Echo(): Listening to the Reflection of Obsolete Technology

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Abstract

This paper introduces two interfaces developed under the theme of 'echo()', which explores HCI and design creativities from reflective and reuse practices on broken and obsolete technologies. In this series of projects, diverse old and mundane electronics have been collected and repurposed to provide heuristic spaces where the audience can playfully communicate with forgotten materiality and outdated functionality. The first version of echo() is a sound interactive installation where the visual components of the installation respond to the frequency and volume of the audience's vocal sound. The second version of echo() is an eight channels electronic controller that allows a user to automatically switch eight different electronic devices on and off according to the selected tempo. This paper describes the concept, related works, and technical details of this project.

Author Keywords

Interactive art, HCI and design creativity, Sustainability, Art practice

Broken and obsolete items collected during the collection stage.

Reflection practices for exploring the insides of broken technologies.
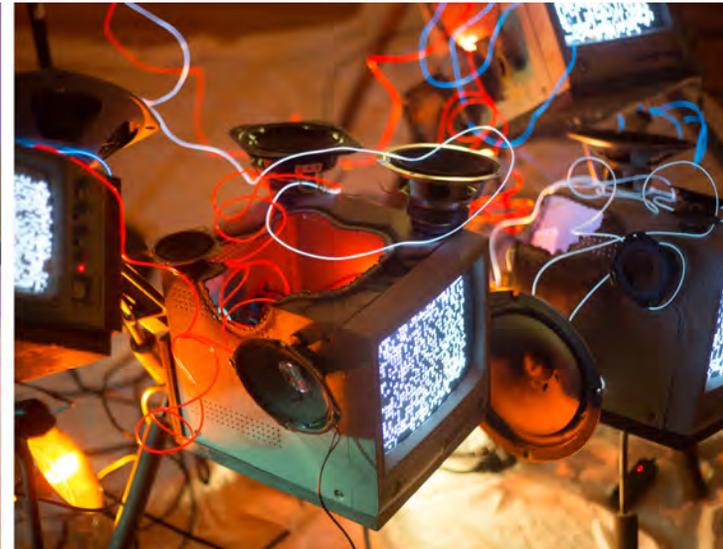

Figure 1: (left) echo() II, custom-designed interface and repurposed electronics, 2016; (right) echo I, multimedia installation interacting with the audience's voice, 2015

Introduction

'echo()' is an ongoing series of multimedia art projects that intends to explore alternative and creative uses of obsolete and broken technologies. Currently, two versions of echo() have been developed to provide experiential spaces in which the audience can playfully and creatively interact with diverse mundane and obsolete technologies around our daily life. Main idea of this series is (a) to highlight the potential creativity embedded in reflective and reuse practice of obsolete technology, and (b) to provide heuristic spaces where people can think and discuss about this topic in both aesthetic and critical ways.

In this project, various mundane and obsolete electronics, such as B/W tube screens, old radio, cassette player, and electronic typewriter have been collected from local streets, second-hand stores and personal donations. After collecting, the author began the process of 'reflection' in which he actively explored the inner working and logics as well as material aesthetic in collected technologies by means of diverse craft and repair tools.

On the process of this reflection practice, the author often encountered unexpected joy, challenge, mystery and artistic inspirations from the functionality and materiality embedded in these outdated technologies: after-image effect of old tube screens, dragging sound of tape-player, weirdly big design of old electronics, and others. Those things are still alive around us providing its own and unreplaceable aesthetic and

In media art area, such idea of alternative uses beyond the pre-assigned functionality have been highlighted under diverse themes and practices including appropriation, ready-made, bricolage. Especially in mid 20C, diverse multimedia artists such as Nam Jun Paek[5] started actively exploring artistic use of existing and emerging technology to transgress its original functionality. By reinterpreting intended functionality through artistic imagination, these works show how artistic exploration may transgress limited assumption in socio-technical environment.

In music and technology intersection, this has been also explored under the theme of 'circuit bending' that promotes the creative and chance-based customization of the circuit in existing electronic devices for new musical and visual expression[8,9]. This series artistic examples shows that there are distinct materiality and functionality that may challenge and extend the notions of creativity in HCI.

functionality, which are often considered as useless or mundane things in our function-oriented society.

Those inspiration and discoveries naturally led the author to think about the reuse of them beyond the contexts and functions. In other words, what naturally motivate the author to use the obsolete media was not only ecological responsibility on E-waste, but mainly inquisitiveness on the function and aesthetic embedded in outdated and broken technologies. From this combination of reflection and reuse practice, two installations are produced.

The first project, 'echo() I ' is comprised of six obsoletes B/W tube screens, and other light sources. This installation interacts with the audience's sound received from the standing microphone. These old screens are standing tilted on the floor, entangled with incandescent lighting sources and other obsolete media. When the audience makes sound on the microphone, the screens start printing out diverse pattern of characters, and the brightness of the lights changes according to the volume and the frequency of the input sound.

'echo II' is an eight channel electronic controller where a user can automatically switch eight different obsolete technologies on and off according to the selected tempo. Diverse electronics such as broken typewriter, cassette player, metallic fire alarm have been repurposed and connected to the custom-designed interface to create rhythmical patterns of the sounds and visuals of the connected electronics.

The process of building these works also have been also studied through a general auto-ethnography study with

an extensive process of documentation and reflection, captured through a rich combination of cameras, video, and self-interview. The motivation of this study is to understand how our creative cognition interact with the situation of repairing and reusing broken and obsolete technologies. Main contribution of this project is to provide useful examples that presents how design creativity may be emerged though reflective and reusing practices of broken technology can promote art and design creativity.

Obsolescence for Creativity in HCI and Art
Extended from design responsibility, recent works in broad sustainable HCI[1,2,3,8] highlight potential design creativity embedded in repairing and repurposing practice of broken and obsolete technologies. By calling attentions to the often-neglected links between design, aesthetics and consumption that extend beyond points of technological purchase and adoption, this series of studies provides theoretical and ethnographic evidences that show how technologies may have alternative 'lives' beyond the contexts and functions for which they were originally designed. Especially, Jackson & Kang's integrated study[4] about broken technology explains that the distinct "propensities" of found and broken objects can challenge and extend HCI notions of creativity and design itself.

More recently along with ecological concerns on technology consumption, some individual artists and artist-in-residency programs focus on repurposing E-wastes as central methods and topics of art work(Please find these in Jackson & Kang's repair study). Especially, Taezoo Park's 'digital being[6]' that explores 'invisible and formless creature born within

echo() I interacts with the audience's vocal sound.

echo II, example II, showing how to use echo() for new musical expression.

technological garbage', and his collaborative art installation 'Scale' [7] have been crucial sources of inspiration that describe the relationship between creativity and obsolescence.

Technical Details and Floor Plan

Recent DIY technologies such as Arduino, its related shields and other electronic components have mainly been used in both installations. In echo() I, the audience's input audio is received and analyzed through Sparkfun's audio analyzing shield. For controlling the text pattern of the screens, Tellymate shield[ref] have been used. In echo() II, an eight channels relay controller has been used to individually control the obsolete technologies. These two installation can be installed in either individual and combined ways. In individual versions, 'echo() I' will require approximately 100 square feet space, and the installation will be placed on the floor. In 'echo() II', the installation will be placed on the table, and the required space would be 50~100 square feet. In the combined version, the visual components of echo I interact with the sound produced from echo II.

Conclusion: Listening to the reflection of obsolete technologies

This paper introduces two art works developed under the theme of 'echo()' , which explores HCI and design creativities from reflective and reuse practices on broken and obsolete technologies. By reporting and sharing the idea, process and results of this project, main contribution of this project is to provide one useful example that show how HCI and design creativity can be emerged from the reflection practice on outdated technologies, which are often considered as useless and garbage in our function-oriented society.

What the author mainly intends to highlight in this project is the importance of 'listening' and 'reflection' practice on mundane things around us that may naturally and emergently inspire our design and HCI.(Video: https://youtu.be/yjY04LSP3Go). More information can be found in the author's website(http://www.laewoo.com)

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