arts festivals. The developed prototypes can be divided roughly into three different groups of devices.

5.1 Sampler Devices

The *Sampler Devices*, a group of mobile audio units, can be described as tools that integrate customize messages and noises in the public sphere. With these units, any type of audio sound can be recorded and played. The units can be equipped with different sensors or a timer, or a combination thereof, to play back the sounds, directed toward targets and plan the timing. The addition of individual sound messages to the dynamic city interface means a more proactive approach to the urban environment. The aim is to make it a personal issue to the public through subtle interventions and messages.

5.2 Sniffer Devices

The *Sniffer Devices* transforms inaudible frequencies into the audible range perceptible to the human ear. With the help of these audio units electromagnetic and ultrasonic waves can be detected and played back in urban space. An interesting aspect of this is to make audible the various urban frequencies that are normally not heard everyday life. The *Sniffer Devices* expand our field of perception, generating sounds and linking us with hidden frequencies that pulsate to the rhythm of the city. The prototypes of the *Sniffer Devices* can be divided into two groups. One group is used to detect electromagnetic frequencies, and the other ultrasound. The *Sniffer Device* with bat detector module can be used to detect mosquito devices, which are designed to keep young people away by using extremely high frequencies. The *Sniffer Device* spots the mosquito devices. It transforms the high frequencies of the mosquito devices into audible frequencies. It therefore makes an acoustic attack by these mosquito devices on young people into an attack on all. This intervention is a call to end this targeted act of "shooting with sound".

5.3 Urban Crickets

The *Urban Crickets* are small, solar-powered sound generators made from simple electronic circuits. They are very easy to make, and are long lasting. These prototypes meet most of the design considerations, which apply to a broader application for sound interventions in the context of street art. Followed by intense experimentation with different circuits and components, the sound more and more imitated a lively cricket. The development and distribution of the different prototypes of the *Urban Cricket* has been promoted through various activities such as illegal street art campaigns, organization of workshops and active participation in media art festivals. The sound of crickets has many positive connotations. This makes the *Urban Cricket* device an interesting tool for interventions in urban space and attempts to set free positive feelings in those passing by. At the same time, they should cause some irritation because the *Urban Crickets* are located in urban areas, a place where you rarely hear crickets.

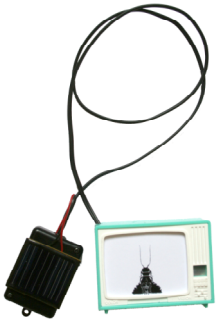

Figure 2. Urban Cricket

6. Field Work

The *Urban Crickets* can be used to carry out subtle and sometimes provocative sound interventions in urban spaces. The degree of irritation depends on the location and the method used for intervention. The basic idea is an invasion of artificial crickets as subtle signs of recapturing the acoustic space of the cities. *Urban Crickets* are a change in the

auditory environment that reinforces the perception of our everyday life.

The use of the *Urban Crickets* in public spaces has been going on since November 2010, primarily through illegal interventions in public space in which the devices are either thrown or hung with a long pole onto overhead power lines, trees and other street fixtures. Depending on the location and the time of execution, and of course the number of active participants, *Sound Tossing* action can grow into a kind of performance with many viewers.

The decision about where the *Urban Crickets* were placed in urban areas was based on several considerations. To position the practice of *Sound Tossing* not only conceptually but also spatially within the context of street art, the actions took places in areas where there is a high density of street art.

Figure 3. Urban Cricket (middle), London 2011

Another aspect was to position the *Urban Crickets* in places with extremely high audience-density. In this case, tourist areas, buildings, squares and streets of inner cities appeared to be particularly attractive. In these zones, the misappropriation of statues and monuments was especially interesting. These objects are understood by the public to be public art, and often serve as photo opportunities for visitors to the city. In addition to the auditory alienation of a place, it is also a visual intervention, which is immortalized in the photographs of tourists.

Basically, it was thought that residents would not directly be affected by the sound interventions. The use of audio units was dispensed with in close proximity to residential areas as much as possible. In certain places, such as in parks, several *Urban Crickets* were simultaneously set free. Overlays of chirps generated a summer- like cricket concert. In order for the *Urban Crickets* to stay active during the night, they were positioned in the immediate vicinity of streetlights.

7. CONCLUSION

In the course of this paper, an overview has been given on different forms of artistic expression and their development in the hotly contested area of the public space. In this context, the role of street art and its heterogeneous techniques were investigated and explained with examples to improve understanding. The practical research project *Sound Tossing* is an attempt to establish sound interventions in the context of street art. At the same time, it also puts an emphasis on current issues in public spaces, in particular in relation to the prevailing situation, to attract attention to urban sounds.

In recent years, an increase in interventions that use sound as a medium in connection with emerging new technologies within street art has been recorded. The project *Sound Tossing* is in the tradition of these projects, questioning public space with sound. It deals with the perception of sound interventions in urban space and any resulting problems and opportunities.

A major problem with the *Sound Tossing* actions was that they were easy to ignore or to overlook in urban areas. This is due to the general subtleness of the intervention of the *Urban Crickets*, but above all it is affected by the dominance of our visual perception. Compared to conventional street art, *Sound Tossing* is difficult to discover in the city. Particular emphasis was therefore given to a strategy for placement of the audio units. We cannot simply place art works in public and expect everyone to use, understand and appreciate them. Studying public space and how inhabitants use the space is key to a successful art installation in that context. [6]

8. ACKNOWLEDGMENTS

We would like to thank Kunstuniversität Linz for their support of this project, as well as the Alumniverein forum - Kunstuniversität Linz and the Linz Culture.

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