
Designing with Defamiliarization: Projects from the Everyday Design Studio

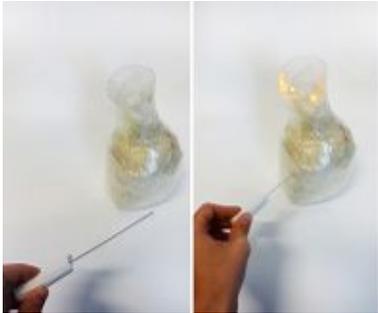


Figure 1. The Piercing Jar. We found the lights bring an ambient, subtle reaction to piercing.

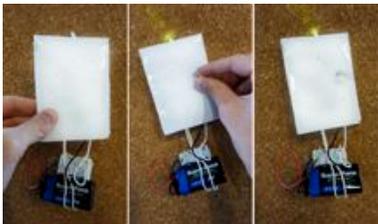


Figure 2. The electronic Memo. The interaction with this electronic memo was indeed a familiar action that was augmented with technology.

Leah Maestri

School of Interactive Arts and
Technology
Simon Fraser University
Surrey, BC, Canada
leahm@sfu.ca

Audrey Desjardins

School of Interactive Arts and
Technology
Simon Fraser University
Surrey, BC, Canada
adesjard@sfu.ca

Xiao Zhang

School of Interactive Arts and
Technology
Simon Fraser University
Surrey, BC, Canada
xza57@sfu.ca

Copyright is held by the author/owner(s).
CHI 2012, May 5–10, 2012, Austin, TX, USA.
ACM xxx-x-xxxx-xxxx-x/xx/xx.

Abstract

We are three Master of Arts students from the Everyday Design Studio at Simon Fraser University's School of Interactive Arts and Technology (SIAT). We are looking to understand how to design with appropriation through the perspective of defamiliarization. As part of our research we extend existing work around defamiliarization, surrealism and ambiguity for informing our design process.

Keywords

Defamiliarization, interaction design, surrealism, everyday design, appropriation.

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

General Terms

Design.

Bio

Leah Maestri is an interaction design researcher interested in *everyday creativity* and how it manifests in the ways people interact with technology. Her



Figure 3. The act of piercing is simple enough to allow us use it in repetition and access different modes of lights (blinking, fading, etc.).



Figure 4. Spoon rock: an interactive tangible.

master's thesis looks at the processes and interactions by which people repair broken objects in their home for informing interaction design. She will be graduating in the spring (2012).

Xiao Zhang is an industrial designer. She graduated from a master program of industrial design in China. Her current master thesis explores the role of designers' personal life experiences in interaction design practice as a way to inform future technology design.

Audrey Desjardins is an industrial designer. She studied and worked in Montreal, Canada, as well as Valencia, Spain. Her research focus looks at understanding the techniques of appropriation in different practices such as jewelry making and the steampunk subculture.

Our work within the Everyday design studio employs the notion of defamiliarization as a paradigm for exploring how to design for the ways people creatively adapt and repurpose everyday objects around them – or more specifically, *appropriate* them. Appropriation can be described as the use of a design artifact for a purpose different than intended by the designer(s). We see this as a valuable lens and key consideration for interaction design in the creation of interactive technologies.

Our research is influenced by existing work that looks at appropriation, ambiguity, and defamiliarization. We extend the work of Anthony Dunne and his notion of defamiliarization [1]—specifically his discourse on critical design as a 'poetic' and 'artistic' driven approach for designing everyday objects based. We find inspiration from concepts such as '*estrangement*',

'*dematerialization*', '*defamiliarization*' and '*alienation*.' Dunne sees these characteristics as ways of creating new perspectives for interacting with the world via aesthetic experience. The author posits that functionality is extended by an objects' estrangement.

Other work by Gaver and Sengers [2] looks at how the lack of *clarity* around the semantics of digital technologies can be used as a strategy for designing more dynamic and compelling interactive artifacts. Gaver believes there are multiple benefits to ambiguity. For one, technologies that have multiple interpretations can better adapt to shifting contexts of use and can also pave the way for more metaphoric forms of interaction that go beyond usability – thus becoming a resource for design. These sentiments are also shared with Phoebe Sengers [4] and Kristina Höök [3] who look specifically at notion of *multiple interpretations*, and how the various meanings people draw from ambiguous technologies can often lead to objects' appropriations.

In the following sections, we describe various projects from the Everyday Design Studio that embody aspects defamiliarization for designing towards appropriable technologies.

Projects

Designing low-level interactions and Piercing

The goal for this set of experiments was two fold: 1) to explore a balance between the familiar and the unfamiliar, and 2) to use these experiments to understand what we can learn about designing for what we call low-level interactions (simple interactions). As a way to start designing low-level interactions, we chose piercing as a technique to explore because of the range



Figure 5. An early prototype of the 'Man Bag,' which uses typical materials found in a garage / workshop for creating the final form. Modularity is afforded through the use of hooks and a pegboard.

of actions and scales it could provide. Piercing can be defined as perforating or puncturing with a thin and rigid pin. We aimed at exploring how piercing can feel familiar and unfamiliar in different contexts, and how it is possible to defamiliarize the action itself.

FIRST PROTOTYPE: THE PIERCING JAR

The "scotch tape jars" (see fig. 1) were filled with rice, and contained an open circuit in the center. When someone pierced the jar with a metallic pin, it would complete the circuit and lit an LED or made a piezoelectric actuator sound. The action was surprisingly rewarding: the tape, the rice and the core required force to pierce. *Design qualities:* Even though the input action is somewhat violent, the reaction is soft and offers a pleasing light through the plastic jar. The piezo sound provokes an opposite reaction. The sound is strident, powerful and immediately disturbing.

SECOND PROTOTYPE: THE ELECTRONIC MEMO

As we were playing with the jar prototypes, we realized how unfamiliar and bizarre it was to pierce a jar. In [3], Höök argues that in order to design systems that are open to interpretation and appropriation, they need to present a level of familiarity. People have to recognize their "daily social, emotional and bodily interactions" [3, p. 250] as a starting point for interpretation. We decided to engage in a direction where the familiarity of the action was more present.

We created an electronic paper memo. When it is pierced by a pushpin, a circuit was complete and lit up an LED embedded in the paper. We faced issues with the size of the battery and the wires that were almost larger than the piece of paper thus getting in the way of the interaction (see fig.2). *Design qualities:* We

learned that the materiality and the mobility of the pieces assembled have an important effect on our perception of the prototype. The piercing of paper felt similar traditional paper, but the light could transform a familiar action with added the meaning.

THIRD PROTOTYPE: THE CUSHIONED BOARD

The next prototype is a padded frame with embedded LEDs (see fig.3) connected to an Arduino microcontroller. We programmed the arduino for three possible modes: light up, fade in and out, and blink. The modes are accessible by piercing the cushion one, two, or three times, within one second of each piercing. *Design qualities:* With this prototype, we were able to play with the subtlety of the action of piercing, and the possible routines that hide behind repetition. The actions required precision and timing but the reaction was rewarding. In this case, the action itself is defamiliarized since it brings a different routine and meaning to the action of piercing.

An Interactive Tangible: Spoon Rock

We also played with expectations as a way to create defamiliar interactions. We designed this rock with attributes of ability to contain however with instability. The shape of this tangible artifact invites people to place and store something in the cavity. However, we challenged this assumption through making the rock unbalance once artifacts are placed within it (see fig.4). Moreover, a tilt sensor along with a cellphone vibration motor (powered by a 3V battery) were embedded within the rock. The rock could vibrate when it is placed bowl up and the vibration will shut off when it is turned upside down. So in this case, the precise representation of the 'bowl' creates both side effects and inconsistencies that don't correlate with people's



Figure 6. We played with the handle of the cup through the technique of additive. But now the electronic part has not been implemented.



Figure 7. We played with the negative space of the cup through the technique of inclusion. (Note; without electronic parts)



Figure 8. One example of leveraging the vibration of a cellphone and the material quality of porcelain.

expectations of the artifact. And in this way the artifact may trigger new thoughts and actions of it that can lead to appropriations.

Defamiliarizing Everyday Objects

THE SURREALIST APPROACH: A CELLPHONE BAG

The cellphone bag is a prototype that simply tries to integrate the attributes of a cellphone and bag into a single object using a surrealist approach. Much like the European avant-garde movement in the early 1920s, this approach challenges current assumptions and norms of culture to inspire reflexive and counter-intuitive uses of a cellphone bag. The end goal for this prototype is to use common materials (i.e. peg boards, hooks, pockets) and integrate them with the various attributes found in smart phones. The key challenge for this work is to strike a balance between the familiar and unfamiliar for introducing new modes of interaction. These prototypes are still in early development phase (see fig.5)

EXPLORING THE POTENTIALS OF CUPS

This project tries to utilize cups as a design resource to explore the potential of simple technologies for promoting acts of appropriation. Our process was inspired by traditional design techniques, namely the concepts of additive and inclusive forms. We experimented with the physical attributes of cups (like the handle, see fig.6), as well as the space that's created by taking away (negative space, see fig.7) and adding to its form (positive space). We saw these spaces as opportunities for embedding sensors. This project tries to challenge the expected use of cups in order to compel multiple interpretations around their use. The materials we are currently using with our cups include play dough and arduino sensors.

We also experimented with the vibrator of cellphones and the delicate qualities of porcelain cups for creating interesting sounds (see fig.8). Our process involved placing cups in various configurations that were either grouped or balanced together, and then embedded a cellphone within these configurations. Once the cellphone vibrator was triggered, the porcelain cups would emit different qualities of sound depending on how they contacted other cups within their configuration. Our goal was to leave the meaning and usefulness of the sounds open for people to decide, thus facilitating the potential for their appropriation.

Motivation for participating in the workshop

The workshop Charline Poirier and Calum Pringle are proposing asks similar questions to our own research endeavors. What techniques are people using to design with defamiliarization? How does defamiliarization lead to innovation and compelling interaction? We strive to discuss and share our experiences. We believe that we can learn a lot from this workshop, as well as contribute to the discourse based on the lessons and challenges that emerged through our own work.

References

- [1] Dunne, A. (2006) *Hertzian tales: Electronic products, aesthetic experience, and critical design*, Cambridge, Mass.: MIT Press, 174 pages.
- [2] Gaver, W. W., Beaver, J., & Benford, S. (2003). Ambiguity as a resource for design. In *Proc SIGCHI'03*, ACM Press. 233-240.
- [3] Höök, K. Designing familiar open surfaces. *Proc. NordiCHI 2006*, ACM Press (2006), 242-251.
- [4] Sengers, P., and Gaver, B. (2006) Staying open to interpretation: engaging multiple meanings in design and evaluation. *Proc. DIS 2006*, ACM Press, 99-108.