
Obsolete



Copyright/license statement:
The author(s) retain copyright,
but ACM receives an exclusive
publication license.

Aritro Mukhopadhyay
amukhopa@sfu.ca

Josh Stuible
josh_stuible@sfu.ca

Stephen Therriault
stephen_therriault@sfu.ca

Theo Tang
tatang@sfu.ca

Abstract

This paper discusses the concept of planned obsolescence in the context of technological advancement. It describes an exhibit which comments on the gradual decline of appropriate affordances, durability and usability through a condensed set of interactions. Using interactive objects we aim to create a satirical experience that uses humour to spark a moment of reflection.

Author Keywords

Research through Design; Tools; Prototyping; TUI;
Perceived durability; Planned obsolescence;
Psychological obsolescence; Arduino

ACM Classification Keywords

Applied computing: Arts and humanities: Media arts

Introduction and background

Whether you've cursed under your breath while purchasing yet another ink cartridge or bought a new phone just because your old one no longer held a charge, as modern day consumers we all experience the effects of planned obsolescence. According to Berry & Zallio from Stanford University and Technological University of Dublin respectively, in the paper "*Design*

and Planned Obsolescence: Theories and Approaches for Designing Enabling Technologies" defined planned obsolescence as a strategy used by international firms and companies where products are designed with a predetermined expiry date [4]. This practice can be seen in many modern designs such as ink cartridges that programmatically stop working after a predetermined number of prints or phones with unreplaceable batteries. Author Jeremy Bulow, in his paper *An Economic Theory of Planned Obsolescence* in 1986 defined planned obsolescence as "Planned Obsolescence is the production of goods with uneconomically short useful lives so that customers will have to make repeat purchases" [2]. That being said, there is now a growing concern for the economic and environmental impact that this marketing strategy has.

So how can we enable people to have a satirical experience around planned obsolescence of mobile audio systems? *Obsolete* is an expressive art exhibit designed, not to solve this problem, but to demystify the concept to interested viewers in a comedic way. This exhibit is about giving technology temporary life before taking it away with the user as the accomplice and perpetrator. *Obsolete* allows users to explore technological advancement and its sometimes regressive nature. Additionally it aims to showcase how new technology renders its predecessors unusable. This is achieved through a set of interactions with increasingly modern audio players, each with different form and interaction.

Obsolete form is largely inspired by the way objects attract and repel us. The act of making a product more desirable through style is a persuasion strategy first coined in the late fifties as psychological obsolescence

by Newman in his paper *Motivation Research and Marketing Management* [3]. This strategy was implemented to subconsciously pressure the consumer into buying newer versions of products as the older ones became outdated in terms of physical appearance, rendering them obsolete [3].

In *Made to Break Technology and Obsolescence in America*, a book by Giles Slade, reports that in 1930s RCA's (Radio Corporation of America) head David Sarnoff had planned to render the existing radio market as obsolete by introducing television to the American market yet it was the further development of high fidelity radios through transistors and wire circuitry that caused the old to be replaced by the new. This strategy then became the norm, with billions of connected devices now becoming obsolescent every year. A recent study by the Gartner Group suggested that IoT-based devices (Internet of things) grew by 6.4 billion in 2016 which was 30% more than 2015. The study also predicted that this number is to rise up to 20.8 billion by 2020 which is in a few months [4]. With the volume of disposable technology production increasing, something should be done to spread awareness not just about the issue, but the real consequences it has on people's daily lives.

In order to convey the concept of planned obsolescence we employ engagement, symbolism, and perceived durability to deliver an effective experience. According to Verbeek, symbolism refers to a product that possesses status and value based on the lifestyle and social status that the user aspires to be associated with [5]. We also employed the concept of perceived durability which refers to "the extent to which an object's owner regards an object as long lasting either

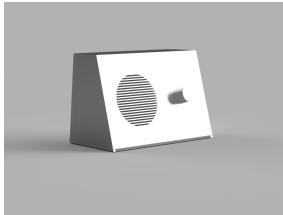


figure 1. A 3D render of the first interactive object



figure 2. A 3D render of the second interactive object

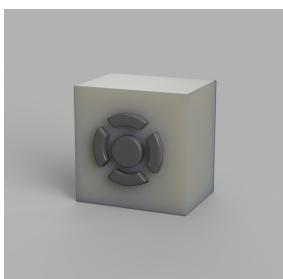


figure 3. A 3D render of the third interactive object

in terms of function or in terms of longevity or both." [6]. Lastly, engagement refers to "the extent to which an object invites and promotes physical engagement with its owner during use". [6]

Research through Design/Art Method

Concept

Obsolete consists of four interactive audio players which rest on an LED-lit platform. Aside from being a study on style and durability, we wanted showcases the evolution (and de-evolution) of technology. To represent this, the audio players are laid out from left to right similar to the way a museum might display the evolution of a species. The interactive audio players are then designed to mirror technological products from different eras. We decided to pay homage to iconically designed electronic products over the years to establish a sense of context and familiarity through symbolism.

Form

The first player was based off of Dieter Rams's *RT20* (figure 1). The large form factor and the choice of portraying an aluminum-like appearance was to create a very durable and long lasting radio. It has one simple affordance: a volume knob which is mapped to the audio level. With this initial form we wanted to start by demonstrating the peak durability, yet limiting its functionality and portability.

The second form drew inspiration from Dieter Rams's *T3* pocket radio (figure 2) and adorns a less durable

wood-like appearance. It has all the affordances found in our first audio player and has the additional ability to toggle between AM (Amplitude modulation) and FM (Frequency modulation).

The third form was based on the *iPod Shuffle* (figure 3). Unlike the previous two forms, this one emulates the functionality of a music player. This object now has five buttons: play/pause, volume up, volume drop, next song, and previous song. This form is also smaller and constructed out of 3D printed plastic.

The final audio player mimics modern smartphones such as the *iPhone* (figure 4). This form forgoes any kind of buttons and only affords a gesture based system. The user is only able to see the information of the song being played and volume on an LCD screen. The pitch (forward and backward tilt) of the device is mapped to the volume of the music while rolling it will change the track. This device is meant to poke fun at modern audio mobile devices.

We designed the prototypes of interactive objects one, two and four with 4 ply and 2 ply mattboard (figure 2) (figure 4). Although to give it the perceived appearance that we wanted, we applied vinyl covering on interactive object 1 and 2 to mimic metallic and wooden appearances respectively [6].

The design considerations included approximation of measurements and thinking about the electronic parts such as the arduino and the wires and how they were to be placed inside these prototypes. These prototypes were made by cutting and sticking parts meticulously so as to give the product a clean finished appearance.

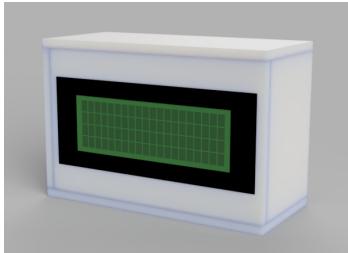


figure 4. A 3D render of the fourth interactive object

The base contains all the circuitry; its simple construction allows users to focus more on the design and aesthetics of the four radios. With the perforations in the base, light is able to shine up and indicate the current lively state of each radio.

Interaction and User experience

Obsolete presents the user with the four devices described above. When the user approaches the exhibit, the first and leftmost interactive object will have a green glowing ring surrounding it via the base, indicating that the user should interact with it.

The first interactive object is an old radio with one knob for volume. Upon picking the device up, they will hear a 1950s era news report. For each object, the audio was chosen to match that era from which the audio player is from. This further accentuates the evolution taking place and adds another level of engagement. The platform will then light up below the next object. The user can play with the first object for as long as they want but once they move on to the second object, the light below the first object becomes red and they are stuck with the second object. This is where the effect of obsolescence begins. By encouraging the user to move from one object to the other through the use of lights and promise of a more engaging interaction

This second object has both a volume knob and a switch for AM and FM mode. AM will play a 70s era news report while FM will play 70s rock and roll. Once again, the user can use the device for as long as they want but if they move onto the third object they cannot go back.

The third object is an iPod shuffle-like device with buttons that allow the user the ability to change songs, volume and play pause at will.

Finally, once the user reaches the fourth and final object, it is not immediately obvious how they are supposed to control it. As they experiment with it will become apparent that an accelerometer is being mapped to different actions on the music player. We want these mapping to be unclear and frustrating, signifying that not all progress is good progress. This will also help the user understand that they can't go back to the more pleasant models and realize that they are stuck. Additionally, the music being played by this final device will be extremely over-compressed and blown-out, a nod to the recent trend in both authentic music and satirical memes that does this. The result is a usability and auditory nightmare from which the user cannot recover. A users only course of action is to place the item back on the platform and walk away.

The iterative process

During ideation, the initial concept for *Obsolete* was to explore technology that was made to destroy itself. In early iterations, the new technology was to literally push the old technology away towards its imminent demise. This was eventually abandoned not only because of the mechanical complexity but because we wanted the user to be the main driver of the story.

Our new goal was to create a more simplified set of tangible interfaces that better implemented our concept. We focused on how to create a sense of attachment between the user and the product through

the concepts of engagement, histories, perceived durability and augmentation.

Technical implementation

Obsolete utilizes both *Arduino* and *Processing* to create a seamless user experience as the user moves from one device to another. All four objects and the base include arduino chips and communicate with each other via 2.4ghz radios. The base keeps track of which object is active and relays this along with commands from the active device to a computer via a USB connection. This computer runs the companion Processing application which controls all audio playback for the experience.

Discussion and Conclusions

Obsolete is intended to be viewed as an interactive art exhibit in a gallery space. If this project were to be exhibited in the future, a designated gallery space would not only complete the experience but also allow space for users to reflect upon the premise that *Obsolete* comments on. Additionally, some automated way of resetting the experience once it had been completed would be necessary for an autonomous exhibition.

This project achieves its satirical narrative by playing with both form and function. As users move through the line of audio devices, they are able to experience the true long-term cost of planned obsolescence within a short period of time. While the experience is both safe and lacking in any real world consequences, it presents itself in a comedic way that is meant to stick with the user and augment their understanding.

References

- [1] Giles Slade. 2007. *Made to Break: Technology and Obsolescence in America*, Harvard University Press.
- [2] Jeremy Bulow. 1986. An Economic Theory of Planned Obsolescence. *The Quarterly Journal of Economics* 101, 4 (November 1986), 729–750. DOI:10.2307/1884176
- [3] Joseph W. Newman. 1957. Motivation research and marketing management. (1957), 237. DOI:10.1037/14394-000
- [4] Matteo Zallio & Damon Berry (2017) Design and Planned Obsolescence. Theories and Approaches for Designing Enabling Technologies., *The Design Journal*, 20:sup1, S3749-S3761, DOI: 10.1080/14606925.2017.1352879
- [5] Verbeek, P-P, 2005, What Things Do – Philosophical Reflections on Technology, Agency, and Design. The Pennsylvania State Press.
- [6] William Odom, James Pierce, Erik Stolterman, and Eli Blevis. 2009. Understanding why we preserve some things and discard others in the context of interaction design. *Proceedings of the 27th international conference on Human factors in computing systems - CHI 09* (April 2009). DOI:10.1145/1518701.1518862

For further information

Source code: <https://github.com/stuible/IAT-320-Final-Project>

Demo video: <https://vimeo.com/379130810>