

Sonic Graffiti: Spraying and Remixing Music on the Street

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ABSTRACT

Sonic Graffiti is a concept for people to spray and remix music on the street. It contains a system of devices for creators, including the sound cap, the controller and the boom box. The sound cap is designed to be put on the real spray can, and makes the sound sample spray out with the paint. The controller and the boom box serve as assist devices during the creating process. Music is composed by overlaying paints. Hence the graffiti is the visualization of the music, and the music is the soundtrack of the graffiti. Passengers can listen to the music with a software player installed in their mobile devices. Music is streamed to the device when the passenger come close to the graffiti.

Keywords

Locative media, music visualization, geo-tagging, graffiti subculture, urban experiences

1. INTRODUCTION

Graffiti is an urban phenomenon with its own prominent subculture. [1] With the rising of locative media, the invisible audio is able to be tagged in the physical space. Here tagging technically means geo-tagging, as a process of depositing digital content in a physical location. This project explores a concept of enabling people spray music on the street and make graffiti with both visual and audio elements.

A system of physical devices is designed for artists to create and tag music in the urban space with real spray cans. For general viewers/audiences Sonic Graffiti provides a listening experience giving a sense of connection with the environment.

Music is abstract to express visually. Some graffiti artists distort letters, design patterns to make abstract works; others do picturesque pieces. I am interested in investigating what new form of expression would evolve from the blending of music and graffiti. The current design of Sonic Graffiti leaves much freedom to artists for developing their own formation and visual languages of music. They can adopt a more improvisational attitude or

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4th International Mobile Music Workshop, May 6–8, 2007, Amsterdam, The Netherlands.

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Figure 1. Sonic Graffiti.



Figure 2. Devices (a) sound cap (b) controller (c) boom box.

sketch out their work before painting. The results may be short sound signatures or epic compositions.

2. DESIGN

Devices for creating and tagging music includes the sound cap, the controller and the optional boom box. The sound cap snapped on the spray can forms the main instrument. The controller and the boom box act as assist components.

The method of composing music in Sonic Graffiti is by remixing various sound samples. Suppose each spray can represent one sound sample, when the artist sprays out the paint, he also sprays

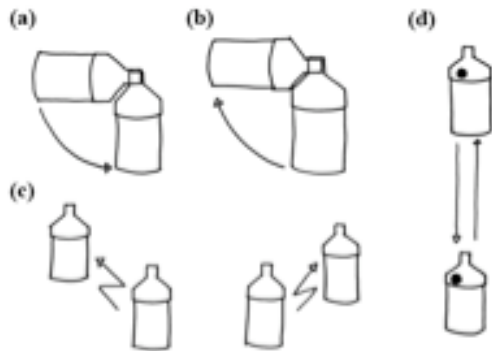


Figure 3. Gestures of the sound cap (a) fade in (b) fade out (c) scratches (d) change sound.

out the sound. Overlaying different paint causes related sounds mixed together. Hence music can be composed layer by layer.

2.1 Sound Cap

The sound cap enables users spraying out sounds. Each cap stores up to 3 different pieces of sound that users upload to the cap before spraying. To make the music creating more interesting and the result more refined, the sound cap equips two remix techniques: fade in/fade out and scratches. Users reach all the functions on the sound cap with gesture controls:

- *Fade in*: turning the spray can from horizontal to vertical
- *Fade out*: turning the spray can from vertical to horizontal
- *Scratch*: scratching diagonally, from top left to bottom right and vice versa
- *Change sound*: holding the shift button on the cap and shaking the spray can vertically for once. Each shaking makes the sound change to the next.

Having the same continuous rhythm through the remixed music is commonly seen. To include this composing technique in Sonic Graffiti, a looping switch is designed on the cap. Turning on the looping switch keeps the sound sample looping through the whole music piece even if the user doesn't keep spraying. If the switch is off, the sound sample only comes out when the user sprays.

2.2 Controller

The controller provides logistic support for listening, recording and tagging in music creating process. After the user indicates the start of a music creating session with the controller, the controller records the created piece, and geo-tags the music after the user marks the end of the session. During the creating session, the user can play back his/her creation and listen with earphone. One controller can be used with several sound caps. Same as the sound cap, the controller is designed to be operated with one hand. It has a clip on the back hence can be worn or put in the pocket.

The sound sample has to be put on the desired time position to form a composition. Positioning sound samples is also achieved with the controller. There is a set of forward/backward buttons letting users move the playhead on the music timeline, and then spray the sound sample on the time the playhead indicates.

The controller also comes with a recording part for collecting sound samples from daily life, or recording performances to be put in the work. Recorded samples can be uploaded to the computer afterwards.

The intended interface for the controller is not far from the one commonly seen on media players, using buttons for Play/Pause, Forward, Backward and Record functions. The Record button is used both for collecting samples and record created musical tags. The user starts a music creating session by pressing Record + Play/Pause. After spraying out the first layer of sound, the user positions the next sound with Forward or Backward buttons. Upon finishing the user press Record + Play/Pause again to mark the end of this session and the music will be geo-tagged.

The features on the controller are not far from a media player plus wireless/GPS capability. Therefore instead of being a physical object, the controller can be a piece of software on mobile devices such as mobile phones, PDAs, even portable music devices (ex. iPods, MP3 players) and portable gaming devices (ex. Sony PSP, Nintendo DS). It would be more economically sustainable to use the devices people already have.

2.3 Boom Box

Graffiti is usually carried out under secretive circumstances, but for some public practices, a group of artists can use the boom box to share and collaborate their creation. In this situation artists still use the controller to record and tag the music, but listen to their creation from the boom box.

2.4 Experience

Sonic Graffiti fits for both solo or collaborative creation. Since the music tagged at the same location is accumulable, this allows collaboration being both synchronous and asynchronous. One can also imagine an individual creator adds on a little work everyday to complete a piece. On the down side, the accumulation also offers the chance for the malicious to spoil other's work.

Listeners receive music via a dedicated software player installed in mobile devices. The software player is meant to be kept open when listeners walk in the city. Each graffiti is like a small radio station, having a limited broadcasting range. As the listener passes through different graffiti, the player tunes into the music of the nearest graffiti. In the player application, the listener can also mark the music on the map. The music can also trigger accidental encounters for listeners. People may notice the graffiti because of the music.



Figure 4. Listening to graffiti.

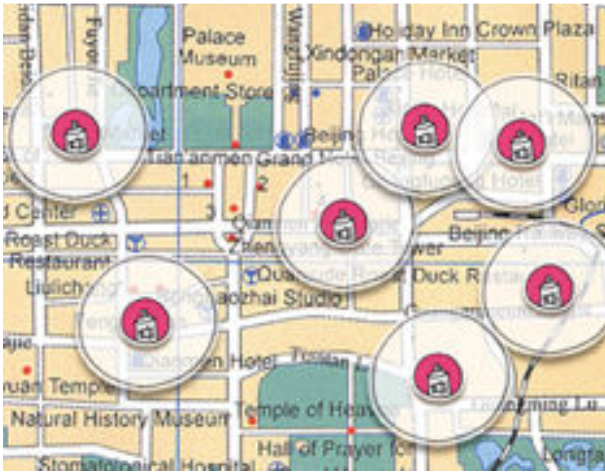


Figure 5. A map of Sonic Graffiti.

3. RELATED WORK

MotoGlyph [2] developed by Digit London is the closest idea to Sonic Graffiti. However it focused entirely on virtual experiences, while Sonic Graffiti is more about augmented reality. MotoGlyph was an installation containing special-made virtual spray cans and three glass panels. Each glass panel had different sound libraries. Visitors were invited to make digital signatures with virtual spray cans, the signature was then translated into 'the author's own sound and animation' [2] which could be downloaded as ringtones.

Taking the urban environment as an interface, Sonic City [4] by Gaye, L. et al explores an interesting concept of transforming body movements and contexts encountered in the city into musical compositions. This project emphasized on personal experiences of interacting with the city. It has realized a scenario that mobility could mediate musical interaction between the user and his environment, and enhance users' engagement with everyday encounters.

Mobile Music Making [5] by Atau Tanaka provides collaborative music making in wireless networks. Users can use the system to create music with their friends remotely. Each participant is associated with a track of the mixer. The result creation is the sum up of all the tracks manipulated by participants.

4. FUTURE WORK

The initial prototype was made for the sound cap to test out the gesture controls. It was made with an accelerometer and Arduino [6] platform. We used Pure Data for sound programming. On the appearance we would like to suggest a neutral 'tool' quality which would remind spray cans, stencils and other spraying caps in an artist's tool bag.

The prototype was exhibited for three days in Milan [7]. Most visitors felt comfortable with the designed gestures and described the experience as 'fun' or 'interesting'. In the future versions I



Figure 6. Prototypes.

will keep implementing features for creating music so that a bigger trial on spraying and composing can be carried out.

Other than communicating and making expressions, graffiti also has purposes on declaring public space, or 'making the city more of my own space' [3]. It would be interesting to investigate scenarios about what sound tags could mean to people and how them could be used in the urban environment.

5. ACKNOWLEDGMENTS

This project was developed as part of the author's second year thesis in Interaction Design Institute Ivrea (IDII), advised by Fabio Sergio, Yaniv Steiner and Philip Tabor. Thanks to all the internal and external faculties in IDII.

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