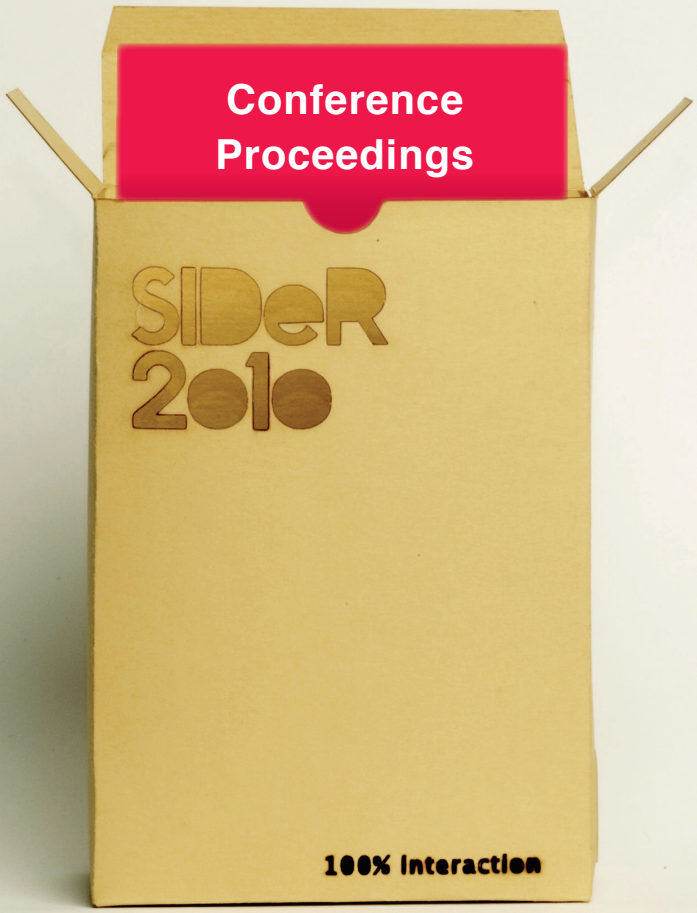
SIDeR 2010

Ingredients in gradients

Student Interaction Design & Research Conference
At Umeå Institute of Design March 2010



Proceedings edited by
Camille Moussette, Lauren Javor & Niklas Andersson

www.ingredientsingradients.com

Presented by:

SMART DESIGN

ERGONOMIDESIGN

Umeå Institute of Design
Umeå University

SIDeR '10

Ingredients in Gradients

Conference Proceedings
Edited by Niklas Andersson, Lauren Javor & Camille Moussette

24-25-26 March 2010, Umeå Institute of Design

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

SIDER '10 'Ingredients in Gradients' Conference Proceedings

Published by Umeå Institute of Design
Östra Strandgatan 30
SE–903 33 Umeå
Sweden

Editors
Camille Moussette, Lauren Javor & Niklas Andersson

Cover Design
Brian Oko & Soramist Chintanamanus

Layout and Typesetting
Camille Moussette & Pierre-Alexandre Poirier

Umeå Institute of Design, Umeå University, Umeå, Sweden

www.dh.umu.se
www.interactiondesign.se
www.ingredientsingradients.com

For inquiries or comments, please contact us via email at
recipes@ingredientsingradients.com

About SIDER

The sixth Student Interaction Design Research (SIDER) conference in 2010 is hosted at the Umeå Institute of Design in Umeå, Sweden. The conference enables students to participate in and contribute to the emerging discipline of designing (for) interaction. Students (especially: graduate and post-graduate students) are invited to challenge the state of art of the current design world by submitting their 'interactions'.

The SIDER conference consists of a three day event, with a mixture of keynote lectures, interaction presentations, demonstrations, workshops, interactive sessions and social events.

Ingredients in Gradients

With the title, *Ingredients in Gradients* we aim to communicate the intrinsic playfulness of the process behind creating interactive systems. We hope to evoke the range and openness of this field and allow for creative interpretation both from the student presenters and from the keynotes.

Inspirational themes for articles

Interactivity for the real world — A spin-off of Papanek's famous book. What is (or could be) "[Interaction] design for the real world"?

You and me equal interactivity — Discuss the societal implications of ubiquitous gadgetery and embedding technology everywhere.

One dose of code, two doses of craft, and a sprinkle of wit — Show us what you mean by a true and well thought-through systemic approach to design.

Design for them or with them — Any luck with co-design? Share your recipes of recent success stories, or life-enhancing failures.

Long lastin' interactin' — Give us your wide (and wild) interpretation on how one make sustainable and viable interactions come to life.

Freebie — Push the boundaries of IXD and blow our brains out (or in).

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

Table of Contents

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

SafeCircle : A Child Locator for Travelling Parents

Javad Khalaj, Behrang Kalkatehchi, Hadi Nurullahoğlu*

Students at Middle East Technical University, Department of Industrial Design
*** Middle East Technical University Alum- Special student at Hacettepe University**
{e152035, e131986, e122018}@metu.edu.tr

Abstract

The purpose of this study is to identify a new connection style to facilitate communication. Following studies about the relationship between parents and children on the move, the proposed solution idea — *SafeCircle* — suggests an alternative approach for taking care of child, providing freedom for both parties. Meanwhile, it will reduce the risk of children becoming lost. So, it eliminates unnecessary and stressful activities to locate a lost child. As a result, the meaningful and intentional *SafeCircle* concept aims to create a positive experience for both parents and children whilst travelling. *SafeCircle* also facilitates communication between parents and children when they stay within a prescribed distance from one another.

Keywords

Designing interactions, user experience, connection, mediator, lost child

Introduction

Connection is the indispensable part of our life. Everything in this world somehow is connected. It is connection that drives the development of many devices and objects over time. Human beings understand that connection with objects is needed to improve the quality of their life. Accordingly, it can be said that through history the advent of new devices has been mainly related to human needs. Human beings use these devices or objects as tools to meet their needs and two demands. In other words, these objects around us are tools to get to certain goals, but not goals in themselves.

In many cases, mediators (usually in the form of products or services) are created to provide connections between different users in order to achieve specific user experience goals. It can be considered that users interact with each other through connection. In this respect, connection directly affects quality of interaction between users. In response, the type of interaction influences the quality of experience. Accordingly, reaching a desirable experience requires defining a purposeful and meaningful interaction.

User experiences with objects are shaped through interactions (Desmet & Hekkert, 2007). With this respect, 'designing interactions' as an activity has developed in recent times for new concept-level design, with the intention to create novel and positive experiences (Moggridge, 2007; and Saffer, 2007). Accordingly, this study focuses on the 'interaction-based product experience' issue.

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

Description of SafeCircle product concept

The concept of *SafeCircle* is based on observation and understanding of how a modern family's members communicate with each other. The aim of the project is to explore and create a new product concept to facilitate communication. By focusing on interactions between parents and their children while travelling, a design opportunity has been identified, framed and responded to.

The National Center for Missing and Exploited Children (NCMEC) reports a statistic that approximately 800,000 children (younger than 18) disappear each year (over 2,000 children a day) because of various reasons. The report announces for an urgent need to address this problem. Keeping children connected while traveling and shopping during holiday periods has been one of the concerns of the NCMEC. On November 9th 2009, NCMEC stated that "crowds are greater this time of year and children may easily become separated from their parents, causing confusion and fear. If that should happen, parents need a plan and children should know what to do". NCMEC aimed to "remind parents not to let their guard down or be distracted while traveling" in order to avoid panic and potential dangers. However, the question arises as why traveling with small children has become an activity requiring too much parental attention and leads to stressful journeys and unpleasing experiences. Accordingly, the challenge of this project is to identify a mediator to facilitate connection between parents and their child whilst traveling, with an intention to create a positive experience for both parties.

Based on the role of connection within the context of communication, the effects of connection and disconnection between parents and their children are studied. It is believed that ignoring the constant connection would depress communication among parents and children. Disconnected children psychologically feel left out of the parents' support — with such support being critical in building positive experiences. Connected children are very pleased about being a member of the family and they feel they are an important and integral part. Even in tough and stressed times, the sense of connection helps children to not lose their self-confidence. This study examines how we might initiate remote communication using nonverbal cues commonly found in face-to-face communication. The authors present a concept, *SafeCircle*, for initiating mediated communication through eye and sound contact. *SafeCircle* is a physical mediator of a remote individual that senses and conveys attention using facial gestures and alert system. Users, especially a child, may stay in touch emotionally by carrying an object that shares visually similar characteristics and semantic values to a parental figure (Figure 1).

The proposed *SafeCircle* may facilitate the use of traditional or socio-cultural rules for keeping children in touch. For example, parents tend to take a child's hand constantly when they go out, which is against the child's nature to explore and be independent and prevents building of the child's self-confidence.

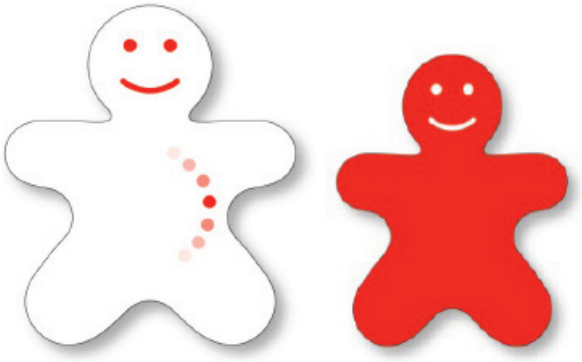


Figure 1

There are some existing solutions consulting parents to locate their missing children. However the *SafeCircle* provide parents with constant connection with their children. By giving information on the child's location, *SafeCircle* can be considered as a mediator that provides an invisible connection between the parent and child. The suggested concept reviews the stressful attentions of parents taking over their children. This kind of behavior limits their activities, and contributes to the unfortunate situation where children are seen as a 'burden' for modern and young families on the move.

SafeCircle symbolizes parents' attention and connection to their small child. During travel, small children require continual observation. The case when a child is lost requires immediate action. *SafeCircle* addresses the need for urgent access to the child by showing the parent in which direction the child may be found.

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

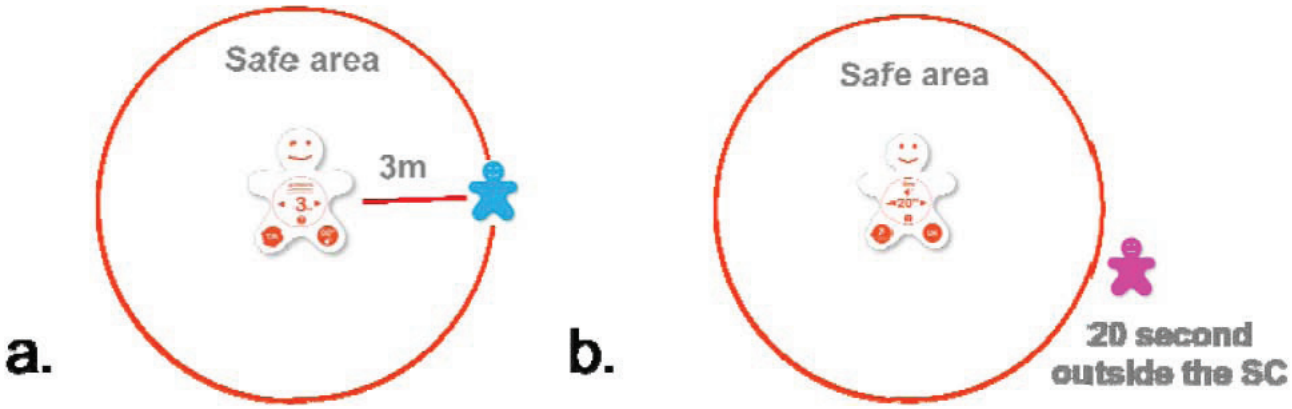


Figure 2 : Adjustment tasks of SafeCircle

Functional and expressive attributes of SafeCircle (SC)

The visual properties of SC-Child are the same as SC-Parent. The visual characteristics and personality of the *SafeCircle* devices represent a happy family. Based on the parent's common responsibilities and child's natural manner and behavior, tasks are applied to SC-Parent and fun attributes to SC-Child. Moreover, in order to avoid children abusing the device and seeing it as a toy, SC-Child has no adjustable functions. Considering the child's colorful world, the surface of SC-Child with its changing colors gives a fun characteristic to the device and also makes the device more adorable (see Figure 1).

It is necessary for traveling parents to define an area (radius) within which they think it is convenient for them to easily track their child. Usually, the nature of the environment is a critical factor in defining an appropriate safe area. Accordingly, the 'distance' between parents and child, together with the 'period of time' that child stays outside of this distance, are taken into consideration for the functionality of *SafeCircle*.

Considering a stressful moment when a child is out of the parents' sight, *SafeCircle* is conceived to be mastered very easily. So, the design of the interface and thee usage scenario is planned to bee simple and easily understood. The first function in using SC-Parent is to define the distance between the parent and child. The intended distance is defined according to the situation and context of use. For example, a distance less than 3 meters can be applied to very crowded areas (Figure 2.a). The second accompanying function is to define the period of time that child is allowed to stay outside of the intended distance. For example, this time can be limited to 20 seconds in a crowded environment (Figure 2.b). When the child runs outside the safe area and exceeds the set time, SC-Parent device starts to give an alert. The goal of *SafeCircle*'s alert system is to instantly galvanize the parents to assist in the search for, and safe recovery of, their child. To assist this, the arrow on the main screen of SC-Parent shows in which direction the child may bee found. To do this, a transmitter-receive module will be implemented into the *SafeCircle* devices to provide tracking.

Conclusion

Within the context of communication, people use several physical mediators to achieve their goals. Sometimes not being in contact with a beloved one causes people to feel frustrated and negative. This paper investigated a problem that parents can face when they travel with their young children. *SafeCircle* offers an digital assistive approach for child minding, providing freedom for both the parents and the child. Unlike conventional experiences when traveling with children on the move, parents who use *SafeCircle* are intended to feel less worried about, and more emotionally attached to, their children.

This concept can be applied to different cultures and conditions. For example, India may be a potentially strong market, where considerable numbers of children are lost everyday (NCMEC). The solution ideas that we have suggested provide a realistic and achievable response to a problematic situation by today's parents.

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

Acknowledgment

We would like to appreciate Assistant Professor Dr. Owain Pedgley for his contribution and enthusiastic support through correcting this paper.

References

DESMET, P. M. A., & HEKKERT, P. (2007). *Framework of Product Experience*. International Journal of Design , 1 (1), 57-66.

NATIONAL CENTER FOR MISSING AND EXPLOITED CHILDREN. (2009, December). News. [online]; http://www.missingkids.com/missingkids/servlet/PageServlet?LanguageCountry= en_US&PageId=2810#1 http://www.missingkids.com/missingkids/servlet/NewsEventServlet?LanguageCountry=en_US&PageId=4155

MOGGRIDGE, B. (2007). *Designing Interactions*. MIT Press.

SAFFER, D. (2007). *Designing for Interaction : Creating Smart Applications and Clever Devices*. Berkeley,CA: New Riders.

This paper is the written part of a text + video submission to the SIDER '10 Conference. The full submission, including video file can be found on www.ingredientsingradients.com

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

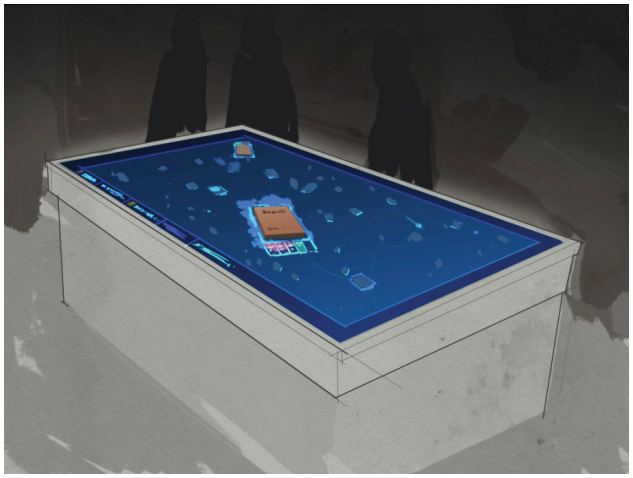
The Inspiration Table

Nicolai Brodersen Hansen, Thomas Hjermitslev

Aarhus University, Denmark
nbhansen@gmail.com

Abstract

In this paper we describe the *Inspiration Table*, a novel approach to bridging the gap between the aesthetic pleasures of a good book, and the possibilities of the digital age. We argue that there is much to be gained by recognizing the tactile and emotional qualities of the physical book when implementing new technologies in the public library, and bringing these qualities into play can reshape the idea of inspiration in the public library. Our design concept is meant to be proof of concept of this way of thinking, and this paper will include both a rich description of the concept and a theoretical as well as aesthetic call to arms of our approach.



Introduction

The *Inspiration Table* is a proposal for an interactive installation, developed as a student design project related to a public library redesign project. It is an attempt to rethink search in relation to the challenges faced by this library in particular, and public libraries in general. During the design process we came to the conclusion that there was a need for novel approaches to inspiration in the library. In our view, the public libraries already have a very good grasp of databases and searching for books when it comes to providing the user with a fast and effective means of boolean search and finding the book. It is, however, a real problem to actually get casual readers interested in reading books, and also in maintaining interest once an initial affinity with a book has been established. This is partly due to growth in competing alternatives, such as computer games, TV and Internet. There has been an enhanced interest in encouraging reading by attempting to make literature "available" through the new media, and in particular we see a movement towards "digitizing the public library". This is a trend becoming more and more prominent as technology for reading books digitally improves. In our opinion this solution reduces the experience of the book to its written contents alone. This streamlines the interaction paradigm of books and inspiration in libraries with the alternatives such as Facebook and other digital entertainment forms that offer quick, consumable and, above all, non-physical and non-tactile forms of entertainment. We thus find that our approach is interesting, not so much for its

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

technical prowess, but rather for the attempt to bridge the gap between the physical attractions of the public library and the joys of the digital domain.

The Inspiration Table

The table itself consists of an embedded screen which utilizes image recognition to identify the book placed upon it, and to track the movement of the book around the table. This setup is partly inspired by other interactive table projects such as [1] with a crucial difference being that using your hands on the table will not yield any results. Using the *Inspiration Table* means using the book placed upon it to interact with the table, making the actual book — not a touchscreen or a WIMP interface — the bridge between user actions and the system. When placing a book on the table, an aura appears below the book, as shown below. It augments the actual book with a digital layer of additional

information, primarily three keywords related to the book and two empty keyword slots.

On the rest of the table, a number of images float around slowly. Moving the book and its aura around reveals that the images can be absorbed into the aura, thus adding more keywords to the three keywords that come with the book. The images representing the keywords will try to "escape" by moving away from the book, if the combination of keywords do not yield a lot of results and will teasingly move closer if there are a lot of possibilities to explore by selecting this keyword.

After adding keywords, the table will present the user with reading suggestions based on the keywords in the form of book front pages. S/he can then move her/his book over one of the front pages upon which the table displays a short description of the selected book at the edge of the table. Touching this will print the data needed to find the book on the shelves of the library. If none of the suggestions please the user, s/he can continue adding keywords to the book and new suggestions will appear.

Ideals

The experience offered by the *inspiration table* builds on our conviction that there is more to the library experience than the mere consumption of the data contained in, for instance, 300 pages of printed words. We firmly oppose the classical HCI notion of usability in calling for different ideals than the transparency of the interface and the effectiveness of use. Rather, we attempt to play along with the cultural and physical connotations of the physical book, and thus follow what have been labelled "the Aesthetic Turn" by, for instance, [2] or "Aesthetic Interaction" by [3]. In positioning our design concept as opposed to for example [4], we find it worthwhile to go into the aspects of Playful Search and Physical Attraction of the *Inspiration Table*.

Playful Search

One aspect of our aesthetical ideal of digital searching in the public library is the attempt to make this activity playful and intriguing, rather than

In: MOUSSETTE, C.; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

effective. This can be seen as an attempt to turn on their head the rather dreary but nonetheless effective search engines that most libraries implement. In offering what is essentially an imprecise search routine that does not always yield the same results with the same search terms and at the same time making the user "chase" the wanted images used for the search around, we challenge the notion that getting a book should be easy, fast and accessible. This draws on both notions of video games as bridging the gap between easy and challenging, and the pragmatist aesthetic notion of experience [3], where the fulfilling experience is when the whole of one's faculties, mental as well bodily, are employed. This aspect is further elaborated by [5] who, in detail, describes how one aesthetic experience gives meaning and form to other actions. By attempting to utilize the style of the interaction to give meaning to the normally tedious act of searching for books, we hope to shape the sum total of the library experience, an experience we see as closely intertwined with the idea of "borrowing a book".

Physical Attraction

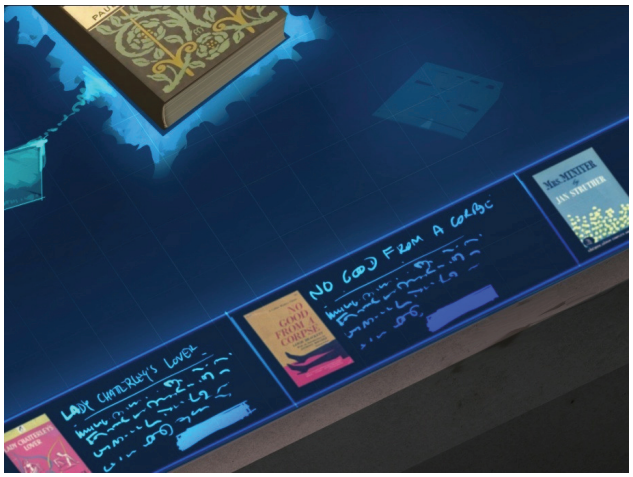
The *Inspiration Table* is not only meant to be a playful device, it is also inherently a physical and tactile device by utilizing the book itself as the interaction tool. This can be seen as a bland and gimmicky feature, but this criticism would be neglecting two crucial points. First, that it is actually easier to start searching by placing a book on the table than selecting from an array of options on a screen. This means that one of the main draws of the physical book for some users, the simplicity and ease of use, is actually preserved in the interaction paradigm. Second and more importantly, during our design process, we found that users not only seem attached to the story in the book, they are often attached to the actual physical instance of the book they read. We make the case, that the physical aspects of the book experience cannot be ignored. By ignoring the materiality and the fact that lots of people value owning not only books, but also records and similar items, proponents of the ebook solution to the woes faced by the public library, in our opinion fall short of fully explaining the attractions of reading books.

The design process

The table currently only exists as a concept proposal, meaning that it is still very much a work in progress. The ideas for an alternative approach to searching came about through a participatory design inspired process, and as such we have conducted both classical ethnographical studies in the public library and other kinds of domain studies. But the process has mainly been characterized by different workshops confronting potential users with future use, for instance Inspiration Card Workshops [6] and mock-up testing [7]. This movement between use, context and internal reflection in the design group, is very much a Schönian "conversation with the material" [8], and while we had the anti-vision of not wanting to design yet another iPhone, the idea of the table and the aesthetical considerations grew out of these design interventions.

Mock-up testing

One interesting aspect is the way keywords are used to represent the content of the book. We have not been able to rid ourselves of the feeling that, while we are doing a great job of bridging the physical and digital gap, we have a challenge when it comes to representing the actual story, and it can rightfully be discussed whether representing a story using only a few keywords, is a fruitful route. This issue does point to an interesting issue of searching "related" literature. In short, the two prevalent approaches can be described as the "Amazon Approach", where the user is suggested literature based on what other people like and the user's previous shopping history. Or alternatively the keyword method, which was utilized in our concept



and in the public library, where an entered keyword results in similarly tagged entries. Even though our concept uses a variant of the keyword approach, the user brings her/his own keywords with him in the form of a book. In our opinion, this goes some way towards alleviating the dreaded keyword selection boxes, which we feel are the direct opposite of an engaging library experience.

Going on from the ebook readers

We have made the case for an approach to inspiration in the public library that taps into the aesthetic potential of the physical book. We argue that the attempts to make literature available along the same lines as music and other digital forms of entertainment in ebook readers, iPods and so on, is only one way of crossing the digital divide. We furthermore argue that, in the materiality of the very book a reader spent hours holding in her/his hands, there is an already established relationship between the reader and the book with great potential. This relationship the *Inspiration Table* attempts to utilize in order to inspire the reader to go on reading. In taking this path less trodden, we argue that there in the layman's words are "more to the book than meets the eye", and it is these hidden qualities we attempt to highlight with our design proposal.

References

1. http://portal.maceproject.eu/maeve/
2. UDSEN, L. E., HELMS JØRGENSEN, A. (2005). *The aesthetic turn: unravelling recent aesthetic approaches to human-computer interaction*, Digital Creativity, 14626268, Volume 16, Issue 4, pp. 205-216
3. PETERSEN, M. G., IVERSEN, O. S., KROGH, P. G., & LUDVIGSEN, M. (2004). *Aesthetic interaction: a pragmatist's aesthetics of interactive systems*, In Proceedings of the 2004 Conference on Designing interactive Systems: Processes, Practices, Methods, and Techniques (Cambridge, MA, USA, August 01 04, 2004). DIS '04. ACM Press, New York, NY, 269276
4. NORMAN, D. (1990). *The Design of Everyday Things*, Doubleday Business
5. SHUSTERMAN, R. (1992). *Pragmatist Aesthetics — Living Beauty, Rethinking Art*. Blackwell publishers.
6. HALSKOV, K. , DALSGÅRD, P. (2006). *Inspiration card workshops*, Proceedings of the 6th ACM conference on Designing Interactive systems, June 26-28, 2006, University Park, PA, USA
7. EHN, P. & KYNG (1991). *Cardboard Computers: Mocking it Up or Hands on the Future*. In J. Greenbaum & Kyng (Eds.). Design at Work: Cooperative Design of Computer Systems, Lawrence Erlbaum, Hillsdale, NJ, pp. 169-195.
8. SCHÖN, D.A. *Educating the Reflective Practitioner*, Jossey Bass Wiley, 1987

This paper is the written part of a text + video submission to the SIDER '10 Conference. The full submission, including video file can be found on www.ingredientsingradients.com

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

The quality of experience : Playing with temperature and humidity, where on Earth would you go?

Daniela K. Santos, Tamim H. Shakeel, Torben Jessen

M.Sc. IT Product Design, University of Southern, Denmark
dksdani@yahoo.com.br, tamimhs@gmail.com, tjessendk@gmail.com

Abstract

People often understand the climate primarily as hot and cold weather. However not many think of the 'invisible' factors that cause the different climates on Earth. The prototype presented in this project is the result of a user experience design course developed with the purpose to teach children about climate helping them to experience those 'invisible' factors in a tangible way. The design and development of the prototype goes beyond 'just' interaction, in terms of exploring not only interaction and usability, but also by looking at the user's experience. The prototype challenge people to engage with and learn through playing with temperature and humidity — which are some of the factors that cause the different climates on Earth. This paper presents and discusses how users have engaged with the prototype by taking the role of movement as the focus in the analysis of the final concept, considering the embodiment that were explored while interacting with the *uFeel* prototype.

Keywords

User experience design, interaction design, embodiment

Introduction

Users are getting more and more in the focus of the modern design process. It is important to consider the user's feelings and needs when developing products or services. Researchers from the design field are focusing on the experience that users have when engaging with products and services (Norman, 2009, Sanders, 2002). This project takes the user's experience, as well as the role of movement, as the main focus areas to guide the development of the prototype. This means that during the project each step was planned and discussed putting the users' feelings and needs in the center of the project.

First, the paper describes the framework and context of the project, by presenting the natural phenomena and the dilemmas that exist when trying to understand the difference between the real temperature and the feeling temperature.

Second, the literature behind user experience design is discussed in regard to the quality of experience that was applied in the prototype.

Third, the paper presents the concept in details and show where the user experience is explored in the prototype.

Finally, there is a discussion of the embodiment and user experience that was explored by people during the user tests.

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

The *uFeel* Project

The *uFeel* project was created from a user experience design (UED) course, with the goal to design an interactive prototype focusing on the user's experience. The UED course proposed to use a natural phenomenon and the visitors of a science park for the context of the project. The challenge of the project was to find a natural phenomenon to work with and develop a prototype that would teach people about the phenomena. After an extensive process of brainstorming sessions, a tangible interaction workshop, and literature studies it was decided to explore the different climates of the world and the factors that causes them.

People experience different climates in different parts of the world. It is a fact that in some parts of the world, based on its latitude and altitude, the climate varies and for that matter people experience different kind of weathers. People often take these natural phenomena for granted and perhaps never think of which factors actually causes climate variety. However, there are many factors which play a great role in this variety. Other elements, apart from merely latitude and altitude, such as humidity, wind speed, rainfall, and pressure, create and affect climate changes.

The real temperature is measured and understood by meaningful statistics, demonstrated for example on thermometer devices. There is also the feeling temperature which is not possible to calibrate and demonstrate by meaningful numbers in a conventional way. It is felt on one's body and it is understood as the body reacts to that. The feeling temperature could be such as when, for example: the warmth is felt and realized a lot warmer in hot and humid climates than in a hot and dry one. It is also true when coldness is felt and realized colder in windy and cold areas than cold and calm ones. In order to find a way to communicate the invisible factors of climate, the goal was to interactively teach people about these factors. The purpose of building the *uFeel* prototype was to engage users in understanding and experiencing some of the factors that cause the different climates.

Experience

Throughout the development of the *uFeel* prototype, the focus was on the quality of the experience that users would get when engaging with the object. Djajadiningrat, Matthews & Stienstra describe the notion of embodiment knowledge "in which meaning is created during actual, physical interaction rather than being abstractable before hand in schemata." (p. 6 2007). Looking for a meaningful coupling between the action, form and function in this project, there was an embodiment challenge on how to design a prototype that would challenge people to create meaning while interacting with the object and therefore learn about climate in a fun way. The role of movement was the core of the project, for that reason it was essential to this project to understand the nature of 'embodiment' that exists in the world. The focus on the body had

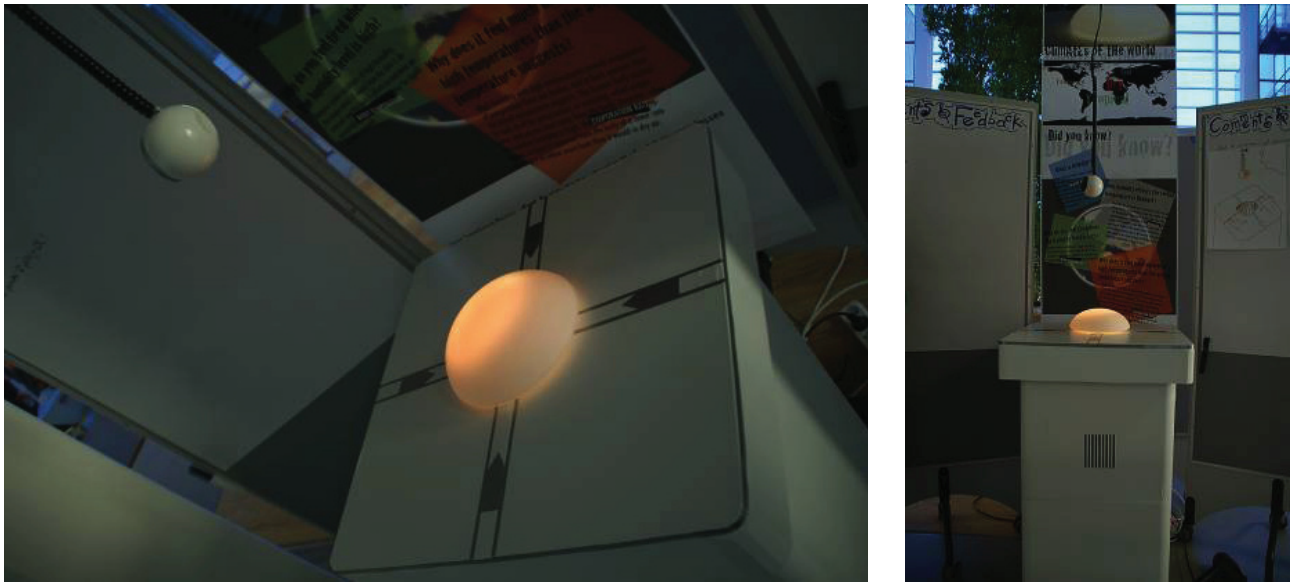


Figure 1 : Final prototype

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

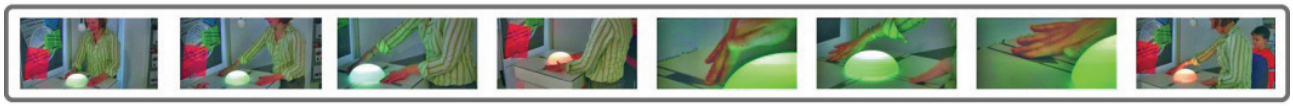


Figure 2 : A woman exploring the prototyping with both hands and finding a better position to her body.

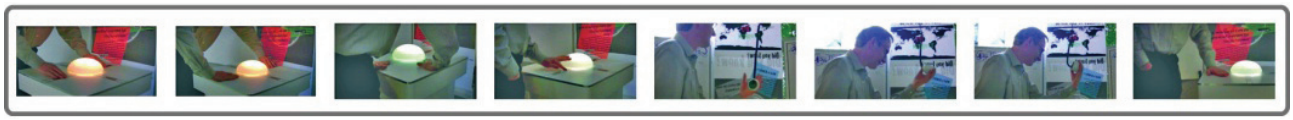


Figure 3 : A man interacting with the prototype first only with one hand, but later with the correct body position and both hands.

Figure 3 : A man interacting with the prototype first only with one hand, but later with the correct body position and both hands.

respect to human-product interaction, in order to develop a prototype that would teach people about the factors that causes the different climates on Earth. To decide the form of the prototype, the different ways to interact with it was strongly based on embodiment. In order to engage with the prototype, users were forced to use both hands, and the reactions were given by animated colors, sound and temperature.

Prototype Development

The prototype is based on the following research question: How can people experience the factors that cause different climates? The first idea was to build the prototype as an interactive globe that could show different climates around the world. This idea was changed after having experienced that objects that looks like something they are not, by not reacting like it, has a disappointing effect on the users because it does not live up to the users expectations (Dajadiningrat, Matthews, & Stienstra, 2007). The new idea was to let users interact (adding heat or cold and adding humid or dry air) with the prototype and thereby creating a climate in an abstract (colored animation) way that is presented in a half globe together with sound. The prototype was changed to have only a few characteristics from a globe as for example the rounded form. The prototype is focusing on the users experience when interacting with it. The user can actually feel hot and cold temperature, by adding it to the globe physically with their hands and creating humidity with his/her own mouth. When, for example adding temperature to the globe the user has to do it a few times before it changes, the reason for this is that temperature does not chance very fast (like a button press) physically. This gives the impression of actually adding heat/cold temperature to the globe. By adding humidity to the globe, the user gets a strong connection between action and reaction because the animated colors on the globe changes, showing that she/he made it humid. User tests showed that people got better to interact with the prototype the more they tried. Different interactions were also developed over time. Some people have interacted with two fingers and later with the whole hand.

Discussion

The final prototype of the *uFeel* project was presented at an exhibition. The exhibition was planned in order to present the final project work of different disciplines, such as 'product design', 'mechatronics', 'interaction design', between other disciplines. The prototype was installed at the main corridor of the exhibition and people were invited to engage with it by a big poster that was hanging from the ceiling and had the question: 'Playing with temperature and humidity, where on Earth would you go?' (see Figure 1). There was a camera to capture all the moments that users were engaging with the prototype, in order to produce video material to use as data in the analysis of the final prototype outcome. As a result, screenshots of the video were created following a sequence since someone had started touching the prototype until they stopped.

The first example (Figure 2) shows a woman starting to engage with the prototype by touching the hot plates

and trying to add heat into the globe. You can observe that in the first picture, the body is standing in front of the globe, but as the picture follows, she had to move her body to the side, in order to have a better position to keep interacting with the prototype and therefore manipulate different climates.

The second example (Figure 3) shows a man trying to feel what the prototype does by touching one of the hot plates with one hand. The prototype does not react and the man starts to explore the humidity sensor by looking and shaking it. He keeps trying only with one hand, and the other hand is inside his pocket. After a while, he sees that the prototype does not react, he finally takes the other hand out of the pocket and tries to add hot temperature into the globe, getting a quick response from the object which starts playing a desert sound together with some animated colors.

The last example (Figure 4) shows a man, which started engaging with the prototype by touching both cold plates at the same time, adding cold into the globe. By doing that, he got a quickly response going from a hot to a cold climate. After changing the climate in the globe, the man started to explore the humidity sensor, first by putting it next to his ear to find out if there was any sound coming from there. Second, he started to talk into the humidity sensor and there was no reaction from the globe. But the more he interacted with the humidity sensor with his mouth, it started to get humid and therefore, the climate in the globe went to a

Analyzing the video material that was collected during the exhibition where different people were engaging and interacting with the prototype, a few conclusions can be made. The goal of the project, which was to explore the user experience, not just a fast reaction or the usability of the prototype, proved to be achieved. In the first example, the woman tried to add heat or cold in different ways, until she found a better position for her body and started to change the climate and enjoy the results that she could make. The second example shows that the notion of embodiment knowledge was explored in this prototype. He started to interact with only one hand, but in order to get a response from the object, he had to take his other hand out of the pocket, positioning his body in a better way in order to get feedback from the globe. The last example shows that the man already started to interact with the prototype with the proper position of his body and hands, even finding a better way to add cold temperature by placing his hands in a certain position, which can be observed in the last picture of figure 4. Therefore, he started to explore the humidity sensor and showing by a happy face that he was enjoying to interact with this prototype and exploring different possibilities. The results of the outcome analysis proved that embodiment knowledge was explored and people were creating knowledge and improving their motor skills throughout the process of engaging and interacting with the prototype. A few other examples that are not presented in this paper also shows that at first, people did not know what to do but it created a curiosity and therefore a fun environment to explore the prototype and learn about the different climates on Earth.

Conclusion

This paper presents how the *uFeel* project takes the user's experience in the focus of the design process. In order to create a product that would interactively teach visitors from a science park about a natural phenomena, it was necessary to go beyond 'just' interaction and usability. By having the user's experience and the quality of these experiences as the focus of the project, we can conclude that the prototype provoked curiosity for people passing by and thereby invited them to engage with it. Motivated by the challenge of improving their skills while engaging with the prototype and manipulating different climates, the learning aspect was increased. Furthermore, observing how people were interacting with the prototype, we could see that by being challenged on how to engage with the prototype and get feedback from it, people were also having fun while engaging and learning about climate.

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

Acknowledgement

We would like to thank Marcella Stienstra and Laurens Boer for the 'user experience design' classes and inspiring workshops. We would also like to thank Tom Djajadiningrat for giving feedback on the development of the project, and to all students and other participants that helped in the process of the project providing feedback and comments on the uFeel.

References

DAJADININGRAT, T., MATTHEWS, B., & STIENSTRA, M. (2007). *Easy doesn't do it: Skill and expression in tangible aesthetics*. Personal and Ubiquitous Computing 11 , pp. 657 -676.

NORMAN, D. (2009). *Systems Thinking: A Product Is More Than The Product*. http://interactions.acm.org/content/?p=1286).

SANDERS, E. B. (2002). *From User-Centered to Participatory Design Approaches*. Design and the Social Sciences.

This paper is the written part of a text + video submission to the SIDER '10 Conference. The full submission, including video file can be found on www.ingredientsingradients.com

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

Recollect ! The media player that chronicles your life

Sergio Manuel Galán Nieto, Marcus Paeschke*, Quentin Duncan, Adeel Rashid

Malmö Hogskola (K3), Malmö, Sweden
***Malmö Hogskola (K3) /Universität Potsdam**

Introduction

This concept was developed during a mobile computing project in the Interaction Design Master course at the Malmö University. The goal was to design a new concept of mobile media player. Our result is called *Recollect!* It explores the connection between personal media and life experiences. Nowadays, media are more ubiquitous in people's life than any time before. Using the links that, in our mind, are established between music, images and past life, *Recollect!* seeks to:

- ☞ Classify the media in a meaningful way for the user.
- ☞ Boost the arousal of memories that spontaneously come up when you look at a photograph or listen to a song.

This paper explains the user centred developing process, describing all the tools that were used while we learned them, and introduces some reflections and findings about media, people and memories.

User research: Interviews

In the first brainstorming process we came up with different concepts and according to our preferences and the feedback received at the first presentation we decided to focus on "memories and media". With this thought in mind, we interviewed different people in order to obtain information to create our personas in the next stage, and to listen to their stories about music, media players and memories. We setup the interviews in a cozy context like coffee shops or university canteen and we choose to interview students between 20 and 30.

Every interview was, of course, different. Some people were addicted to media players, while others listened to music only via YouTube. None of the interviewees had a diary but all of them would like to, if they weren't too lazy to keep it. Apart from persona building, these interviews gave us a deep immersion on the way people interact with media and media players as well as several inspirational thoughts like the existence of "memory boxes" to save physical memories related with the same period of time or the "top ten list of the year" that one girl applied to people, music, experiences...

As a summary, even with a small amount of interviewees — five in this first stage — , the list of personal details that make every user different is huge: Different patterns in media consumption, in memories collection or in media player preferences. It's not possible to achieve a design that fulfils everyone's needs.

Targeting our user group

We took details from the different users that we interviewed to build three different fictional characters: The personas [2][3]. For each one we focused on creating personal goals, psychology, sociology, desires and we also created a graphic image of their life (figure 1). During the whole process we thought in our personas to take decisions about the product and they

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

were useful to decide what kind of users we should focus on. Our final target user was:

"People who use smart phones/media players and social websites, who enjoy reliving their memories but don't have the time or the inclination to keep a diary" Why? From our interviews and from feedback in our presentations we got that:

- ☞ Most people enjoy reviewing their memories.
- ☞ Some people enjoy collecting memories and they spend much time writing a diary or collecting photographs
- ☞ Most people would like to spend more time with their memories: Writing a diary, printing digital photographs but they don't actually do it.

We couldn't design this product for the second group members because there are already a bunch of products to bring them into the digital world [5]. Thus, we decided to focus on people who would like to have a better catalogue of their memories but won't spend so much time doing it. And so then, if they don't spend time creating the memories, the only way to do this work automatically is to use the information that already exits in the "Web 2.0" and in the users' every day "digital life".

Framing our ideas

At this stage, each one of the group members had its own idea about the concept we were creating. We made our first paper prototypes [fig 1] to show our vision to the others, and from here the debate emerged:

- ☞ How much input the software needed from the user and how much information would proceed from the Internet?
- ☞ Which is the best metaphor to show the information on the screen?

We seek to create a feasible project in the near future, so we look into Facebook, Last.FM, Twitter, iPhoto... and we found that these programs offer the option to interact with them: get dates, photographs, song names... So, using all this information, in combination with geo-position and data exchange, it is possible to establish the links between the media and the people you are with, or the place you are in.

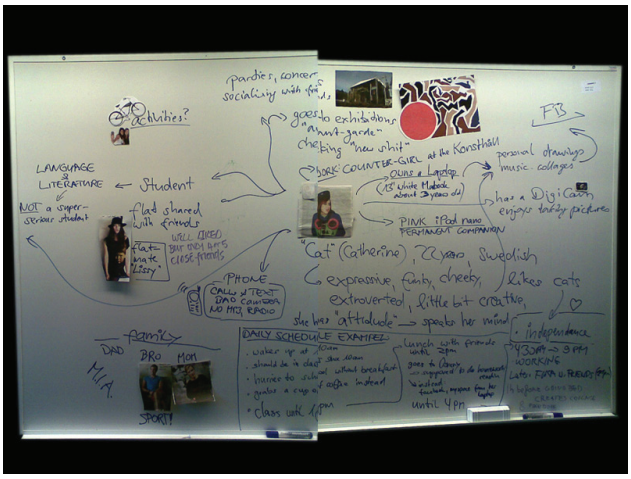


Figure 1 : Cat, our first persona

In this way, the more information the users spread in the digital world, the more accuracy their media representation will be.

Defining the product

During the process, we had several discussions around some use qualities from Löwgren's map [1], and at the end *Recollect!* is based in this three:

- ☞ Autonomy: In our concept the product is a fully autonomous agent: The users only provide their information about what online services/ desktop applications they use and leave the rest to the application in order to figure out the best way to rearrange the media according to online information.
- ☞ Functional minimalism: Memories and how users like to interact with them is a big arena to play in. In order to get the concept working, we focused on the core value of our application: The software arranges the media library, and the user browses this library.
- ☞ Anticipation in the interface, surprise in the content: The interface builds on some kind of mind-map metaphor and presents the user with nodes (memories) and connections between the nodes. The number and possible contents of these connections are limited to three options. This way the navigation and number of choices is totally predictable and easy to use. On the other hand, the actual content you might see when following the connections might be surprisingly rich: connections between events,

friends and places you have long forgotten or never thought about, will be brought back to your mind.

What was more interesting from this discussion is how an apparently theoretical definition of a use quality can help to finish the design of the product. Once we were able to talk about our product in terms of these use qualities, the rest of the decisions came as a consequence.

Testing

Our testing with paper prototypes had the goals of:

- ☞ Testing if users could predict what's going to happen when interacting with each element of the user interface.
- ☞ Detecting if the process that we defined to get results browsing through
- ☞ our media library view was easily understood.

In order to get the answer to these questions we created scenarios, and different tasks for the users inside these scenarios [4]. In addition we made paper buttons representing each interactive component of our interface and during the interview one of us changed the screen elements according to the user actions. Because of time constraints we could only did two tests in individual sessions. The users were young students that potentially could fit into our target group. We found out that:

- ☞ The mindmap metaphor was easily understood. They found without problems the relation between the different elements in the screen.
- ☞ Was less clear why the content of every mindmap node was showed as a list instead of as another element in the mindmap pattern. We assess the results and the changes that we could do and decided to keep the interface.

***Recollect!* The final product**

Scenario: Cat is a 20 years old student that uses *Recollect!*. She spends much time on her Facebook. She tags photographs, posts status updates, comments... A few months ago she travelled to Lund to visit Brenda. They took tons of photographs and listened to a lot of music. In the background *Recollect!* got the information about position, about the music and the photographs.

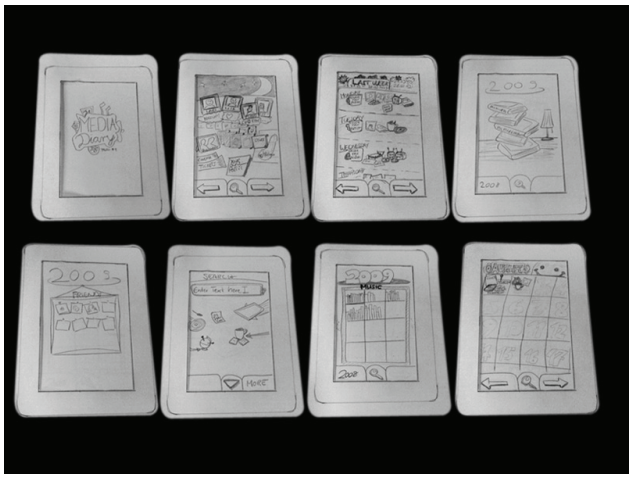


Figure 2: Paper Prototypes: First and last ones.

The system detected that they were together thanks to the GPS position. *Recollect!* also got information from Brenda's Last.FM so the software guesses what music she likes. Today Cat is lying in her bed, browsing through recollect.

In the video

Recollect! divides the information in:

- ☞ Internal elements. The media: Music, Photographs, and video
- ☞ External elements. Ways to relate the media: Friends, Events, Places When Recollect starts, a first screen with the three external elements is showed, and the new updates are retrieved from the Internet. When clicking in any one of the external elements, the new screen shows the list of elements. Cat choose events. After choosing one element from the list (Cat choose an event called "travel to Lund") this element becomes the first node of our memory map. Linked to this node we find the other two external elements (friends and places). When the current active element is selected, it shows its content: Music, videos and photographs. In this screen, *Recollect!* acts like a traditional media player. While playing a song it is possible to go back to the mind map structure to keep expanding it. Every time the situation is the same: friends, events and places linked between them, each one with its internal multimedia content.

The memories in the age of digital materials

In the transition from physical to digital media,

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

according to our interviews, we found that something was being lost. From the vinyl records "clicks" that keep the story of the scratches, to the value of printed photographs over digital ones. Along our history, through music, movies or novels, physical media has been seasoned with the value of the rituals. In other words, to send a letter and a photograph to your girlfriend is romantically perceived as a set of steps that provides an additional value to the final object: from developing the photograph, to writing the letter. Now all is reduced to pressing forward button and writing a short sentence. As the rituals are lost, the digital object lacks most of the attached values and as a consequence, some of the magic powers related with triggering memories.

Reading or writing a diary, opening the memory box, making a collage; these are processes full of rituals. *Recollect!* is a digital application to be used every time and everywhere but memories are related with emotions and romanticism and while time and surrounded culture doesn't create and enhance this rituals for digital products, the emotional connection with a software piece would be quite low. *Recollect!* therefore doesn't replace a diary or creates these rituals that can enhance the meaning of digital media. Anyway, it can work as a memory trigger and as a personal media organizer.

Future and conclusions

This *Recollect!* concept is pretty finished. To improve and test it, the next prototypes cannot rely on the interface (because it's done) but in personal content in order to test how far the expected use qualities are achieved. In order to do this, a first version of the *Recollect!* algorithm is required.

Despite this future, the *Recollect!* concept tries to take advantage of current zeitgeist: the spreading of personal information on the net, the ubiquity of media player, exposure to digital recordings... All these elements show a scenario with an overabundance of personal media: an issue for traditional classification and a big opportunity for new concepts. *Recollect!* aims to use what we don't forget -our experience- to classify our multimedia content and at the same time, to let us remind details from our experience using this content.

Acknowledgments

Thanks to Amanda, Micke, Jörn and the rest of the teachers and classmates at K3-IDM, and thanks to Marina for the language corrections.

References

1. LÖWGREN, J. (2006). *Articulating the use qualities of digital designs*. Cambridge, Mass: MIT Press pp.383-403
2. NIELSEN, L. (2002). *From user to character an investigation into user descriptions in scenarios*. ACM Press
3. PRUITT J., GRUDIN J.(2003). *Personas: Practice and Theory*. ACM Press.
4. MONK A., WRIGHT P., WRIGHT P., HABER J. & DAVENPORT L. Improving *Your Human-Computer Interface: A Practical Technique*. Prentice Hall (pp. 20-37)
5. *Remember*. http://www.remember.com/(Accessed in Jan. 2010)

This paper is the written part of a text + video submission to the SIDER '10 Conference. The full submission, including video file can be found on www.ingredientsingradients.com

Noisock: A musical playful experience

Sergio Manuel Galán Nieto, Matthew Hennessey

Malmö Hogskola- Konst Kultur och Kommunikation (K3), Malmö, Sweden

Intro

The initial development of the *Noisock* concept began with the element of play inside a physical computing project at the Interaction Design Master Course at Malmö University. The task was "Soundify a common household object and control it with an Arduino in one week". From this first basic task to the final *Noisock* concept we followed a design path that included brainstorming, user testing, bodystorming and, of course, fast-prototyping in order to design a physical and playful music experience. During the process we also discovered the importance of Creative Commons content and decided to use *Noisock* as a tool to put Creative Commons musical samples in the hands of non-musicians.

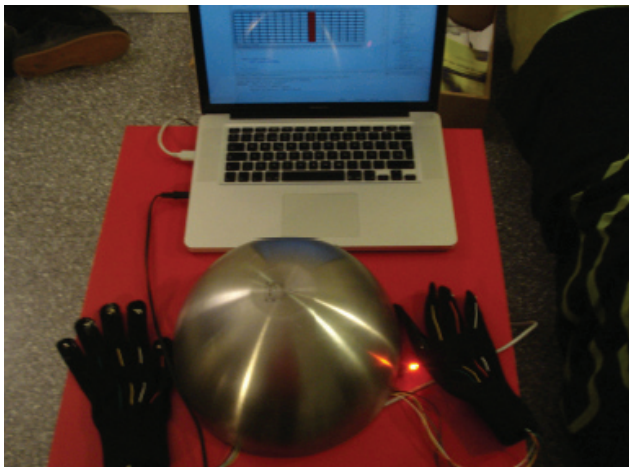


Figure 1 9LyrDip

First prototype: *9LyrDip*

Our first concept was to turn the analog exercise of drumming with utensils on the dining table and its objects, making them digital. How to make multiple sounds out of two utensils and a metallic bowl? The result is shown on [Figure 1] and is slightly different: The player sits with the bowl on his legs. To play a sound he must wear a pair of gloves and touch the bowl with a finger. Eight of the fingers produce a beat while the other two, turn on/off the recording mode or remove the last beat. In this recording mode, each sound that is played is recorded and displayed in a music sequencer on the computer screen.

Bodystorming process

After seeing interest from teachers and classmates in the *9LyrDip* prototype, we decided to keep working and to move forward with the concept. To do this, we try an approach to bodystorming described in [1]. We found that bodystorming is a tool that needs external factors like a comfortable atmosphere and a very good mood. So we went home to play, grabbed some beers, turned up the beats and we began to imagine physically how to create the music with other objects and body movements. We took notes from this process and used them to create the concept of *Noisock*.

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

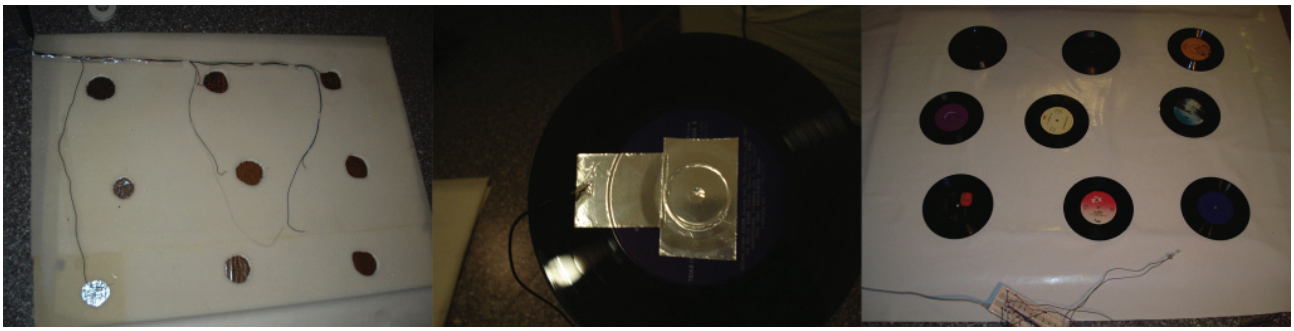


Figure 2 : Building the Noisock *mat*

Noisock : Concept and implementation

To define the concept we thought about:

- Scenario: *Noisock* can be used in the same context as games like Guitar Hero or SingStar: It can be played as a "living room-game", but works better in social events with more people around to interact and even play in pairs.
- Music games (i.e. Guitar Hero) are not really based on creating music. They focus on the users hand eye coordination. Dance Dance Revolution, is a coordination game, as well. To play with *Noisock* the main sense is hearing, aided by vision.
- *Noisock* should create a full physical engagement between sound and body movements.

In *Noisock* we replaced the bowl for a big mat with different sounds at each touch point. Stepping on a different touch point plays that specific sound. To control the sounds we wanted to use arm movements. In the body storming session we came up with these gestures/controls.

- Record: Hi five with another player or clap the hands.
- Volume: Arm movement up and down
- Undo last action in the sequencer: Single arm movement from left to right.
- Change the sound set: Both arms moving at the same time from right to left.
- To implement this concept we created a cheap electronic mat with 9 contacts covered by a vinyl LP [Figure 2] based on a instructable [3]. When stepping on the LP the sample is played in the same way that it was played with the *9LyrDip*. Using a Nintendo Wiimote to incorporate some of the distinct gestures and replace others with button clicks helped us to avoid the complex problem of capturing gestures. For instance, recording is not a clapping gesture but an action controlled by the A button [Figure 3].
- The hardware used is an Arduino [6] board while the software was Processing [7] at the beginning, and OpenFrameworks [8] currently. To read the information from the Wiimote we use Darwiinosc. [9] In different incremental iterations we added more functions to the software, now *Noisock* has the following features:
- Rhythm tune: If the player is not in sync with the rhythm, *Noisock* automatically adjusts the sample that is being played.

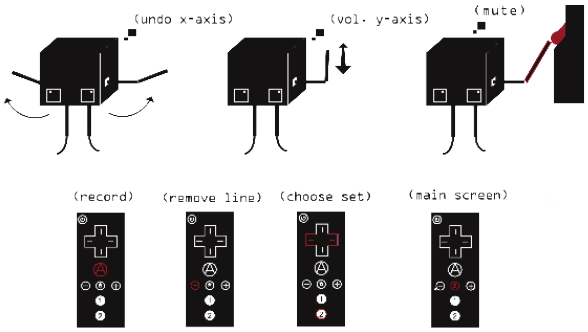


Figure 3 : Some of the Noisock *controls*

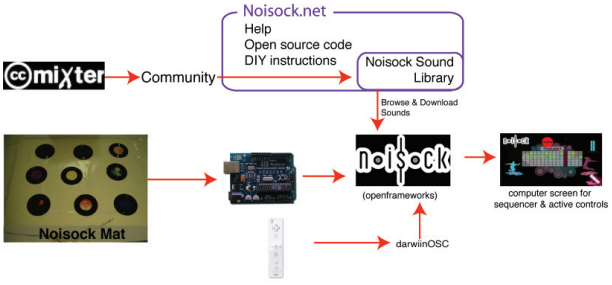


Figure 4 : Elements in the Noisock *system*

- ☞ Graphical interface based on a step sequencer: A 16 × 9 cell grid where rows represent each sound and columns represent the time that the sound will be played. A line iterate through the columns to show the current loop position. When the recording mode is activated every time that a new sound is added the cell representing the sound in a particular moment changes colour. This is a very extended interface in the music software and we found that is also easy to learn for non musicians.
- ☞ Song-like output: Enables inexperienced players, after recording a few sounds in the sequencer, to obtain a pleasant sounding loop.
- ☞ Easy to start: it doesn't have the expressive power of a musical instrument but it is easier to learn.
- ☞ Playing not gaming: *Noisock* isn't governed by goals or rules. The user value is about play and enjoyment. [10]
- ☞ Different sound sets at the same time with mute functions: Increases user's ability to mix sound sets and create a kind of DJ experience.
- ☞ Download new sound sets from the Internet.

From technical constraints to new ideas: Examples during the whole process

During this project we learned the importance of tinkering and how learning with technical constraints can move forward the concept. Here we present two examples. The first one, is related with *9LyrDip*. As explained before, we wanted to make different sounds hitting different parts of a bowl, but finding no solution in a few hours of research lead us to move on. Leaving behind the idea of "soldering the different sounds" to the bowl, to keeping the bowl as a ground and "soldering the sounds to the fingertips of gloves". We found that, because of wearing the gloves, the immersion was higher and the link between body movement and sound was stronger.

The second example happened when developing *Noisock*. Our first thought was to deconstruct famous songs and spread their samples across the mat. The goal of the game would be: "Piece together the simples and try to build the song as close as possible to its original form."

Fortunately, this is not an easy task. CD tracks are flattened compositions of all the instruments together making it impossible to extract a single instrument. When we attempt to build a song cutting it into pieces the result was bad and the process painful. Needing studio tracks (one instrument per track) we turned to the Internet, finding that there are some artists that not only provide the final song, but also the studio tracks and they use a site called ccmixers.org, a community remix site filled with amateur and professional samples for users.

Thanks to the technical constraints we moved forward and created a much more powerful concept: Not only an average game, but a play experience that includes the ideological implications of using Creative Commons content.

Creative Commons and ccmixers.org

In the current copyright war, the debate lingers on, pay for content/don't pay for content, piracy... Beyond this, the free culture movement wants to warranty rights to creators and users. As Lessing [2] explains:

We live in a "cut and paste" culture enabled by technology [...]Using the Internet and its archives, musicians are able to string together mixes of sound never before imagined; filmmakers are able to build movies out of clips on computers around the world. [...] All of these creations are technically illegal. Even if the creators wanted to be "legal," the cost of complying with the law is impossibly high. Therefore, for the law-abiding sorts, a wealth of creativity is never made. And for that part that is made, if it doesn't follow the clearance rules, it doesn't get released.

With no change to the copyright laws, Creative Commons offers the only solution to creators, to allow other creators to take their work and "sample it" to build something new. CCmixers.org is a Creative Commons community focused on music. It's possible to find different kinds of musical content there:

- ☞ Professional artists distribute their songs' samples and studio tracks- the source code of the music- to allow others to remix them.
- ☞ Amateur musicians release their sounds and samples to allow other musicians to build their songs.

In the free software community the technical material, source code, is available. This is a useful tool for developers that could be perceived as useless

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

for users, usually only concerned about money and functionality. It's the same with cultural products: end-users are rarely concerned with the value of freedom to artist material. That's why *Noisock* wants to contribute to spread the importance of free content to users. *Noisock* takes sounds from ccmixers.org to build the sound sets. It takes the free musical content that is mainly used by professional/amateur musicians and puts this content into a mainstream-like electronic game.

The future of *Noisock*

We tested *Noisock* in one of its potential scenarios: A dinner party. We observed that all who played with it, found it funny, even with the current sound sets and limitations. To move forward with *Noisock* we thought ways to spread it. *Noisock*

is hardware+software so in order to distribute, releasing the software on the Internet is not enough.

In recent years a digital "Do It Yourself" (DIY) culture has been growing on the net. Webs like Make Magazine [4] and Instructables [3] have big communities that create new content daily for tinkerers [5]. We don't have the infrastructure to

create *Noisock* mats and send them everywhere, thus we are working on a community web to allow people to build their own version. On *www.noisock.net* we want to provide tutorials and tools for:

- Users: Those who want to build the mat and run the software.
- Content creators: Those who want to create sound sets. The better the sound sets, the better the *Noisock* experience.
- Developers: Those who want to download the source code to make their own versions

With these elements we want to build a community where all contribute to design the game that, on the other hand, still needs to be developed in order to be a finished product. Two main redesigns are needed:

- The sequencer is useful to build the songs but in the tests we did, we found that players spend too much time looking at the screen and the physical engagement that we want to build gets broken.
- Software and hardware are not eye-catching at all. To achieve a successful product the aesthetic experience should be complete.

Conclusions

When we started the project, the brainstorming session didn't work, but anyway we took the less bad idea for us, began to create something, and step by step, because of technical constraints or just because new ideas came up while we worked, we moved far beyond the first concept. Here we realize that creativity doesn't usally come from post-it collections, but it emerges while you work.

Now *Noisock* is a working prototype that we have tested and we realize that it can have a path beyond the course assignment. We're now working on new concepts to make it better, well-known and available to anyone.

Acknowledgments

Thanks to Amanda, David, and the rest of the teachers and classmates at K3-IDM. Thanks to Adeel for the graphic design.

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

References

1. BUXTON, W. (2007). *Sketching user experiences: getting the design right and the right design*. Amsterdam.Elsevier/Morgan Kaufmann.
2. LESSING L. (2004). *Free culture*. http://www.free-culture.cc/
3. *Instructables.* http://www.instructables.com/id/Interactive-Twister-Game/step1/Materials/ (Accessed in Jan. 2010)
4. *Make Magazine.* http://makezine.com (Accessed in Jan. 2010)
5. LAHART, J. (2009) *Tinkering Makes Comeback Amid Crisis.* http://online.wsj.com/article_email/SB125798004542744219-lMyQjAxMDI5NTM3MDkzODAwWj.html (Accessed in Jan. 2010)
6. *Arduino*. http//Arduino.cc (Accessed in Jan. 2010)
7. *Processing*. http//processing.org (Accessed in Jan. 2010)
8. *OpenFrameworks*. http://www.openframeworks.cc/ (Accessed in Jan. 2010)
9. *DarwiinOSC* http://code.google.com/p/darwiinosc/ (Accessed in Jan. 2010)
10. ZIMMERMAN E.(2002) *Gaming Literacy*.

This paper is the written part of a text + video submission to the SIDER '10 Conference. The full submission, including video file can be found on www.ingredientsingradients.com

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

Easy Music Player : Playing Digital Music with Physical Objects

Mehrdad Amirghasemi, Kristoffer Holmberg, Golnaz Saberi, Tommy Salenlid

Interaction Design Group, Department of Computer Science and Engineering, Chalmers University of Technology, 412 96 Gothenburg, Sweden
{mehami, kristofh, glonazs, salenlid}@student.chalmers.se

Abstract

This paper explains and motivates the concept and design of *Easy Music Player*; a music player that facilitates playing digital music by associating its intangible files with tangible objects. The focus has been on ubiquity; extracting the digital music into everyday life, as well as on usability; creating a product that is easy to use even for non-technical users.

Keywords

Ubiquitous computing, intelligent home, digital music, music player, RFID products

Introduction

We are currently experiencing a new era of digital information. Digital music is one of the areas that have been most successful, allowing us to both buy and play music remotely using our personal computer. This digital music revolution contributes to a sustainable environment since it promotes dematerialization, preventing manufacturing and worldwide shipping of physical CD-albums.

However, in order to be a part of the digital music revolution today, knowledge of computers is required. Almost all the interactions with digital music today are carried out using the mouse and keyboard connected to the computer. Not only does this require basic knowledge of computers, it also requires the user to carry out all the interactions in front of the computer screen.

Using a tangible interface, the user will get an interface towards the digital music that resembles the way we usually play physical CD-albums. This will lead to a more comfortable and structured way of interacting with digital music albums.

Concept

The idea of associating physical objects to intangible music files is realized by developing a portable music player. The music player will work as a physical interface towards the digital music library stored on a stationary computer. All necessary interaction-based actions will be carried out on the portable device itself, including actions such as

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

creating playlists, changing volume, switching tracks etc.

The concept of removing the interaction from the stationary computer is an idea based on the way people listen to music nowadays. People listen to music not only in front of the computer, but everywhere in the room; and the way the user interacts with the music should follow that fact. Another interesting aspect is to explore the design of the physical objects that is used for playing the music. Nowadays, all CD-albums resemble each other, regardless of the content. We want to create physical objects with different shapes, looks and feelings depending on what kind of music that specific object represents. This is done by introducing moods and feelings instead of specific albums or songs. This is based on the idea that the genre of a song is more important than the specific song itself. If the user is feeling relaxed, a random playlist of calm songs is more interesting than a specific calm song.

Context of use

The context of the music player is an everyday environment. The digital music should be extracted from the computer and integrated in the vividly commonplace. When you are sitting in your living room, the proper way to listen to music is to interact with the table in front of you, not the computer in the corner.

Realization

Product design process

One of the key things in this project is the interaction between the user and the product. Since the concept implies that the interaction should be natural and non-technical, the interaction and the technology integration have been our main focuses when it comes to the product design.

Music player

The board is designed in a way which makes it look and feel non-technical. It is designed as a fairly flat box where the technology is hidden inside. This way, the board can easily be integrated into the everyday commonplace. For instance, the board can be integrated into a table, be placed on a wall as a shelf, etc.

The size of the board is designed to give the user enough space to play with the physical objects, create

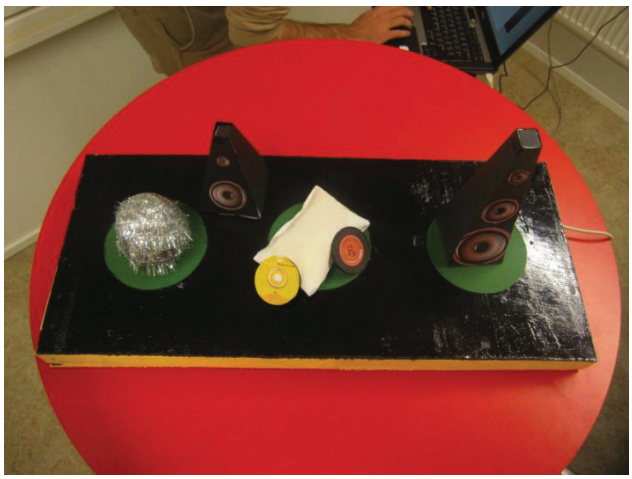


Figure 1 : Product design showing the music player board and several tangible objects

playlists etc. It consists of three numbered hot spots where the user can place physical objects. The hot spots are numbered due to the fact that they have different priorities; number one is the first item in the playlist, number two the second item and so on.

Tangible objects

The tangible objects used to represent the normally intangible digital music can be divided into two different types. The first one is a small flat circle which can be associated with the common concept of a CD. One object represents one album, and a printed label on the circle tells the user which album it is. The other types of objects are moods. One mood does not represent a specific album or song; it represents a song categorized as the specific mood it represents. The user can for instance place the "pillow" object on the board and a song categorized as calm/soft is played. If the user on the other hand places the "disco ball" on the board, a disco song will be played.

The decision to include both the traditional type of objects, as well as the mood type was based on the idea to make the product more comprehensive, covering several aspects of how to play music.

Functionality

Since the product replaces the traditional computer interaction, it is vital that all important functionality can be carried out on the device itself. One of our key points is to explore and elaborate how users interact with the music player, and thus we have chosen to make all the interactions in a natural way, not using any buttons or other apparent digital solutions.

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

Instead, the music is controlled by the placement of the physical objects.

- ☞ Play: place the physical object on the board.
- ☞ Pause/Stop: remove the physical object from the board.
- ☞ Add/remove song to playlist: place another physical object on the board (beneath the first/second one), to remove a specific song: remove the physical object.
- ☞ Increase / Decrease volume: place the big speaker on the board to increase the volume / place the small speaker on the board to decrease the volume. The amount of time the speaker is placed on the board corresponds to how much the volume changes.
- ☞ Switch track: Remove the current playing object to switch to the next playlist. Another alternative is to use the Next and Previous objects which give you the possibility to switch track even inside a currently playing playlist.

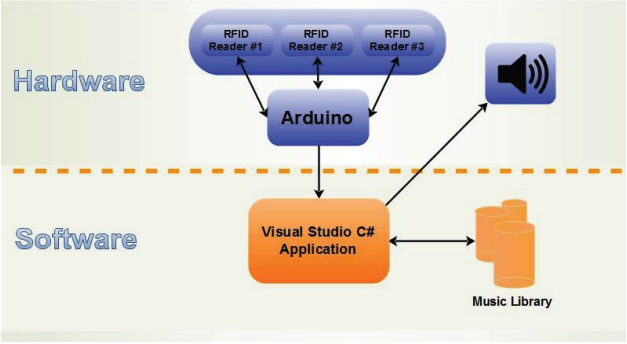


Figure 2 : Hardware/software architecture

Technology

The technical part of the product is constructed using a architecture of several different hardware components communicating with software applications.

Hardware

An important part of the product design phase was to research what kind of technology would be most suitable for our product. We made an early decision to implement the wireless interaction between the physical objects and the Arduino by using RFID technology. RFID technology is wireless, cheap, operates on good distances, and the properties of RFID tags (cheap, small, no battery) make them easy to integrate into physical objects. Alternatives to RFID technology could have been WiFi, Bluetooth, or any radio frequency based low distance communication standards. We have chosen to use an Arduino micro-controller as an interface between the device and the stationary computer (which is the computer running the Visual Studio C# application, see Figure 2), providing an easy way of communication between the RFID readers and the software applications.

One of the problems we faced was that when you connect three different serial out pins (SOut of RFID readers) to one single Arduino serial-in port, ordinarily you will get unreasonable values as tag IDs. The main reason was that, for example, when one reader wants to send its data the other readers also is sending something and the data would mix and one would get crashed values as read Tags. We managed to solve this problem by adding three 1N4148 diodes to separate the serial in/out lines.

Software

The software is developed using a combination of Arduino and Microsoft Visual Studio C#. An Arduino application has been developed, which reads the values from the RFID tags and sends them as serial data to the stationary computer. When the stationary computer receives the RFID value, the application interprets the value as a command and executes the appropriate action on the embedded music player.

We had two alternatives for handling music functionalities. One can read the serial port and do some process on it and send the appropriate command to Windows Operating system by calling windows APIs, or, one can embed a Media Player Component in the c# application and then do required functions there by calling the methods of the components. We came up with the latter one, since it's more sustainable and it will give us some hints toward moving to platform-independent solutions. However, we still take advantage of anipulating the current windows media player library. The C# program consists of two parts. One class called SCOMMS for handling serial port communication, and, one main form "frmMain.cs" which contains the embedded player and acts based on what is received from SCOMMS class. There is also a timer component in frmMain.cs with one second interval in order to handle

the presence/absence of TAGS. The embedded music player is based on Windows Media Player (WMP), giving us the possibility to control any WMP functionality directly from our C# application. Since we have three different RFID readers connected to one single Arduino, a slight modification of the readers' antennas had to be accomplished. We solved this problem by using software timers, controlling which antenna is currently the active one. The timers are operating on fractions of a second, which makes the reading smooth and user-friendly.

User test

The product was tried out on the Ubiquitous Computing Exhibition (Chalmers University of Technology, 2009). The exhibition attracted both people with extensive computer experience, as well as novice users. The focus of our observations was intuition; how easy the product was to understand and use without guidelines, as well as excitement and satisfaction; how the user valued the concept. In order to simulate the context, a living room environment was constructed and the music player placed on a sofa table.

Overall, the users were curious and excited to play digital music this way, understanding both the concept and most of the functionality intuitively. However, some users, both expert and novice, had problems understanding the playlist function without guidelines. Most comments regarded developing more apparent markings for the playlist function, since the function itself is hidden. A couple of users wanted to change volume in another way, not using the big and small speakers. The physical objects tempted the users to experiment and create playlists based on their moods, instead of other preferences. The possibility to play music categorized as moods and feelings, instead of specific songs, were very appreciated by the users.

Discussion

Future development of the product would include both technical and non-technical improvements. The technical improvements should lower the production costs as well as cover the possibility to make it completely portable. This can be done by trading the Arduino for an ASIC and include a Bluetooth chip and a battery to make it completely portable.

Improvement and development can also be accomplished when it comes to the RFID readers. Today, three readers have been implemented inside the product. By expanding the amount of readers (or more specifically: the amount of reading antennas) inside the products, the possibilities to create playlist and interact with the product become more natural. As it is designed today, a restriction of three commands at the same time is applied. Using several antennas instead of several RFID readers is preferred for creating a long-term solution when mass-producing the product; this because of the production costs. Using several antennas, the product development costs will be in line with actual market prices for these kinds of products.

The market for tangible interfaces and "body interaction" towards digital material is rising; and in a near future, companies will compete against each other to be the leading developer of such products. Tangible interfaces are a part of Mark Weiser's vision of Ubiquitous Computing; and in this paper, a presage of future tangible music players has been discussed and prototyped.

Acknowledgements

We would like to thank the institution of Interaction Design at Chalmers University of Technology for providing material and support for projects like this one.

Related Work

☞ Records of the future (ROTF) (M. Clare, J. O'Connor. http://www.vimeo.com/3012500, 2008)
☞ Tangible Music Player (M. Hjulström et al, http://web.student.chalmers.se/groups/idp091/docs/Tangible_Music_Player.pdf, Chalmers University of Technology, 2009)

This paper is the written part of a text + video submission to the SIDER '10 Conference. The full submission, including video file can be found on www.ingredientsingradients.com

In: MOUSSETTE, C.; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

Pro.Seed : Designer toolkit for effective profiling and self-reflection

Nunzia Coco

Copenhagen Institute of Interaction Design (CIID), Copenhagen, Denmark

Abstract

Pro.Seed is a toolkit, which allows designers to present and reflect on themselves and their goals at the beginning and at the end of a new teamwork learning process. The aim of my exploration is to design a tool to simplify the design process, to avoid being stuck and to get more out of the design team and the constraints of the time. The toolkit allows designers to delineate their profiles, to reflect on group dynamics and personal development in a visual way. It supports with visual and notational tools the way of proceeding in a learning development.

Keywords

Interaction design, methods, ingredients, toolkit, stories, design process, groups dynamics, interdisciplinary, visual tools

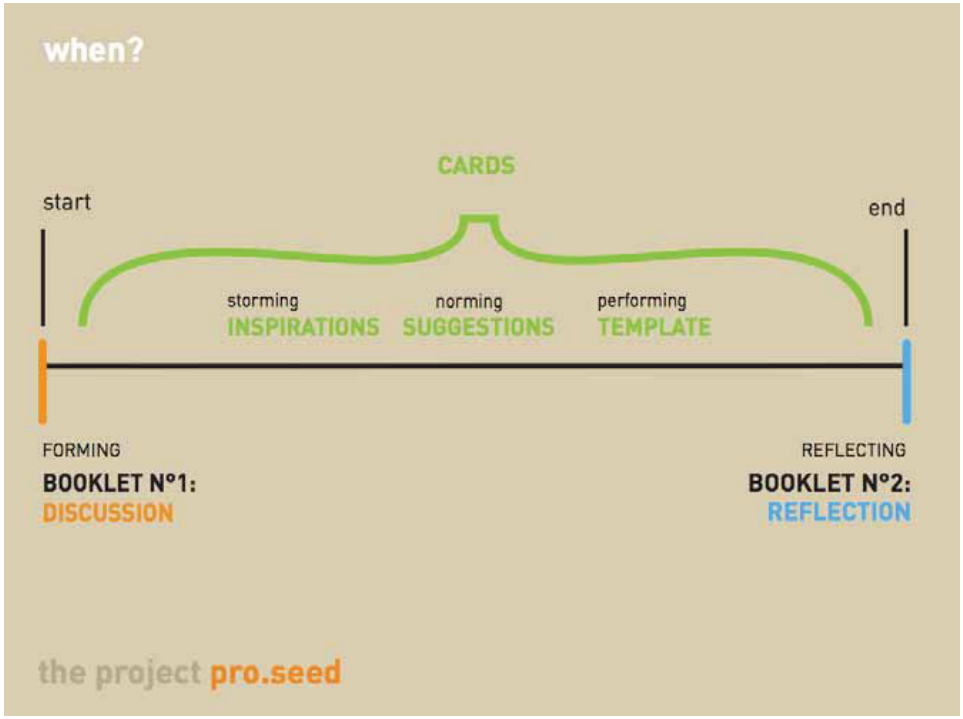
Introduction

As a Pilot Year student in the Copenhagen Institute of Interaction Design, I have always worked in teams and tried many of the group dynamics involved in a design process building on a multidisciplinary dialogue.
We were twenty-one students from eleven countries with many different backgrounds from Psychological Studies to Engineering. During the whole year we have been involved in a range of design projects with very different topics, ranging from tangible user interface to medical issues. We were asked to perform in groups in the best way possible in a very short time, from one to four weeks. So I decided to learn from our experience and design some tools starting from our point of view and experiences in order to facilitate future group dynamics and best performance. I decided to involve my colleagues in a co-creative process asking them about how they perceived themselves and their group dynamic during the whole year. In this way we co-created an initial series of rough visual tools wherein it was possible to identify high and low pitches to ease self-reflection. After the first sketches I refined all the material and I designed and developed the toolkit, which consists of two booklets and sixty cards to be tested again with next year's CIID students.

The design process and the challenges (frameworks)

In order to cope with the complexity of group dynamics my design challenge was how might I develop a tool for a better understanding of group

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.



dynamics and improving communication between individuals in groups? I decide to analyse and take inspiration from one of the most well known models of group development by Bruce Truckman. Tuckman's model states that the ideal group decision-making process should occur in four stages: Forming (pretending to get on or get along with others); Storming (letting down the politeness barrier and trying to get down to the issues even if tempers flare up); Norming (getting used to each other and developing trust and productivity); Performing (working in a group to a common goal on a highly efficient and cooperative basis). I decided to build a toolkit that was able to follow this process together with the necessity to build trust and self-reflection between the individuals within a group for improving performance in a short time. My toolkit tries to convey an effective design process in groups that can also be useful for the individual's growing knowledge through self-reflection.

Pro.Seed concept

Pro.Seed is a toolkit to follow the developing process of designers in teamwork experiences. At the beginning, when a team is formed, designers with different backgrounds have to present/define themselves in order to understand how to perform together to achieve great and fast results

Each member of the team has a *Pro.Seed* toolkit. The toolkit contains: two booklets, one to engage and start discussions and another allows a personal and useful reflection at the end of the process; some stickers to build profiles in a free, easy, visual and handy way; 60 cards, which are tools for enhancing group dynamics during the process.

They start to use it from the beginning of the process. The *Discussion Booklet* lets them interact with one another and present themselves in an equal perspective. The cards are in the toolkit to help the users during the process, so they can pick them up and show/discuss each of them while they are developing a project. At the end of each fast process, all of the designers have learned a lot and the reflection tool allows them to apprehend the acquired knowledge.

What are the expected core values for the context?

11) A toolkit that follows the designers during the whole process, avoiding their feeling lost in the

In: MOUSSETTE, C.; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

process;

12) A tool for an easier and intuitive self-reflection and description;
13) Awareness of being an individual within group dynamics;
14) Having a better view on personal learning.

Booklet №1: Discussion

The first booklet is a team building tool that allows each member to present him/herself in an easy way in order to ensure self development, positive communication and the ability to work closely together with others. It is a series of templates, some of them are ice-breakers, some allow group members to start talking about their expectations and personal goals. By going through this booklet the designers are profiling themselves in a visual way, in order to better understand each other even if they normally don't use the same language. In fact, a visual tool will allow them to speak from an equal perspective without any judgement or language boundaries. The *Discussion Booklet* has three main sections: to express initial expectations and goals; to enhance the discussion: some ice-breaker templates; to present themselves: many aspect of profiling.

The Cards

There are sixty cards divided into three categories: suggestions, inspirations and templates. All of them are designed to be used during the process of project, when the group dynamic is fundamental. The cards

are physical elements of the service that can be used by all the participants and create relevance during the process. The categories identify the answers to some common problems a group usually faces; an example of a template may be a suggestion on how to visualize complex research topics. The use of the card is up to each member. They can decide what they need and how to use the suggestions provided on the card. They can pick and choose which techniques work best for their context and fit their situation.

Booklet №2: Reflection

The last element of the toolkit is the "Reflection" Booklet. This booklet is quite similar to the first one but this one allows each member to reflect on his/her own personal development, working in groups, personal learning and peer to peer learning through the comparison with the first booklet. This type of reflection gives the designers the possibility to re-shape their profile and better define themselves after a teamwork learning process. All the templates are designed with consideration to their relevance when they are compared to the ones that are filled when students start. In the *Discussion Booklet*, one of the notational tools asks the user to profile him/herself with some stickers; in the *Reflection Booklet* the schema is the same but with different specificity, so through the comparison the user can better express his/her personal development during the process. Specific topics in this second booklet are personal development, peer to peer learning, and the working in groups experience.

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

Experience Prototype

Phase 1: CIID Pilot Year, prototype the self-reflection

The first phase co-created a series of rough visual tools with my colleagues in CIID Pilot Year to reflect visually about the whole year. I proposed to eight fellow students the first prototype of the *Reflection Booklet* and I tested it and discussed with them the parameters involved and the possible meaningful comparisons.

I learned through their sketches how essential it was to give them the possibility to take notes and compare different elements in order to impact the process in the memory. I asked them about their group dynamics and for suggestions about how to avoid being stuck. The most common answer was: "I looked back to my previous project." So I decided to translate their "looking back" into something that could be used by others, sixty cards that give answers to the most common problems in the design process: lack of inspiration, problems with the group dynamics, the necessity of jumping from one phase to the next one.

In order to answer to these problems I collected and translated our knowledge and experiences in 3 groups of 20 cards to deliver inspiration, suggestions and templates to the next CIID students.

Phase 2: starting form the beginning: team-building week

At the beginning of the CIID year, September 2009, the first week was dedicated to team building, so I had the opportunity of testing the *Pro.Seed* toolkit during the team-building week with Karen Ward. During the week the *Discussion Booklet* was launched and the new CIID students filled it. (video reference)

The research demonstrates the necessity of a common language like visual, especially when the members come from different background and the playful elements were an interesting ingredient. The notational tool about expectation was the most useful together with the profiling system, but the first was considered an opener, instead the second was open enough to enhance the discuss between each other.

One successful element was the size of the booklet. The A5 size given to the user is small enough for the booklet to be considered personal when it is necessary to start filling it in, but large enough to be shared as well.

Phase 3: mid- term prototype: end of skills upgrade

In December after 3 months of the program, the students were finishing the skills upgrade. So, in collaboration with the Head of the Program, Simona Maschi, I went back to test a mid-term *Reflection Booklet*. (video reference)

We noticed that in a program like CIID, extended along a whole year, it was interesting to have a midterm Reflection Workshop Section., so I developed a supplement of the *Reflection Booklet* in order to better demonstrate the developing process of 22 students keen on a very intensive and proactive year.

This midterm section was interesting to discuss about what is the goal of self-reflecting in a visual way. At the beginning, they were concerned about how they could have an immediate feedback from some sort of graph/template, then they realized it was not the graph but the way they were asked to fill it, the action they were doing, that allowed them to reflect and understand better the path they had followed until that point.

This time the size of the booklet was considered

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

too small to allow a useful self-reflection. They were suggesting something bigger, like an A3 sheet, to better draw their pitch and low points during the first period.

The template I designed to allow them to reflect about what they had done until that point was chronological. After this section I learned it was not the best solution. My research highlighted the importance of giving them the possibility to cross-reference their reflections about what they had achieved, how much their were feeling involved in the topics and also their mood, so the chronological system was too fixed to let them express their journeys. Another element I had not considered enough was the environment.

I ran this workshop in the classroom, but I hadn't considered that this was the same environment they were in every day so they were not able to freely rely on their memories. They were quite disoriented and tempted to consider the reflection tool just another form of evaluation or some kind of task. So I learned not to take the environment for granted, instead considering this part of the reflection experience.

Next step: phase 4: end of the year

In July 2010 I'll be back in Copenhagen to finish the *Pro.Seed* workshop with the CIID students 2009-10. In July we are going to test the last part of the reflective process and the possibility to explore a profiling system based on the comparison between the beginning of the year and the last part.

Conclusion

This project has the goals of simplifying the design process, avoiding being stuck and getting more out of a team and the time involved in the design project. After the experience prototype I have done with the CIID students 2009-10, even though is not finished, I can already see many different, interesting prospective possibilities, from an educational point of view, for a school to customize the program they offer based on a more focused understanding of the profiling of the student and his/her goals. On the other hand I can see

the possibility for the student to feel more in control of their future prospectives and goals, understanding and making relevance to what they are really good at without losing their focus, while they are looking for a job. Another interesting step I would like to take is to try to move the project from an educational long term prospective to others delineated like "company" and "advertising agency", fields more related to the business side where teams have almost no time. I would like to build a service platform that can offer customized services based on the same method that can serve both, educational and business needs.

Acknowledgements

I developed *Pro.Seed* as my final Project at Copenhagen Institute of Interaction Design (CIID). I would like to thank my advisor, Isabel Froes and Dave Mellis for their support and cooperation. I also would like to thank the Pilot Year students, the CIID students 2009-2010, Simona Maschi, the Head of the Program, and Karen Ward, for helping me with prototyping the toolkit in all the phases.

References

Extensive references are available on http://coconu.wordpress.com/ and www.coconu.it

This paper is the written part of a text + video submission to the SIDER '10 Conference. The full submission, including video file can be found on www.ingredientsingradients.com

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

Giving a Classic Computer Game a Haptic Interface

Mathias Nordvall

Linköping University
mathias@mathiasnordvall.com, http://www.mathiasnordvall.com

Abstract

Many people are unable to play computer games because of hardware and software limitations that don't accommodate their needs. This article presents the classical computer game *Pong* being given an interface solely based on haptics. The interface makes the game accessible to people who couldn't play it before. This allows people to experience cultural computer game history through the sense of touch alone. The designed prototype is validated through usability testing. The results show that people find games translated into haptic experiences to be novel and entertaining.

Keywords

Game design, haptics, user interface, accessibility and usability, fun and games, interfaces and GUIs, the senses

Introduction

Computer games have emerged as a new form of cultural expression during the late part of the 20th century. It has had an exponential growth in mainstream awareness during the last two decades and is poised to eventually eclipse other entertainment industries in popularity and revenue. Computer games have a short history but there is already a canon of titles that are important for understanding the progression of computer games as a cultural art form.

Despite its success during the last couple of decades, many people are still excluded from taking part in computer games as valuable medium of cultural expression. Currently available hardware and software both have limitations that make them unable to accommodate the needs of many people that would want to fully participate in the contemporary cultural developments that computer games are a part of.

The goal of the project described in this paper was to translate the interface of a computer game into a haptic interface.

Theory

Translating classical computer games into computer games that only use haptics as user interface output, and the design considerations that needs to be taken into account when doing this translation, rests on a foundations of a number of theoretical and empirical positions.

Juul [5] defines a game as being a rule-based formal

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

system with variable and quantifiable outcome, where different outcomes are assigned different values, the player exerts effort in order to influence the outcome, the player feels attached to the outcome, and the consequences of the activity are optional and negotiable.

Haptic experiences can be conveyed to a person through tactile or kinesthetic perception [6]. Tactile perception is achieved through stimulation of the skin. Kinesthetic perception is achieved through sensing the body's muscles, joints and their orientation in space. There are four main methods for conveying haptic experiences [4]: Vibrotactile devices, force feedback systems, distributed tactile displays and surface displays. Only vibrotactile devices are currently used in the hand controllers of computer game consoles. This limits the use of haptics to sensations that can be experienced through the tactile perception of the skin.

The skin has three types of receptors for tactile perception [7]: thermo-, chemo-, and mechanoreceptors. As a consequence of the technological limitations of current hand controllers the only receptor considered in this study is the mechanoreceptor, which can be further divided into Merkel cell, Meissner corpuscle, Ruffini ending and Pacinian corpuscle [7]. Of the four mechanoreceptors the only one that can be stimulated by current computer game console hand controllers is the Meissner corpuscle.

The limitations imposed by available mainstream technology means that haptic experiences must be conveyed through tactile perception, and then only as vibrations that can be registered by the Meissner corpuscle mechanoreceptors. To convey meaning through vibrations they must be distinguishable by the Meissner corpuscle. Vibrations must therefore be designed with the considerations of having poorly defined boarders and only using low frequencies.

Tactons are icons designed to convey meaningful information through vibrations [1]. The skin responds to changes in vibrations along the same parameters as those used to manipulate sound. The design of tactons therefore has a lot of commonality with the design of music. The methods of changing the frequency, amplitude, waveform, duration and rhythm to achieve different sounds can therefore be used to create different vibrations. Body location and spatiotemporal patterns can also be used when designing tactons because of the skin's large surface area.

Translating a classical computer game with an ordinary user interface into one using haptics to convey information requires that the player can understand the new signs used, instead of the old ones, to represent information in the computer game. Pierce [3] describes semiotic meaning making as being composed of three parts: a sign, an interpretant and an object. The sign is the shape of something that has meaning, the interpretant is the sense made of the sign when observed and the object is that which lays beyond the sign and is referred to when the sign is used. Translating a computer game is therefore about creating a design solution that successfully manage to introduce new signs that can be recognized and interpreted by the player as symbolizing the objects of the computer game before it was translated. Because of hardware limitations this necessitates a translation of the computer game into symbolic signs, similar to spoken language, with arbitrary connections between signs and objects. Instead of the icon signs normally used where a ball in the computer game can visually resemble a ball in our own physical reality.

Giving a Classic Game a Haptic Interface

A number of classical computer games were considered in order to find a suitable game to translate. Of the possible candidates the game *Pong* was deemed to be the most appropriate game to give a haptic interface because of some of the game's attributes. It could culturally benefit people, who have so far been unable to play it, since it's a well known game in contemporary culture. *Pong* also has a spatial dimension where objects in the form of paddles and ball are interrelated. There is also a temporal dimension in the game where action must be decided upon and executed within a limited time period.

Sicart [8] has proposed an analytical framework for understanding the formal systems of computer games by dividing them into rules and mechanics; with objects being an implicit necessity in the framework. Rules decide what can be done inside of the game since they are code that realizes the game. Game mechanics are the actions, or verbs, that players can take to affect the game-state: jumping in a game is game mechanic. Game mechanics are themselves rules but are kept separated for analytical purposes. Objects are those

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

things that are affected by rules and mechanics: avatars and buildings are examples of objects. Sicart's [8] framework was applied to the game in order to understand the nature of the rules, mechanics and objects that were to be translated into haptics.

Improving the Game Through Testing

After *Pong*'s interface had been translated into a prototype with a haptic interface it was user-tested in an iterative fashion that moved back and forth between testing and modification. Each user-test was followed by a modification of the prototype based on the insights from that particular usability test before the prototype was tested again on a new participant.

A player's verbal behaviour can be used to gain insight into a their emotional and mental state [9]. Verbal behaviour was recorded unobtrusively during play in the form of positive and negative comments. Semi-structured interviewing [2] with topics based on the player's verbal behaviour was used after each user-test to gain more elaborate answers on how to improve the computer game.

For the usability testing of the prototype 10 students of computer game studies and computer game design were recruited as participants together with 2 professional game designers. They each played the game for 20 minutes before being interviewed about the play session and their impression about the game.

The impression was that *Pong* with a haptic interface was a novel and entertaining experience.

The Anatomy of the New Interface

The translated version of *Pong* presented in this paper was programmed to run on the Microsoft Xbox 360 using two of its. Each game controller has two vibrotactile devices inside of it: one of a higher frequency and one of lower frequency. The translated version of *Pong* has the following input and output.

Input

The player controls the game with the D-pad's up and down directions in order to move the paddle into the right position. The A button is used to launch a new ball when a point is scored by either player.

Output

Two standard game controllers are used to provide the output of the game. They are referred to as the primary and secondary controller. The primary controller is used to provide information that relates to the paddle's position and the secondary controller is used to provide information that relates to the position of the ball. When a point is scored all vibrotactile devices are activated to cause tactile overload in order to indicate that the ball is out.

The primary controller provides output related to the paddle. The primary controller's high-frequency vibrotactile device is used to signal if the ball is above or below the ball on the play area's Y-coordinate by changing the intensity of the signal. If the paddle and ball are horizontally level with each other game controller does not provide any output. The primary controller's low-frequency device is used to indicate that the ball is bouncing against one's own paddle by transmitting a signal of short duration and high intensity. When it bounces against the opponent's paddle a corresponding signal of short duration and low intensity is transmitted.

The secondary controller provides output related to the ball. The high-frequency vibrotactile device is used to indicate the position of the ball relative to the player's paddle along the X-coordinate. When the distance between the two decreases the high-frequency signal increases in intensity to indicate their closeness to each other. It correspondingly decreases in intensity when the ball is further away from the player's paddle. The low-frequency device is used to indicate bounces of the ball against the top and bottom boundaries of the game screen. When the ball bounces against the top edge of the game screen a high-intensity signal is transmitted and when it bounces against the bottom edge a low-intensity signal is transmitted.

Conclusions

The following conclusions can be drawn from the design and testing of the described prototype:

It is possible to translate computer games into playable haptic experiences using only affordable off-the-shelf computer game console technology.

Based on the results of the usability testing it can be concluded that players find the experience of playing games based on haptics to be a novel and positive one.

References

1. BREWSTER, S., & BROWN, L. M. (2004). *Tactons: structured tactile messages for non-visual information display*. In AUIC '04: Proceedings of the fifth conference on Australasian user interface (pp. 15–23). Darlinghurst, Australia: Australian Computer Society, Inc.
2. BRYMAN, A. (2004). *Social research methods*. New York, USA: Oxford University Press Inc.
3. CHANDLER, D. (2007). *Semiotics: The basics* (2nd ed.). London; New York: Routledge.
4. HAYWARD, V., & MACLEAN, K. E. (2007). *Do it yourself haptics : Part 1*. Robotics & Automation Magazine, 14(4), 88–104. 10
5. JUUL, J. (2005). *Half-real: video games between real rules and fictional worlds*, p. 7. Cambridge, USA : The MIT Press.
6. LOOMIS, J. M., & LEDERMAN, S. J. (1986). *Tactual perception*. In K. Boff, L. Kaufman, & J. Thomas (Eds.), Handbook of perception and human performance (chapter 31, pp. 1–41). New York, USA : John Wiley & Sons Inc.
7. PASQUERO, J. (2006). *Survey on communication through touch*. (Technical Report TR-CIM 06.04). McGill University, Department of Electrical and Computer Engineering, Centre for Intelligent Machines.
8. SICART, M. (2008). *Defining game mechanics*. Game Studies, 8(2). Retrieved from http://gamestudies.org/0802/articles/sicart
9. TULLIS, T., & ALBERT, B. (2008). *Measuring the user experience : Collecting, analyzing, and presenting usability metrics*, p. 168. Burlington, USA: Morgan Kaufmann.

This paper is the written part of a text + video submission to the SIDER '10 Conference. The full submission, including video file can be found on www.ingredientsingradients.com

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

Amusity

Dana Yichye-Shwachman, Idan Arbel, Yossi Lugassi, Michal Rinott

Interaction Lab, Holon Institute of Technology

danayicsh@gmail.com

Abstract

Digital technology has caused music collections to move from the shared and physical space of shelves and cabinets to the privacy of screens, thus depriving us of the experience of "coming over to play some records". *Amusity* is a living room coffee table that returns music back to the center of attention in the home. Therefore the *Amusity* makes music a shared experience in the house, providing guests with display and access to the host's music collection through a playful, tangible, visually pleasing interaction. *Amusity* is simple and intuitive to use, while addressing new aspects of the digital music experience such as video clips, additional track information and playlists.

Keywords

Interaction design, tabletop computing, playful interaction, information visualization

Introduction

Music has become digitally concealed. We are surrounded by feature-rich applications that give access to our music everywhere, through music players, cell phones, media centers, PCs and other devices. Our personal music collection, that once inhabited physical shelves and cabinets in our home, has now gravitated to the private realm of our personal screens. The collection's size, contents, variety and spatial layout, that once gave a tangible and palpable sensation to our musical world, has now been reduced into lists of textual information and icons.

And yet music is still a social phenomenon, as well a personal one. A music collection will always be a reflection of an individual's identity, representing ones personal tastes and moods. Current attempts to enable people to share their musical taste with others have

Figure no. 1 : The Amusity *coffee table*

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

included shared music libraries over networks and shared playlists on music sites. A testament to people's desire to make their musical tastes public can be found in recent social media mash-ups, such as Pandora [1] broadcasting the currently playing song to a user's Twitter stream, or Last.FM [2] sending the currently playing song to be displayed as the mood message on Skype.

These virtual solutions cater to the users seated privately in front of their devices. But how can digital music be tangibly shared when people get together? How does one invite friends to "come over and play some records" in the 21st century?

The *Amusity* project was motivated by a fond memory of the experience of stepping into a friend's home, looking through their record collection and glancing at the album covers; picking up a record because its cool cover or checking what's on the record player and examining the recently played records stacked near the stereo system. We now miss the environment of the friend's presence, the host's mood and musical 'state of mind'.

System Description

Amusity is a living room coffee table, in which the surface area provides a display and tangible interface to a person's music collection. Every song in the music collection is represented by a bouncing bubble. We wanted to portray a feeling of 3D movement, and a continuous rhythmic flow animated by the bouncing bubbles. The songs bubbles' appearance visualizes the informational aspects of the music collection. Each bubble color represents a different musical genre, thus the "musical persona" pops clearly out through color. For example, a jazz lover will have predominately blue bubbles in the center of the table compared to an individual user with a wide variety of tastes,

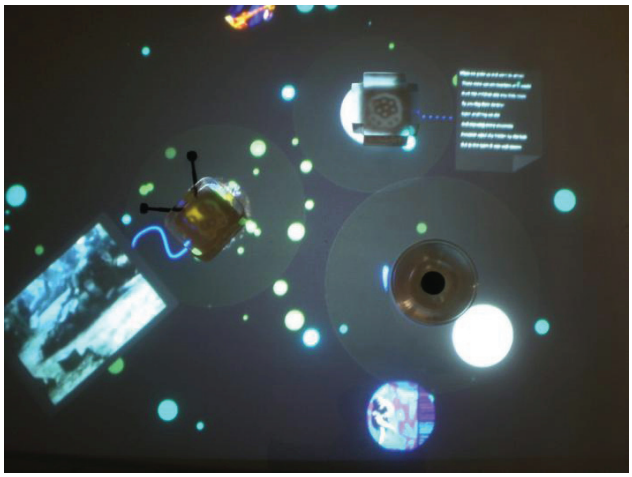


Figure no. 2: Amusity — *a view from the top*

which will appear more colorfully. Therefore, the bubbles create a varied colorful textured pattern and a flow of soft movement for those around the table.

A song's popularity determines its location. The most popular songs bounce in the center and the least listened-to songs lie on the outer edges of the *Amusity* tabletop.

The bubbles 'try' to bounce up in order to reach the table surface. Once a bubble succeeds in jumping high enough and reaches the surface, the cover of the song's album appears, and then it is possible to access the song through three tangible control objects:

- ☞ The 'Speaker' placed on the bubble plays the song and the volume is adjusted by turning the speaker.

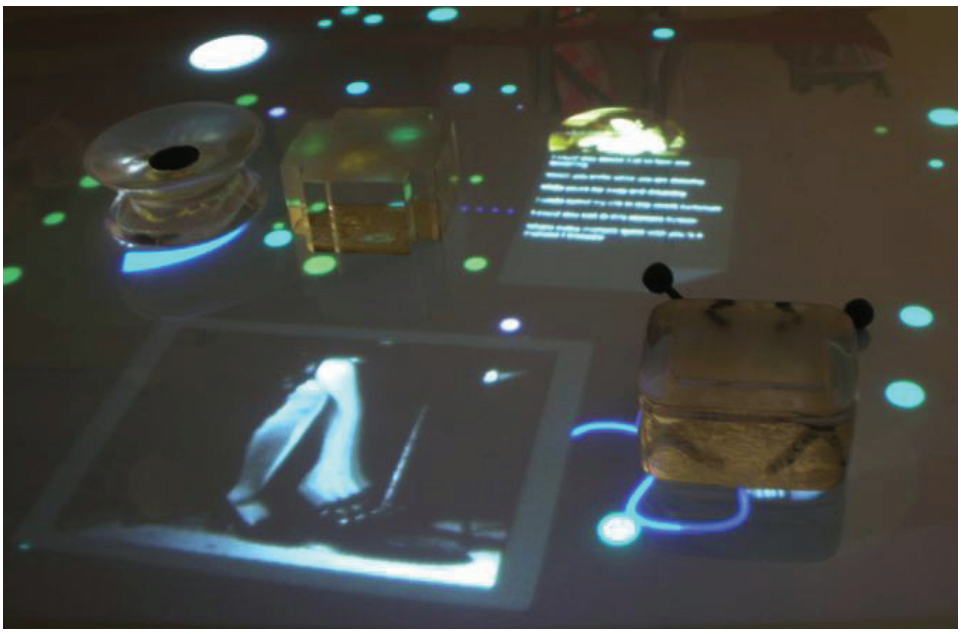


Figure no. 3 : Each control object on a different song

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

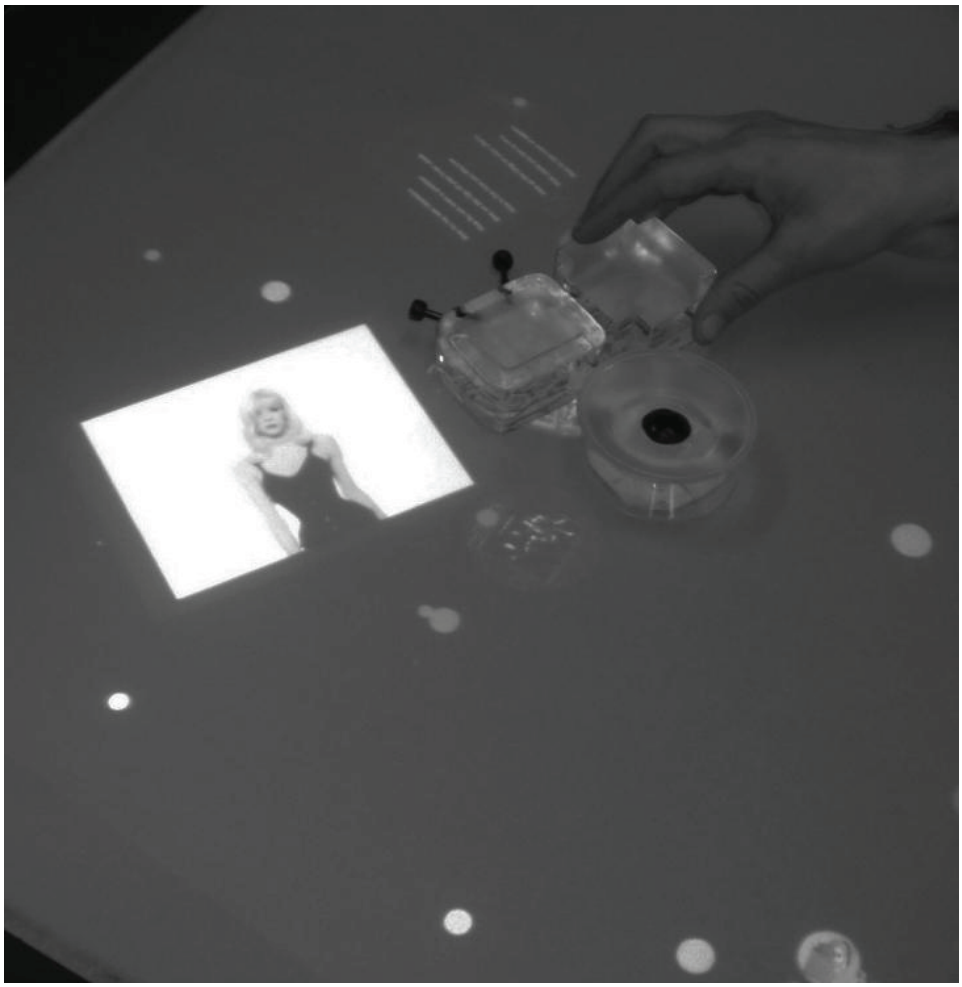


Figure no. 4 – The three tangible control objects on the same song

- ☞ The 'TV' placed on the bubble plays its video clip.
- ☞ The 'Info' (additional information) object placed on the bubble displays the lyrics and artist's biographical information.

Each of the three control objects can be placed on a different song individually at the same time. A more common possibility is to place two or three of the control objects on the same song simultaneously. This way it is possible to hear the music, see the video and read the lyrics of a great song.

A fourth control object, the 'Dome' enables listeners to change the popularity distribution, and therefore reveal the owner's music that is currently less listened to. The Dome changes the popularity cut-off point: zooming in to the center by turning the Dome clockwise, the most popular song-bubbles appear, while zooming out from the center by turning it counter-clockwise brings to the center the more "forgotten" songs from the owner's collection.

In addition the bubbles are subordinated to physical items on the table (e.g. coffee cups) — when such objects are placed on the table, the bubbles move away to accommodate them.

Probability In *Amusity*

Playing songs influences the behavior of the bouncing bubbles: when a song is playing, other songs from the same playlist gain "bounce power" and are more likely to reach the table surface. This may include songs from the same album, and songs that the collection owner usually plays in proximity to the current song. This behavior represents a contrast to the current trend of iTunes Genius or Pandora "smart" playlists that construct a fixed song collection for the listeners, based on a song or songs. In *Amusity*, listeners are gently swayed towards the owners' listening preferences

by the increased probability of his favorites, while maintaining their active choice of songs according to what appeals to them.

In the future the probability will be processed by a program written exclusively for this new type of shuffling in the *Amusity*. The *Amusity* does not try to replace the personal music browser on the computer, but rather gives a coincidental selection affected by the preferences of the listener.

Multiple Users

The *Amusity* living room table displays the music collection of all house occupants, bringing together

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

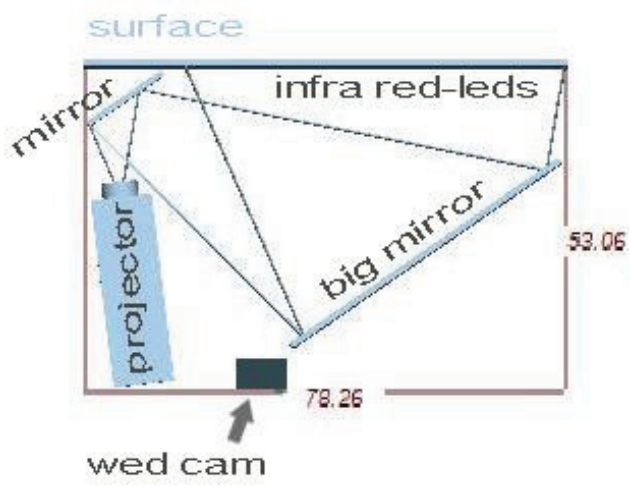


Figure no.5 : System layout

the diverse musical tastes of a family or group of roommates. This enables a lively and playful dialogue around music when all are convened. When one of the occupants is hosting friends, the collection can be made to display only the host's music collection, by placing a personal object — the personal *Amusity* token — on the table. It is possible for two occupants to mix their music collection by putting together on the table their personal *Amusity* tokens.

Design and Implementation

The *Amusity* coffee table implementation is based on the open source computer vision tracking software reacTIvision [3] which enables the identification of objects placed on the table, as well as their orientation, using a set of visual markers called fiducials.

The design of the table was inspired by antique classical wooden tables. The dimensions of the coffee table are 80 × 80 × 50 cm. Inside the table are two mirrors, a projector, a web cam that sees infrared, and a strip of infrared LEDs.

A Flash ActionScript application provides the visualization and animation capabilities, communicates with a data base containing the songs and statistics of listening data. The program calculates the listening ratio of the user to his digital music collection.

The physical control objects were designed for simple intuitive tangible use. They are made from clear acrylic in order to create a visual experience in which the light and color of the graphical element glows through the object. It was very important for us that the 3D icon symbol of the four objects will clearly define their use, and to have a formal physical identity, as opposed to the more neutral token-based objects typical of the Reactable and other tabletop systems.

Development Process

The *Amusity* Coffee Table began as a final project in a course called "Interaction Design Hands On" at the Holon Institute of Technology, Holon, Israel in 2008. Our main goal was to return a lost experience of sharing and learning about your friend's personality from glancing through their musical collection. The design concept was developed after making a survey and conducting research on listening habits of people [e.g., 4], and developed using a project wiki [5].

The table described in this paper is the second version of the project, enabled after the end of the course. During the development of this second version, the *Amusity* prototype was presented during exhibitions at the Interaction Lab. A variety of age groups (teachers and students) from different faculties played with the table.

There was a lot of enthusiasm from this audience This informed the design of the current version and convinced us that *Amusity* generates interest in users.

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

References

1. *Pandora* : a free radio on the internet http://www.pandora.com/
2. *Last.fm* : http://www.last.fm/
3. *Reactable* : http://www.reactable.com/reactable/technology/
4. *reactivision* : http://reactivision.sourceforge.net/
5. VOIDA, A., GRINTER, R. E., DUCHENEAUT, N., EDWARDS, W. K., NEWMAN, M. W. (2005). *Listening in : practices surrounding iTunes music sharing*, Proceedings of the SIGCHI conference on Human factors in computing systems, 2005.
6. *Project wiki* : http://idanarbel.com/websites/idho/

This paper is the written part of a text + video submission to the SIDER '10 Conference. The full submission, including video file can be found on www.ingredientsingradients.com

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

eMoodies : Interactive Cushions With Personalities

Patrik Björkman, Nancy Li, Anne-Marie Liljekvist, Alexander Skogberg

Department of Interaction Design, Chalmers University of Technology
{patrib, nancy, annemari, alexands}@student.chalmers.se

Abstract

This project investigates how to embed IT into everyday environment, making ordinary cushions interactive and anthropomorphized with distinct personalities. Three *emoodies* were created; mary — the social one, cory — the sad one and steve — the mean one. They react to human interaction such as touch and they can also interact among each other. The *emoodies* communicate wirelessly and display their emotional states through facial expressions.

Keywords

Ubiquitous computing, interaction design, embedded interaction, interactive personalities, aesthetics of interaction

Introduction

The technology has reached a level where computers are surrounding us everywhere. They are expected to handle more, be more ubiquitous, more intelligent and to think for themselves. This project combines computer technology, interior design and adds a touch of ubiquitous property with think-for-itself features. The result is *eMoodies*.

eMoodies are anthropomorphized interactive cushions with different personalities. Some are positive and happy, some are introverted and shy and others are aggressive and mean. The personalities are revealed through facial expressions and physical appearance. They respond and react to human interaction such as touch, shaking and noise. Not only can they interact with the user, but also with other *eMoodies* and affect their emotions.

The *eMoodies* can be used in public areas such as student common rooms, break rooms in offices, waiting rooms and such. They encourage social interaction and are a good conversation starter. They can spice up the everyday environment with their enjoyable features and playfulness.

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

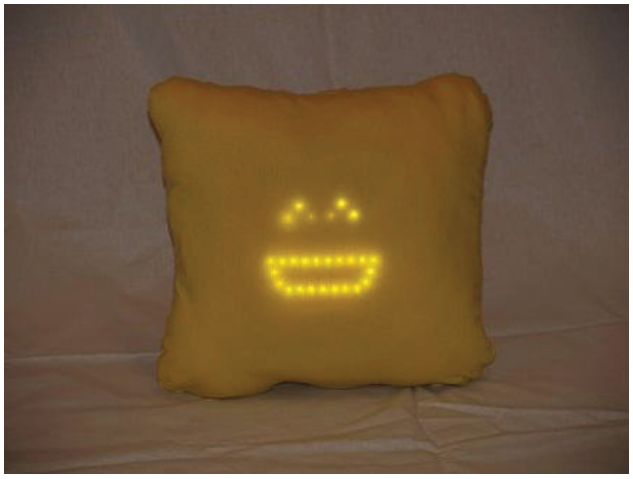


Figure 1: Mary's yellow color and the softness represent a warm and loving feeling

Figure 2: Cory's satin fabric and the blue color give a sensitive and depressed impression.

Figure 3: Steve's black hairy fabric and the rectangular shape give a feeling of dominance.

Design

Personality

It is important for the first prototype of *eMoodies* to have different and distinct personalities so that it will be easy to simulate the influence and interaction between them. Three *eMoodies* were developed through the process.

Mary is a social, positive and kind *eMoody*, who likes company from other *eMoodies* and being cuddled. It is very easy to make Mary happy and her happiness can affect other *eMoodies*.

Cory has a depressed personality and a negative attitude. He is always sad but becomes gradually happy if another happy *eMoody*, for example Mary, is around. He also requires a lot of attention and caressing.

Steve is a bully with tough attitude. He likes to bully other *eMoodies* and make them sad. He is dominant and likes to feel superior. He does not like to be cuddled in front of other *eMoodies* as he is a tough guy. However, he likes to be cuddled when no other *eMoody* is around.

All *eMoodies* have some common characteristics, they do not like to be alone and they like to be cuddled.

Appearance

The interaction with the *eMoodies* is intended to create emotions that are closely related to interest and attraction. Due to the *eMoodies*' different personalities, each *eMoody* will be designed to evoke different emotions. Through interaction a personal bond between the user and the *eMoodies* will be established from the user's point. The intended use should engage the user's interest and feel that it is fun to interact with them. We have chosen four broader areas to focus on: color, fabric, shape and facial expression. These areas play an important role for the look and feel of the *eMoodies* and will affect how people will perceive them.

Mary's Design

Since Mary's personality is positive, happy and kind, it is important to make design choices that create a positive perception of the *eMoody*.

Mary's color is yellow based on literature review upon colors, which showed that yellow evokes cheerfulness, extroverted, happy and positive perceptions [14].

A stretchy material which is soft and cozy was chosen to represent a warm and loving feeling, which

can encourage a user to pet it. Mary's shape was decided to be a quadratic shape with soft edges to balance the kindness feeling without the submissive hints. [12]

Cory's Design

The most important factor when choosing the color for Cory was the perception he is to give, which would be a caring, sympathetic feeling. A brighter hue of blue was chosen for Cory's color based on Kaya and Epps color study [2].To further represent his withdrawn and vulnerable personality, a delicate satin fabric seemed to be optimal.

Cory's shape was decided to be of a lying rectangle; due to submissive and inferior status it represents [1].

Steve's Design

Literature states that black stands for anger, power and dominance which is what Steve needs to represent. [1][2][5] Steve's color was decided upon black, to give him a fearful image. As off material; Steve's material was chosen to be thought with a black ragged, almost hairy fabric.

Steve needs to be dominant of the other *eMoodies*. The dominance is easily shown with the shape of the cushion since his cushion needs to be taller than the others. This shows superiority, which reflects his personality [4].To emphasize his edginess, he is literally given hard edges on the rectangular shape.

Facial Expression

There are four basic facial expressions: extremely happy, happy, neutral and sad. Other additional expressions will be described in chapter 4. The same expression may differ a little bit depending on the *eMoody*, but generally they look the same.

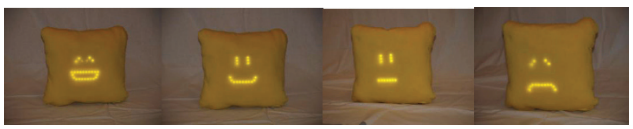


Figure 4 : Four basic facial expressions (from left): extremely happy, happy, neutral and sad.

Interaction

User Interaction

The *eMoodies* are social entities and like to be around users and other *eMoodies*. All *eMoodies* like to be caressed by the user and show this through their facial expressions which gradually become happier. This is true at all times except for Steve, who does not want to be caressed around the other *eMoodies*. Steve shows his dislike through vibration and annoyed facial expression.

Social Interaction

When putting an *eMoody* in the company of another, their mood gradually changes to happy state. This is true for the *eMoodies* that are friendly and have a positive personality.

Bullying

The *eMoodies* are of a friendly nature, but like human beings there can be negative personalities involved at times. Steve is an *eMoody* which likes to show off his dominance by bullying and make the other *eMoodies* sad. By putting him around other *eMoodies* he becomes happier as the other become sadder.

Dizziness

The *eMoodies* can become dizzy if the user shakes it too hard or throws it around. This is visualized through animated eyes (Figure 5).

Implementation

The central component in each *eMoody* is an Arduino microcontroller [6]. The Arduino language is based on C/C++ and supports all standard C constructs and some C++ features. For wireless communication and distance measuring the *eMoodies* use an XBee RF module for the Arduino [7].

To sense touch the *eMoodies* are embedded with piezo speakers. A microphone is used for the detection of sudden noise such as a door slamming. There is an accelerometer to sense if the *eMoody* is being moved around in different ways [8]. Actuator-wise, rumbling is created by a using a vibrating motor and the facial expressions consist of multiple segments of LEDs combining in different patterns to form faces.

The system works on a continual degradation of

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

wants and needs. The more the social need is sated, the faster it degrades. The company of a single *eMoody* will not satisfy the social need at the highest level, but might keep it steady at a medium level. Adding another *eMoody* might keep the social need at its highest level. Sating the social need is also dependent on how happy the *eMoodies* are keeping each other company. The happier they are the faster other *eMoodies*' social need is sated.

Discussion

The *eMoodies* were designed with the intention to improve social relationships. During testing, we found that users tend to choose a favorite among the *eMoodies*, which we believe can initiate and generate conversation-starters among people. The *eMoodies* accept interaction from any source which can encourage interaction from more than one user.

Futile areas can be cheered up with an *eMoody* in it. Waiting-, coffee- and common rooms can be new places for social interaction. We can see multiple areas of use for this product as well. During the testing, a company representant could see usage of the *eMoodies* in a relaxation area. Through the testing we also noticed that children responded well to the *eMoodies*. They thought it was fun and eagerly tried to interact with them. Thus we can see a usage of *eMoodies* in waiting rooms in children hospitals.

Through our first low fidelity prototype testing, it showed that there is a cultural difference in interpretation of facial expressions. Our basic facial expressions were designed based on the result we got. However, this leads to another problem, as the more complex expressions; the more difficult it is to design something that would be correctly understood with any cultural background. More research on this area is needed.

The area for petting *eMoodies* wasn't very clear; a majority of the participants chose to pet the *eMoody* in the area around the face, rather than on its "head". It also revealed that participants seem to only interact with the frontal side of the *eMoody*. Only a few participants flipped the *eMoody* around to investigate what it looked like, but quickly flipped it back.

Figure 5 : The dizzy state of Mary.

Conclusion and Future Works

The project researched the possibility for computers to, not only be ubiquitous, but also have a life of its own while interacting with humans. The result was *eMoodies* — interactive cushions with embedded computer technology.

The *eMoodies* were designed to be seen for their distinct personalities and not for their embedded technology. Testing sessions showed that users appreciated the *eMoodies*, and created bonds to their favorite based upon personal relating and preferences.

For the future, more expressions should be developed to give the interaction more depth and complexity. By adding some artificial intelligence for more complex emotions, it could expand *eMoodies*' area of context and the life span of the user's relationship with them as they become more unpredictable and living.

In addition to developing the existing personalities, there are opportunities in developing more personalities in addition to the core three. An example could be a sporty *eMoody* that likes being thrown around or a rocker *eMoody* that enjoys having music around it.

New ways of interaction should be investigated, such as the original idea of putting a microphone so that it will react to noise. Adding some small but animal-like sounds to give as a feedback, or reaction to lights to give other personality trails.

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

Acknowledgment

The original developers of *eMoodies* are: Patrik Björkman, Nancy Li, Anne-Marie Liljekvist, Frida Polheimer and Alexander Skogberg.

References

1. MCDONAGH, D., HEKKERT, P., VAN ERP, J. & GYI, D. (2004). *Design and emotion: the experience of everyday things*. Edition: illustrated. CRC Press.
2. KAYA, N. & EPPS, H.H. (2004). *Relationship between color and emotion: a study of college students*. College Student Journal, Sep2004, Vol. 38, Issue 3, pp. 396–405.
3. BARKER, E. (2007). *Colour your world*. Natural Health, 10679588, May 2007, Vol. 37, Issue 5.
4. PAVLOVA, M., SOKOLOV, A.A., & SOKOLOV, A. (2005). *Percieved dynamics of static images enables emotional attributes*. Perception, Volume 34, pp. 1107–1116.
5. BEAN, M. (2006). *The Color Advantage*. Men's Health, Oct. 2006, Vol. 21 Issue 8, pp. 174–179.
6. *Arduino* : http://arduino.cc/
7. *XBee* : http://www.digi.com/products/wireless/point-multipoint/xbee-series1-module.jsp
8. *Accelerometer* : http://www.pololu.com/catalog/product/766

This paper is the written part of a text + video submission to the SIDER '10 Conference. The full submission, including video file can be found on www.ingredientsingradients.com

Changing the wine perception in restaurants through a multisensory experience

Ainhoa Ostolaza

TUDelft, MSc Design for Interaction
ostolazainhoa@gmail.com

Abstract

This project concerns the rare opportunity that people have to taste different grapes of wine before ordering a bottle in a restaurant. Therefore, usually they take the advice of the waiter instead of sampling several wines and making a decision based their flavour preference. Moreover, the knowledge of the members of a group of people may influence in the decision-making. Commonly, the person with the most wine-expertise does the grape's selection, that from the perspective of an equitable wine-experience, making it difficult for the group to exchange opinions and leading to biased choice. From these assumptions the aim of the project is settled. The challenge is to design a wine system that enables the group as a whole to explore the wine's qualities and give their opinion regardless of their previous wine-knowledge and expertise, instead based on their feelings in the trial. In short, a wine tester that non-expertise users may appreciate. In order to better understand the users' perception, a multi-sensory wine workshop was conducted. Pairs of cross-modal relations were studied: smell-sight, taste-touch and a final wine-memory experience. Offering new insights into ways of communicating wine.

Keywords

Wine, multi-sensory design, body language, interaction, sense

Project's Concept

The project is developed within a course of the Design for Interaction Master at TUDelft. The evolution of the concept, thus, follows the subject's process. Starting from the study of users' interactions in a framed context of self-selection, the designer set up further research based on the initial findings. The project's aim is then explorative, and focuses its efforts on designing an interactive-base working with users as experts in the domain of their own experiences.

The research topic was selected due to the designer personal interest and experience in the food industry. The experience of working in a family restaurant motivated the concept to focus around food, beverages and their connection with the experience of drinking wine. From a waitress' viewpoint it is easy to observe consumers and in turn get direct access their comments. Beyond users' basic needs there are behaviours, comments and actions. This sort of data involves latent information, which is less accessible but more meaningful, that may be used to find new design directions not yet explored.

As a designer, I like to see experiences as opportunities that must be appreciated as qualitative data. Every happening enriches one's personal background, and hence knowledge. A designer might use them as a kick off, to wonder and draw new questions; that form the basis of further research.

Under the above philosophy of designing, the project's goal is stated. Its aim is to improve the current users' wine experience in a restaurant

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

context, by offering a new way of trying the wine that involves all the senses. Thus, instead of one, the user would have five receptors to apprehend the wine's information. Therefore, in order to understand better how users perceive a wine's properties, interviews to professionals, literature research and a workshop experience were carried on.

However, when concerning wine consumers, there are a few points that should be taken into account. The users' expertise is the most important aspect to define the target. There are many wine related products designed for users with a medium-high level of knowledge, but there is a scarcity of products designed for people with little to know wine knowledge, to provide easier access to wine and involve them in its experience. There is a gap when it comes to trying wine in restaurants, users cannot explore different types when ordering a bottle; there are no small samples they can savour. The only means they have to access wine information is through the sommelier, or waiter in his absence, who can help them in the selection. But such a discussion would not be at the same level, as the knowledge of the new-wine user and the professional is not the same. Therefore a wine tester, which enables users to explore the wine through a wide range of qualities, like textures, flavours or smells, was designed. From these initial sensory explorations, the user might get curious and try to look for more information, even discuss with the sommelier about the qualities he has experienced and request a professional explanation.

Method

The project's development was divided in different phases: firstly a literature review and primary research is conducted; secondly, the project's idea definition was formed — 'a restaurant wine tester that enables the user to taste the wine before ordering a bottle, and involving all the users senses in the process'. However, to get to know the users' wine perception and how cross-modal relations work in wine tasting a wine workshop with non-expertise users is carried out. The workshop focuses on the possibilities of describing wine in different ways apart from words. By offering the users a range of pads of materials and pictures to describe the feeling they experience when trying each grape. As a final stage, based on the workshop results and applying them to the project's concept, an iterative prototyping phase from rough models to the final working prototype was conducted.

Research Results

Qualitative information is the focus of researches evaluation, meaning that aspects like users' comments, gestures or reactions are considered as important as statistical data. The most important findings belong to the analysis of the wine workshop. Although, the specific results are not going to be detailed here, it should be reported that strong connections between materials-tastes and pictures-smells were found. The workshop shows how the participants perceive differences between senses like smell and taste in 5 out of 6 grapes of wine. Eventually, the workshop shows how non-expertise users can appreciate wine qualities, differentiate and describe types of wine with materials they are provided with.

Prototypes

The prototyping starts with rough approximations in size and materials. Then it follows with quick cardboard, elastics and plasticine models. As a result of this initial testing the hanging-system is modified (Figure 1, shows some users' comments).

The next prototype draws the interaction in terms of body language. This goes from product's distances to movements, which the users are asked to do in order to use the product once in the context. Hence, as Figure 2 shows, the users represent the interaction in an abstract scenario. As a result the distances between elements are adapted in order to let the users perform more natural movements. Also, a

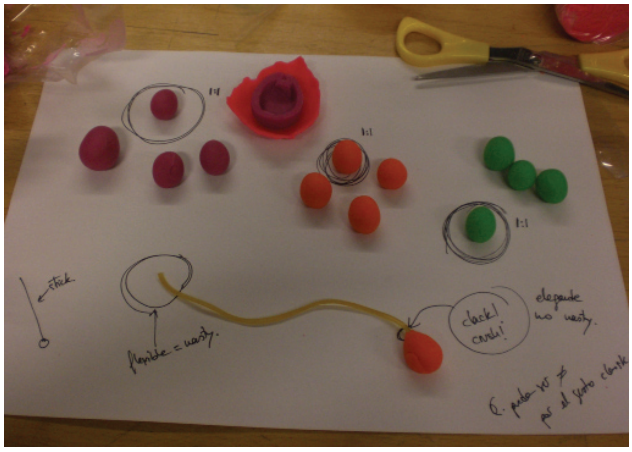


Figure 1 : Shows some rough prototypes and users' comments from the first testing.

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

sharing system is designed to enable users to try and exchange impressions about the types of wine and to open a discussion. The sharing-system consists in a code that it is integrated in the interior side of each grape's packaging, avoiding naming brands that may biased the consumers' opinion. By the use of this code, the participants can compare perceptions and wine characteristics to reach a consensus on the final wine's selection in an egalitarian manner.

The last part of the prototyping was simulating the effect of surprise: the impact in the users' mouth when they introduce and bit the grape, blasting and releasing the liquid wine inside. The selected material for building the grapes is an edible bioplastic. This material can be used in a wide range of thickness, making it feasible to work with films of less than one millimetre and simulate the grape's skin. Moreover the material is suitable for liquid packaging, with a caducity of over six months and does not posses any flavour; all characteristics that make it suitable for the tester. However, prototyping with this material is outside the scope of this project due to tools and financial matters. Further materials investigation led the prototyping to the use of a food-linked material: a seaweed powder called Agar-Agar. The seaweed is mainly used for what is known as 'molecular cuisine'. This powder works creating an external film around water-based liquids (see Figure 4) in a sequence of thermal-chemical reactions. The importance in the use of this material for prototyping is that it allows the user to experience the testing in the same manner the final product is intended to be made; experience that was tested by users as well.

Figure 2 : Shows a selection of photogram from the prototype of the interaction's video.

Discussion

The Learning Experience

The project should be reviewed in the frame of a learning experience. Exploring how to approach the research process and finding out the decisive role of the users in such approaches has been being one of the most useful experiences of the project. Thus, as an educational experience the wine workshop is the most valuable one. The reasons for such state goes from the workshop's concept and set up, to the data analysis and understanding of the users' voice. Hence, comprehending the importance of working in difference layers of researching is also important, in order to identify which one best fits the required data being studied. What is more, demonstrating that the possibility of a multisensory wine perception — initial goal of the project — and its further application to wine-related products is feasible.

The Product's Feasability

On the other hand, the viability of the product and thus its relevance in restaurants is something I have been tracking since the early steps of the project. Therefore, during its development I have been worried about how restaurants' owner might see the product. For that reason, a final interview with the owner of a medium-class restaurant (20-30€ per person) took place. The interview suggested that such a product could not be applied to all the restaurants due to its direct budget-dependency. Nevertheless, the interviewee responded positively to the project's idea and agreed in the opportunity it could represent in having a product like it to improve their customers' experiences.

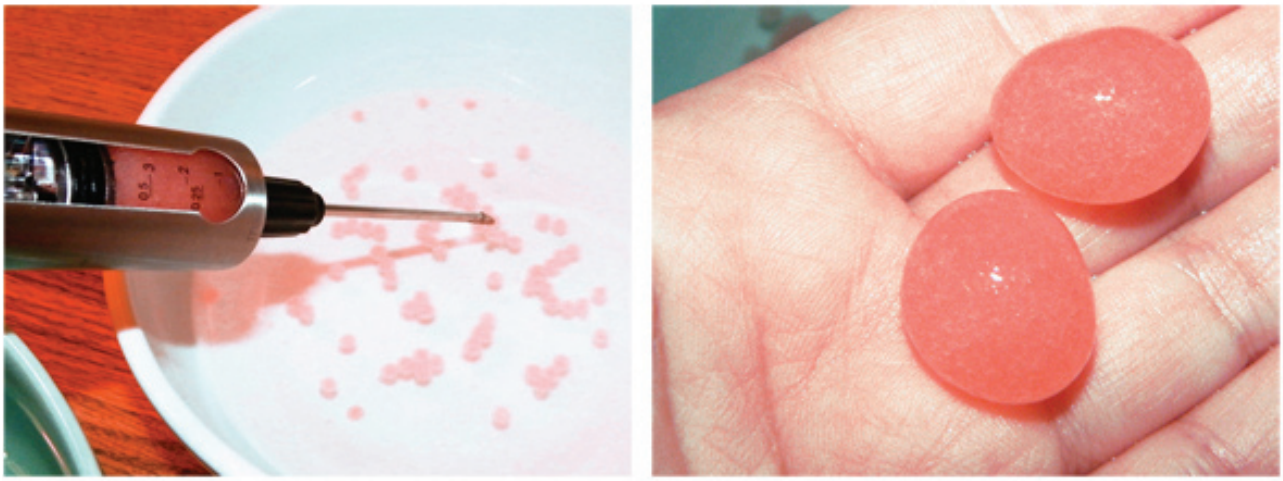


Figure 3 : Pictures of the creation of the comestible prototype with Agar-Agar.

Further Steps

Even if the balance of the research and product is positive, I would like to state the interest in doing a further research involving a second workshop experience with only expertise users. This way, a fairer comparison of the users' perceptual differences would help to assess how far one target group is from the other. Concerning the final product testing with the real material would also be necessary. The final test should be performed in the actual location, a restaurant. Additionally the availability of resources meant the majority of test subjects were young, most of them students from nearby Universities. A wider range of users, in terms of variety of age, gender and other aspects would be desirable. To conclude, I also want to state that a further study about caducity of the wine inside the grape made of bioplastic should be consider; the current studies with this material prove its use for nearly a year, but it is recommended to do a specific test with wine inside.

Acknowledgements

To Gert Pasman and Evelien Fleskens, tutors of the course Exploring Interactions -where this project was born- for their clear indications and references related to the subject of the paper; to Enrico Moccia my colleague in the development of the wine workshop, and finally to Rick Schifferstein, for providing us references related to the wine multisensory perception.

References

1. STAPPERS, P.J., VAN DER LUGT, R., HEKKERT, P.P.M., & SLEESWIJK VISSER, F. (2005). *Context & Conceptualization Reader*. Faculty of Industrial Design Engineering, TU Delft.
2. SCHIFFERSTEIN, H. & HEKKERT, P. (2008). *Product Experience*.
3. SCHIFFERSTEIN, H. & SPENCE, C. (2008). *Multisensory product experience*.
4. JACKSON, R. (2009). *Wine Tasting, A Professional Handbook*.
5. P.R. KLOSSE et. al. (2004). *An Empirical Test of a New Flavour Classification Model: the Flavor Styles Cubes (FSC).*
6. ZOHAR, G. (2009), *Restaurant L'Anima* (Wine workshop experience)
7. OVERBEEKE & HEKKERT (1999). *First International Conference on Design and Emotion*.

This paper is the written part of a text + video submission to the SIDER '10 Conference. The full submission, including video file can be found on www.ingredientsingradients.com

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

Tilt and Time Sensing Bracelets : Demonstrating Handmade Textile Sensors

Hannah Perner-Wilson, Leah Buechley

MIT Media Lab, High-Low Tech
plusea@media.mit.edu , leah@media.mit.edu

Abstract

This article describes the use of conductive materials and craft techniques for constructing textile sensors. In particular it focuses on a pair of sensitive bracelets that were conceived to showcase the construction of two such textile sensors and to be provocative examples of the use of this technology. Provocative in the sense that the bracelets were designed as non-functional, slightly absurd interfaces in order to stimulate ideas and motivate individuals to come up with their own applications for the textile sensors. We were interested whether the absurd nature of these bracelets would encourage people to come up with diverse and creative ideas as well as make attempts to realize them. Because the designs described in the article are intended to be re-creatable, an important part of this work is that materials, techniques and tools are sourced for their availability and price in order to insure that they can be made available to a large audience.

Figure 1 a,b : How To Get What You Want *logo and screenshot of website*

DIY Textile Sensors

Before detailing the construction of both bracelets we'd like to introduce the context in which these bracelets were conceived, namely the Do It Yourself (DIY) approach to handcrafting textile sensors. Where DIY is an approach to making things that relies strongly on documentation and personal creativity, rather than pre-manufactured solutions. And handcrafting textile sensors is an approach to making human-computer interface technology from scratch using textile craft techniques such as sewing and crochet to construct textile versions of sensors that are traditionally manufactured using hard components. This approach is part of a larger body of work that is documented in form of an online database titled *How To Get What You Want* [1]. The database documents materials, tools, techniques and designs that all center around the DIY approach to making soft, flexible textile circuitry and components. Accessibility to materials and comprehensible documentation are important aspects when developing for a community in which individuals are often constrained by personal resources. Creating work inside the context of this community helped formulate the design criteria with which these bracelets were conceived.

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

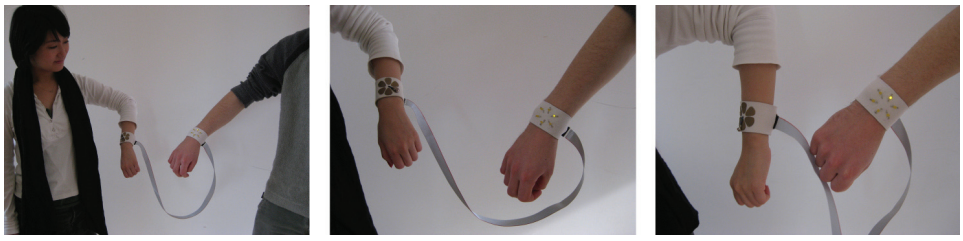


Fig.2 a,b,c : Tilt Sensing *Bracelet and feedback bracelet in action*

Design Criteria

- ☞ Use of available and affordable materials in order to maintain a high level of feasibility by individuals on personal budgets.
- ☞ Simple construction requiring common tools and techniques, also making construction highly accessible.
- ☞ The functionality of the sensor should be visible and self-explanatory and no components should be added for decoration.
- ☞ For demonstration purposes bracelets should be comfortable, robust, easy to put on, take off and not dirty easily.

Tilt Sensing Bracelet

The *Tilt Sensing* Bracelet [2] senses the inclination of the wearer's wrist, lighting up an LED light on a connected feedback bracelet that corresponds to the direction of tilt. The feedback bracelet is intended to be worn by another person, who receives feedback on the tilt of the sensing bracelet wearer's wrist in the form of LED light. The distance between the wearers is defined by the length of the cable that connects both bracelets and in the case of this design the cable is only 60 cm long so that the person wearing the feedback bracelet could just as well look at the other person's wrist directly.

The sensing bracelet houses a fabric tilt sensor, which is made up of a metal bead that is strung at the end of a piece of conductive thread [3], allowing it to swing freely and make contact with the six individual petal shaped conductive fabric [3] patches that surround it. When between two conductive petals, the bead makes contact with both petals, giving this sensor a resolution of 12 positions. The bead will not make contact with any of the petal inputs if tilted upside down.

The feedback bracelet has six surface-mount LEDs sewn to its surface, arranged in the same pattern as the conductive petals of the *Tilt Sensing* Bracelet. The LEDs are connected to the tilt sensor directly via a ribbon cable that plugs into both bracelets. When the bead makes contact with a conductive petal it closes the circuit for the corresponding LED, lighting it up.

Time Sensing Bracelet

The *Time Sensing* Bracelet [4] allows the wearer to indicate their desired time of day by positioning the arm of the bracelet to the desired position. The bracelet

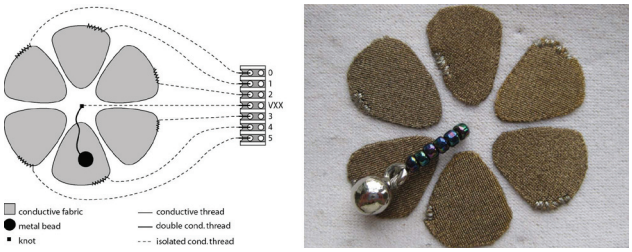


Figure 3 a,b : Tilt Sensor schematic and close-up of tilt sensor

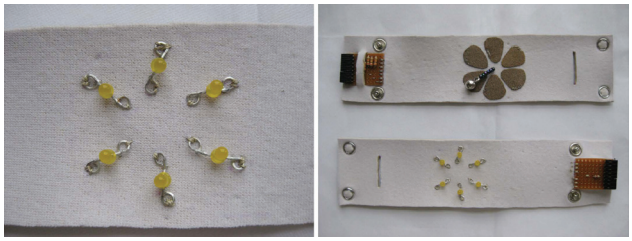


Figure 4 a,b : Feedback bracelet close-up of LEDs and both bracelets together

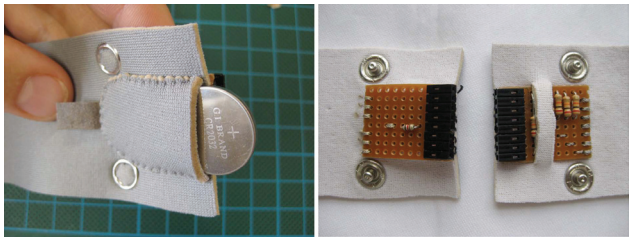


Fig.5 a,b) Close-up of 3V button battery pouch which is situated on the back of the Feedback Bracelet and close-up of the perforated circuit board and header plug connections (with a pull-up resistor for each input — this is before I knew that the Arduino has internal pull-ups :-)

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

connects to a computer where an application takes the sensor input and visualizes it by drawing a clock face with the arm of the clock pointing to where the user indicates.

Figure 6 a,b,c : Time Sensing *Bracelet in action*

This sensor that senses the position of the bracelet arm is a fabric potentiometer. It uses EeonTex RP-3-128 SL-PA coated non-woven piezoresistive fabric [5] as a resistive track in place of commonly used resistive polymer pastes. The piezoresistive fabric is cut in the shape of an interrupted circle and a connection is made at one of the ends by stitching to it with conductive thread. The piezoresistive fabric is not only resistive over distance, but its resistance also changes when pressured — an interesting property for pressure sensing purposes,

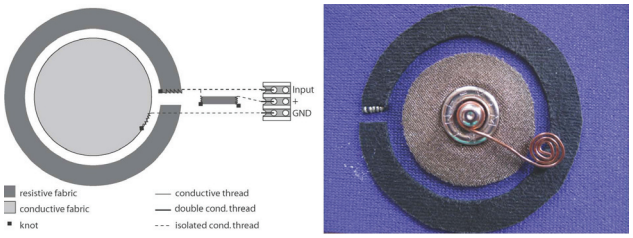


Figure 7 a,b : Fabric Potentiometer schematic and close-up of fabric potentiometer

but that makes this fabric potentiometer less accurate and requires the user to pressure evenly for accurate results.

The first version of this bracelet used a conductive finger-cap sewn from Stretch Conductive Fabric as a conductive wiper finger to make contact along the resistive track, between it and the central conductive patch. A second version replaced the finger-cap with a spiraled wire that extended from a metal snap fastener that was pierced through the central conductive circle. The spiraled wire arm could turn freely, but had to be pressured to the resistive fabric to make good contact. The 40k Ohm pull-up resistor for this sensor was made from a 0,5 × 2 cm piece of the same piezoresistive fabric as the resistive track and is included in the circuitry of the bracelet. The bracelet plugs into the power, ground and first analog input of an Arduino [6] board, which converts the analog signal from the sensor into digital information. The digitalized sensor value is sent to the USB port of the computer via serial protocol. The application which draws the clock face is written in Processing [7] and it visualizes the position of the bracelet hand in real-time.

Fig.8 a,b) Time Sensing *Bracelet and close-up of materials used for the resistive track and conductive center*

Reactions as Interactions

Fig.8 a,b) Time Sensing Bracelet and close-up of materials used for the resistive track and conductive center

Both bracelets were designed primarily to demonstrate the functionality of the textile sensors leaving the interpretation of possibly more useful applications up to the beholder. For publication the construction of the bracelets and their sensors were formulated as step-by-step instructions and posted to the Instructables [8] website which hosts a community of makers that share how-to instructions on anything ranging from baking bread to soldering or fixing your spaceship. After publishing the instructions for the bracelets on Instructables discussions arose in the comments section of each Instructable around the purpose of the bracelets and the sensors themselves. What are they good for? What might they be used for? How could they be improved? In order to show the variety of different responses they received I'd like to quote directly some of the comments from Instructables users.

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

Comments on the Time Sensing Bracelet

"This is very interesting! If you owned a field where you host airsoft battles you could require the participants to wear a jacket with your idea/invention that is linked back to a computer with an operator ready to call 'Hits'. That way nobody can cheat. The only downside i see is the fact that the slightest bump could make the operator think your hit. maybe you could tweak it. But overall nice!" (by Branman)

"Just an 'add on' to my last comment: this could actually be used in real war combat. If a team is going for stealth they could use this watch to reveal enemy position without words. (you know like : Enemy, five o'clock)" (by Branman)

"I could totally see this being used in conjunction with turn tables. If you look at a lot of the scratch videos on youtube(http://www.youtube.com/watch?v=ja9F63jeGOU&feature=related) there is often a computerized version of the record shown, which is much like the clock in the videos. It is used as a place to gauge where the sounds begin on the fly without having to memorize where they are on the record. It would be awesome if you could come up with something like this." (by chubs_mckrakn)

"The thought that instantly occurs to me looking at this is that it would make a good "tactile watch" for the blind who don't want to use speaking watches (or deaf-blind). You could add a pager motor or other tiny tactile feedback device that vibrates when you touch the part on the ring that corresponds to the current minute- not sure how you'd do hours, perhaps have a "mode" button, or two rings. As it is it's a nice demonstration of concept, but doesn't actually do much." (by PKM)

Comments on the Tilt Sensing Bracelet

"What exactly is the point of this? does it allow you to control a mouse or what i am a little confused" "ahh i c i think it would be cool to make the patches into like a hemishperical bowl and attach the string thing to the center so you could attach it to a mouse thing and control your mouse with tilting your hand, just saying" (by trevren11)

"Pretty cool! Very well done! I think I read somewhere that some cars incorporate something like this into their alarm systems. When you park the car, it watches whatever "pad" the "beads" are on, and if the car moves and the "pad" changes, it sets off the alarm." (by Bernard 192)

"if you hook it up to USB then download joy2key... you can use the software to mimic the input from keyboard and mouse" (by freerunnin1)

You could make a version that measures 3 levels of acceleration by adding an outer conductive sensor ring close enough to the sensor petals so that the bead can touch both at once. Replace the fixed length string with a spring. At rest, the metal bead would only contact the petals. When the user is doing something active, the spring would stretch and the bead would hit the outer ring and the petals. More intense activity, and the bead would hit just the outer ring. The outer ring could be subdivided if there are enough inputs left on the computer. I'm afraid that I don't have rhythm, but if the wearer did have musical and dance talent, the Arduino could generate MIDI signals to drive an external synthesizer. Or generate simpler sounds in the ardiuno itself. Adding the force aspect could lead to a more interesting dance. Nice iBle. I like ones that inspire variation." (by hamjudo)

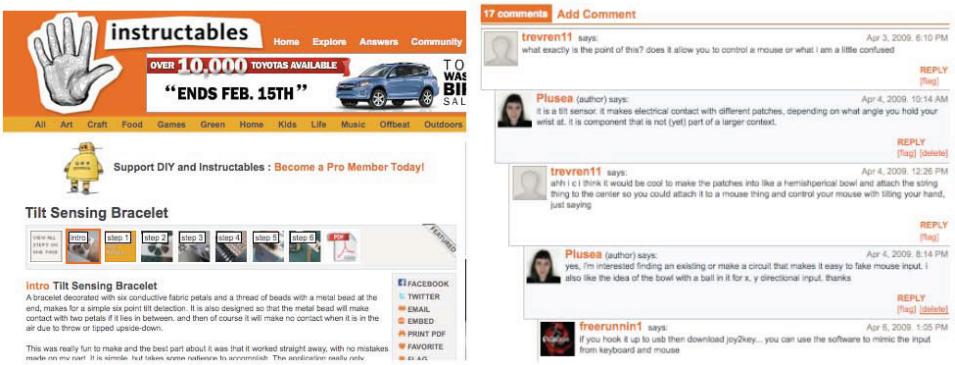


Figure 9 a,b : Screenshots of Instructables website showing comments on the left

Conclusion

Exploring textiles for their use to hand make textile sensors and circuitry is a great approach to creating accessible technology that can be replicated and employed by a large audience. We are hopeful that the more available and attractive these technologies become for individuals, the more personalized and original interactive interface experiments will start to emerge. And that these kinds of projects will push our ideas on interaction into slightly more playful and bizarre realms. A next step in this project, beyond making the technology accessible, and developing new materials and techniques will be to find ways of encouraging people to realize their own interaction scenarios. It will be especially interesting to see individuals personalizing and re-inventing everyday interface technology that they themselves use on a regular basis can can evaluate on these terms. Sparking ideas through publishing open-ended example projects, such as the bracelets described in this article is maybe one approach to making this happen.

Reference Links

1. *How To Get What You Want* : www.kobakant.at/diy
2. *Time Sensing Bracelet DIY Instructable* : www.instructables.com/id/Fabric_amp_Bead_Tilt_Sensing_Bracelet
3. *Conductive fabrics and threads,* distributed by LessEMF : www.lessemf.com/fabric.html
4. *Time Sensing Bracelet DIY Instructable* : www.instructables.com/id/Time_Sensing_Bracelet
5. *Eeonyx EeonTex* fabrics : www.eeonyx.com
6. *Arduino*, open-source electronics prototyping platform : www.arduino.cc
7. *Processing*, open-source programming language : www.processing.org
8. *Instructables*: www.instructables.com

This paper is the written part of a text + video submission to the SIDER '10 Conference. The full submission, including video file can be found on www.ingredientsingradients.com

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

Meet Me in the Library!

Mischa Demarmels, Stephan Huber, Mathias Heilig

University of Konstanz
mischa.demarmels@uni-konstanz.de

Abstract

This paper discusses the topic of social interaction in the field of information-seeking. With our design of the "search tokens", we suggest a new hardware setting and a novel tangible and multi-touch based user interface to support users in their information-seeking process and enabling co-located, collaborative knowledge work. We showcase our design with a scenario of a media library, presenting movies as information objects on a zoomable information landscape.

Introduction

Many theoretical approaches expose the importance of social interaction within a user's information-seeking process [1], [2]. These models describe several forms of social information exchange during the steps of information-seeking between various persons like colleagues, students and tutors.

However, from the perspective of today's digital information systems, such social interaction is not well supported. Besides theoretical information-seeking models not being considered well enough, an important reason for the existing flaws is associated with the hardware that is commonly provided to users of information-seeking systems. These are often based on single-display desktop workstations, controlled by mouse and keyboard and thus suffer from very restricted possibilities for co-located collaboration, allowing only one person at the time to interact.

Therefore, we introduce a novel concept to apply social information-seeking by considering an alternative hardware setting as well as a visual and tangible user interface. Our "search tokens" are specifically designed to support co-located collaboration and can be applied to many different scenarios that involve information-seeking. Furthermore, our design is based on the insights of the theoretical models mentioned above.

According to the literature, tangible user interfaces (TUIs) [3] as well as the multi-touch technology [4] are suitable concepts to support co-located collaboration. In contrast to mouse and keyboard they allow several

In: MOUSSETTE, C.; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

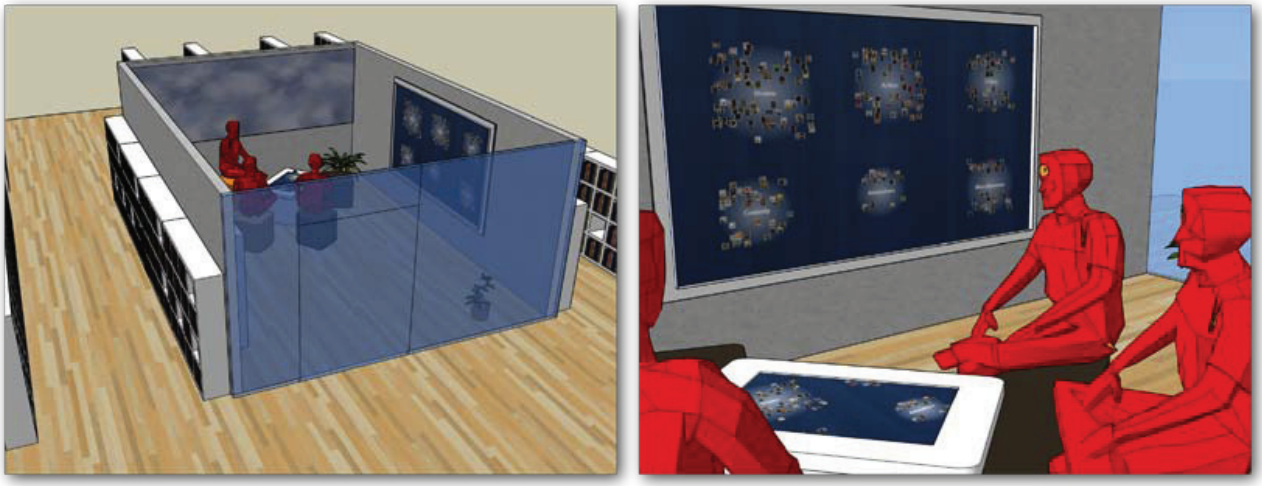


Figure 1 : Schematic illustration of our physical setting for the media library including a multi-touch tabletop display and a large high-resolution wall display.

users to interact with a system simultaneously in a natural and intuitive manner.

Related Work

The following section describes the TUI and multi-touch research concerned with co-located, collaborative query formulation that influenced our concept of the search tokens.

Ishii and Ullmer (1997) [3] explicitly suggested the application of TUIs in the context of information-management, -processing and -manipulation. The Navigational Blocks developed by Camarata et al. (2002) [5] is one example, how TUIs could be used for the interaction with databases. The system represents categories of a history application through the different faces of physical cubes. The Tangible Query Interfaces, introduced by Ullmer et al. (2003) [6], show how tangible objects can be used to represent parameters of a search query. They offer support for continuous parameters, view descriptions, Boolean 'OR' operations and dynamic binding.

Multi-touch technology promises support for co-located, collaborative information-seeking and therefore has been applied in several research projects. Cambiera, introduced by Isenberg and Fisher (2009) [8], is a system for information foraging activities on a multi-touch tabletop display. Through collaborative brushing and linking, it allows users to maintain common ground and awareness as they work, loosely coupled, on visual analytics tasks. TeamSearch from Morris et al. (2006) [7] shows co-located, collaborative search in digital photo collections by a group seated around an interactive tabletop display.

To benefit from the advantages of both, TUIs and multi-touch displays, we propose a combination of tangible on-screen controls on a multi-touch table, allowing multiple users to formulate queries and access information in a co-located setting simultaneously.

Designing Information-Seeking for Co-Located Collaboration

To present the design of our search tokens we will use a scenario where a team of students is analyzing motion picture data in a media library, equipped to support co-located, collaborative knowledge work.

The Physical Setting of the Scenario

Our design is based on a physical setting (see Figure 1) that allows to apply activities like discussing and brainstorming which normally would not be possible in the quiet environment of a library. The setting includes two main hardware devices: a multi-touch tabletop display which is used as control panel for the collaborative information-seeking and analyzing tasks and a large high-resolution display that can be used to examine detail information and as an interactive whiteboard.

The Data Set

We use the catalog data of a movie library to showcase

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

our design. The information objects that are provided by our system are enriched with data from multiple web services like the IMDb, Google maps or Wikipedia. In addition, the system even provides the motion-picture data per se and enables the users to watch excerpts or the whole movie right inside of the information-seeking system.

The Presentation of the Data

Figure 2 : The base representation of our data set: on an information landscape movie objects are clustered by their genres. Zooming onto a specific movie reveals detail information.

Although this is not the main contribution of our submission, to analyze the data set, the virtual movie objects have to be presented in a form that enables users to carry out different types of information-seeking strategies like searching, filtering, browsing and comparing. Our system presents the different data objects as virtual objects on a zoomable information landscape [9] (see Figure 2). In the base configuration of this visualization, all movie objects are placed around halos, representing different genres, as small rectangular shapes showing the poster of the movies as a visual recognition value. By zooming into the landscape, using pinching gestures on the multi-touch display, a semantic zoom of the objects is triggered [9]. The more display space a movie object covers, the more detail information and functionality becomes accessible to the users (see Figure 2).

The Search Tokens

Through this browsing-oriented exploration, users can access the data set via the genre metadata of the movies. Our search tokens (see Figure 3) are designed to perform the more sophisticated and analytical search tasks. In interplay with the tabletop display, each of these on-screen controls physically embodies a user-defined search term, enabling the users to interact collaboratively with the information system and allowing them to spatially organize multiple search terms on the table.

In our scenario a group of students is interested in movies with the comic character "Batman". As a team they intend to compare the distinct movies that were produced in different decades. They are seated around a multi-touch tabletop display, where the full content of the media library is presented. One student picks up a search token to place it on the table, where a visualization appears that is virtually connected to the physical search token (see Figure 4). Moving and turning the token will also move and turn this visualization. The visualization consists of three parts: a textbox for the filter keywords, a virtual on-screen keyboard to input the query and an indicator for the weight of the entered search term.

To initiate a search, one student enters the term: "batman". With each key press the size of all movie objects on the information landscape that match the search term in one of their metadata attributes (e.g. title, keywords or characters) increases, whereas the size of the objects that fall out of the matching subset decreases continuously (see Figure 4). This method of visualizing filters on a data set is inspired by the sensitivity-concept, introduced by Tweedy et al. (1994) [10]. Data objects that don't match a filter are not completely removed from the result set, but are brought to the background whereas the matching objects are brought to the users attention (in our case by increasing their size). After the whole search term

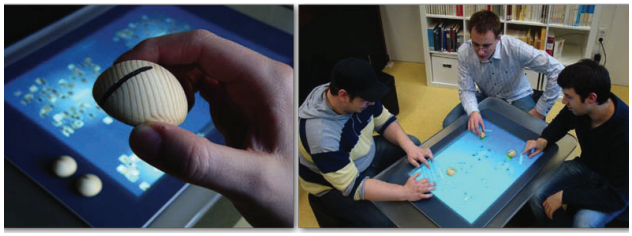


Figure 3 : Our search tokens are used by students working in a co-located, collaborative information-seeking situation.

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

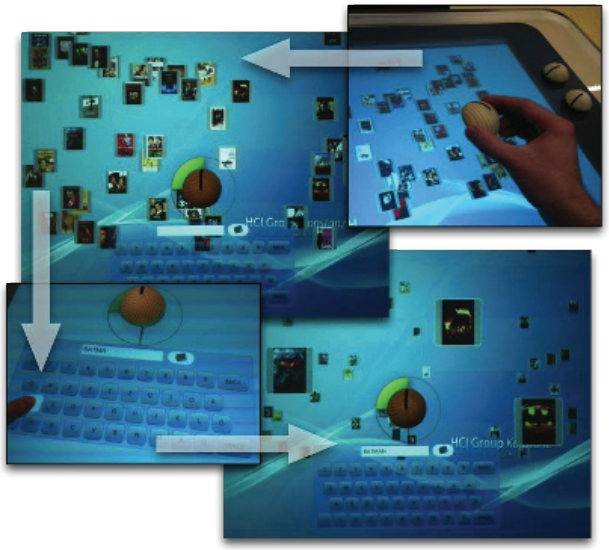


Figure 4 : A search token is used to define a filter term using the on-screen keyboard.

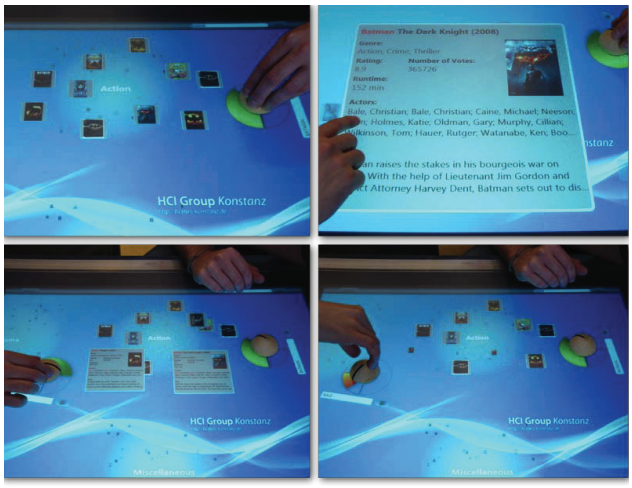


Figure 5 : Multiple search tokens are used to define complex filter queries. By turning a search token, the weight of the corresponding filter criterion is adjusted.

is entered, all movies related to "Batman" are visible to the group sitting around the display.

As next step, the students try to separate the two newest Batman-movies from the ones produced in the 90s and late 80s. Although they don't know the exact release dates of the movies, one student has an idea how to achieve this goal. He recognizes the poster of the latest Batman-movie "The Dark Knight" and zooms into its detail information by taping onto the movie object. The detail information reveals that "Christian Bale" has played the character "Batman" in this movie. The student zooms out to overview the whole data set and picks up another search token to define the search term "bale", resulting in all movies of "Christian Bale" being resized alongside all Batman-movies that already are presented larger. The two filter criterions "batman" and "bale" are combined by a Boolean 'AND', so that the two newest Batman-movies (with "Christian Bale" as "Batman") become even larger then the other Batman-movies (see Figure 5).

After a complete filter criterion is entered into the textbox, a user can hide the search token's on-screen keyboard by pressing a button in the top right of the keyboard. Now the token acts like a turning knob. Inspired by the volume knob of a radio or by a light dimmer, a search token can be turned to the right or left to increase or decrease the weight of its filter criterion. The value of the weight thereby can range from 0 to 4 (see Figure 5 and 6).

Turning the knob to the right will increase the weight of a filter criterion and thereby the size of all matching movie objects, marking them as especially important to the current search. Turning it to the left will decrease the size of the movie objects that match the filter. By turning the knob to the fare left, the weight of this filter criterion will decrease below 1, and thus shrink the matching objects to a size smaller than their default size. This way a user is able to formulate filter criterions that correspond to the Boolean 'NOT' and thus temporarily put certain objects that are not of interest to the background of the information landscape. The mathematical concept behind the weighting of the filter criterions is inspired by weighted Booleans [11]. A growing and shrinking colored indicator around the search token shows the

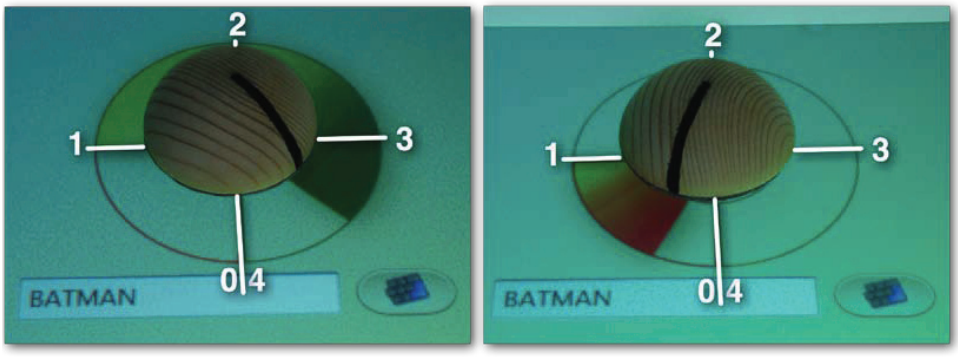


Figure 6 : Adjusting the weight of a filter in the range from 1 to 4 will let matching information objects pop out of the data set, adjusting the weight to a value between 1 and 0 will fade matching objects to the background.

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

weight of a search token and the corresponding filter criterion. It glows green when the weight is larger than 1 (the filter increases a matching object's size) and red when it is smaller than 1 (the filter decreases a matching object's size). The students use this mechanism to consecutively increase and decrease the size of the new and the older Batman-movies and thus visually separate them from each other.

To further improve the access of the detail information of specific movie objects, the students transfer several objects to the high-resolution wall display. On this display they have more screen space to compare multiple movies and write annotations for further use (see Figure 7).

Figure 7. The high-resolution wall display is used to access detail information, compare different information objects and write annotations.

Outlook and Conclusion

There are a lot of topics that still have to be improved in the context of the presented information-seeking system. Scalability to larger data sets is one of the most important problems we are currently working on. To advance our vision of a collaborative information-seeking system, we will also have to find new ways to evaluate our designs and measure the quality of collaboration.

We could already observe that through their physical appearance, our search tokens suit the needs for co-located, collaborative work much better than standard user interface components like text boxes and sliders. They provide better visibility to all involved users, even when they are standing in a certain distance or around a tabletop display. Also, the simultaneous interaction of a group of users is better supported, in comparison to standard WIMP user interfaces using keyboard and mouse interaction. In addition, the natural interaction provided through real-world tangibles and multi-touch technology can be more intuitive and pleasing to the user.

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

References

1. KUHLTHAU, C. C. (2004). *Seeking meaning: a process approach to library and information services*, 2nd Edition. Libraries Unlimited.
2. ELLIS, D. (1989). *A Behavioural Approach to Information Retrieval System Design*. Journal of Documentation, 45(3), pp. 171–212.
3. ISHII, H. & ULLMER, B. (1997). *Tangible Bits : Towards Seamless Interfaces between People, Bits and Atoms*, Proceedings of CHI'97, pp. 234–241.
4. HORNECKER, E.; MARSHALL, P.; DALTON, N.S.; ROGERS, Y. (2008). *Collaboration and interference: awareness with mice or touch input*, Proceedings CSCW '08.
5. CAMARATA, K.; YI-LUEN DO, E.; JOHNSON, B.R.; GROSS, M.D. (2002). *Navigational Blocks : Navigating Information Space with Tangible Media*, Proceedings IUI '02.
6. ULLMER, B.; ISHII, H.; JACOB, R.J.K. (2003). *Tangible Query Interfaces : physically constrained Tokens for manipulating Database Queries*, Proceedings INTERACT '03.
7. MORRIS, M.R.; PAEPCKE, A.; WINOGRAD, T. (2006). *TeamSearch : Comparing Techniques for Co-Present Collaborative Search of Digital Media*, IEEE Workshop on Horizontal Interactive Human-Computer Systems, January 2006, 97-104.
8. ISENBERG, P.; FISHER, D. (2009). *Collaborative Brushing and Linking for Co-located Visual Analytics of Document Collections*, Proceedings Eurographics'09.
9. HEILIG, M.; DEMARMELS, M.; REXHAUSEN, S.; HUBER, S.; RUNGE, O. (2009). *Search, Explore and Navigate*, Proceedings SIDER '09.
10. TWEEDIE, L.; SPENCE, B.; WILLIAMS, D.; BHOGAL, R. (1994). *The attribute explorer*, Proceedings CHI '94.
11. WALLER, W. G.; KRAFT, D. H. (1979). *A mathematical model for a weighted Boolean retrieval system*, Proceedings Information Processing and Management '79.

www.imdb.com
www.maps.google.com
www.wikipedia.org

This paper is the written part of a text + video submission to the SIDER '10 Conference. The full submission, including video file can be found on www.ingredientsingradients.com

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

Interaction Design in the Corporate World : Creating Tame, Captive Designers

Keyvan Minoukadeh

Chalmers University of Technology

Abstract

This paper looks at the role of interaction designers within a profit-oriented society through the works of designer Victor Papanek and physicist Jeff Schmidt. It covers changes in student attitudes since Papanek was writing, a time of radical student activism; the conflict between the priorities of business and the goal of design; and how our professional training programmes set us up to serve corporate interests rather than people's real needs.

Keywords

Design, professionalism, student activism, conformity, responsibility, ethics, corporate interests

Introduction

> *Nearly all of us are so victimized by the propaganda of the profit system that we are no longer able to think straight. [7, p. 333]*

Victor Papanek was a socially responsible, radical designer. He despised gimmicky, showy designs and derided advertising design, "probably the phoniest field in existence today", for "persuading people to buy things they don't need, with money they don't have, in order to impress others who don't care" [7, p. ix]. He saw the designer as someone with enormous responsibility, someone able to contribute to real social change.

Design for the Real World [7] is still relevant today primarily because of Papanek's concern with big picture issues. While many of the "idiocies" of design

contribute to a whole host of new idiocies as interaction designers. The purpose of this paper, however, is not to look at specific cases of good or bad design but rather to focus on a few aspects of the social environment affecting interaction design students today: the "market-oriented, profit-directed system" in which we live, and the role of schools and corporations in creating the "tame, captive designers" Papanek rails against in his book.

From Activism to Conformity

Papanek was writing and working during the 60s and 70s. This was a time of radical student activism and questioning of social structures. In 1969 Papanek

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

took part in a design conference organised by the Scandinavian Student Design Organisation where students asked him to create a flowchart highlighting the moral and social responsibility of the designer and the dominant structures that pose a challenge to truly responsible design. The student movement of the 60s and 70s, according to Professor Sharon Beder, changed the way many people viewed the world and "brought a new emphasis on equity and critical thought". These changes trickled into schools, stimulating lively debates and transforming traditional teaching methods. [2, p. 131]

But the new critical attitude amongst students wasn't welcomed by all. When businesses realised their new recruits where not going to toe the line as before, they decided to respond: "teachers were accused of being left-wing and „espousing an anti-business, or anti-industry stance'" and in 1986, two years after the second edition of Papanek's *Design for the Real World* went to print, the US Department of Education published *What Works: Research about Teaching and Learning*. The booklet "championed a return to the traditional paradigm as demanded by business groups." [2, p. 134]

Corporations, fearful of another backlash, have gone to great lengths to change their image. Corporate social responsibility, a voluntary effort by corporations to appear responsible, has emerged to convince not only consumers but also designers working for them that they do actually care about real world problems shift focus away from problems that might be more deserving of our attention.

Serving Corporate Needs

Amidst so much mass hysteria over ever newer models of portable devices (the iPhone, iPad, Nexus One), multi-touch tables, wearables, augmented reality, etc. it seems we've lost sight of people's real needs. That's not to say these developments are completely inconsequential, but how many of us consider who we really help by devoting so much of our time and energy toward these efforts? For Papanek, the designer's "social and moral judgement must be brought into play long before he begins to design, since he has to make a judgement, an a priori judgement at that, as to whether the products he is asked to design or redesign merit his attention at all. In other words, will his design be on the side of the social good or not."

So what can interaction design students take away from Papanek's experience, what can we do to become more socially and morally responsible designers? One starting point would be to consider why some of the technologies we've familiarised ourselves with are being pursued at all. In *Everyware: The dawning age of ubiquitous computing* [3], Adam Greenfield provides an answer:

"The logic of success in late capitalism is, of course, continuous growth. The trouble is that the major entertainment conglomerates and consumer electronics manufacturers have hit something of a wall these last few years... Putting with maximum bluntness an aspect of the ubiquitous computing scenario that is rarely attended to as closely as it ought to be: somebody has to make and sell all of the sensors and tags and chipsets and routers that together make up the *everyware* milieu, as well as the clothing, devices, and other artifacts incorporating them... So if businesses from Samsung to Intel to Philips to Sony have any say in the matter, they'll do whatever they can to facilitate the advent of truly ubiquitous computing, including funding think tanks, skunk works, academic journals, and conferences devoted to it, and otherwise heavily subsidizing basic research in the field.

If businesses are the main driving force behind these developments, it's clear that their main concern is not going to be people's real needs. The lawyer Joel Bakan explains: "The corporation's legally defined mandate is to pursue, relentlessly and without exception, its own self-interest, regardless of the often harmful consequences it might cause to others."[1]

Despite this, a recent report looking at corporate influence on science and technology found that businesses "have expanded the number and range of partnerships with universities" and "academic departments are increasingly orientating themselves to commercial needs rather than to broader public interest or curiosity-driven goals." [6]

Design Professionals: Exercising Ideological Discipline and Assignable Curiosity

In a chapter discussing the responsibility of the designer, Papanek highlights the problem with design by using a triangle to represent the design problem (see Figure 1).

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

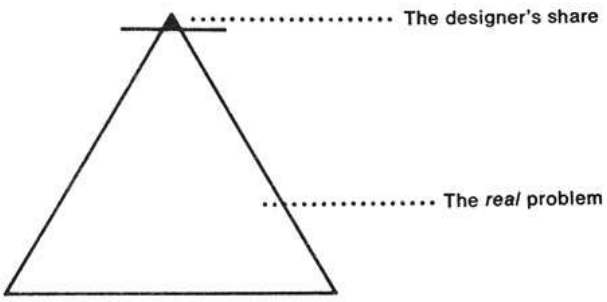


Figure 1: Diagram showing the designer's lack of engagement with real problems

Papanek writes "Industry and its captive designers have not addressed themselves to the huge bottom area of our diagrammatic triangle... Where has our spirit of students, like us, training to become professional designers so they could work with industry and solve real problems. So where is it all going wrong? Perhaps the answer lies in professional training itself.

If you look at descriptions of design programmes on university websites you will likely find a statement where the school says their training will set students up for "professional" work, or their courses will involve tutoring by "professional" designers. But what does it mean to be a professional? Why do we go through professional training and what's the special ingredient in our study programmes that transforms us into professionals ready to enter industry? This is a question that the physicist Jeff Schmidt has looked at in some detail in his excellent book *Disciplined Minds* [8]. Schmidt argues that instead of teaching us to solve real problems, the professional training we go through actually teaches us to "do [our] assigned work without questioning its goals" [8, p. 2].

According to Schmidt, the difference between professional and nonprofessional work comes down to what you are asked to do on the job. If you can write a how-to manual for your job then it's nonprofessional work. But in some jobs that's not possible: "Here a manual would not be able to say much more than „create': Write a news story; draft a policy; design a product", these are the jobs that require professionals. But unlike nonprofessionals who can be told exactly what to do in the job, professionals need to understand and internalise the interests of their employers. So the role of professional training is primarily to instill a certain ideology: to create "ideologically disciplined" professionals who won't seriously challenge the status quo. Schmidt explains:

Work is an inherently political activity, but professionals and nonprofessionals advance their employers' interests in different ways. Professionals sell to their employers more than their ordinary labor power, their ability to carry out instructions. They also sell their ideological labor power, their ability to extend those instructions to new situations. It is this sale that distinguishes them from nonprofessionals, who sell only their ordinary labor power. Those in charge can trust professionals to make

Professionals ... are required to be creative in their work—but within strict political limits. Their creativity must serve their employers' interests, which often are not the same as their own interests, the interests of clients or customers or the public interest...

Just as professionals engage in playpen creativity, innovating within the safe confines of an assigned ideology, so too they engage in playpen critical thinking... Professionals generally avoid the risk inherent in real critical thinking and cannot properly be called critical thinkers. They are simply ideologically disciplined thinkers. Real critical thinking means uncovering and questioning social, political and moral assumptions; applying and refining a personally developed worldview; and calling for action that advances a personally created agenda. An approach that backs away from any of these three components lacks the critical spirit.

But to engage in real critical thinking and continue to keep apace with the study programme is not easy. Those students who spend their time thinking about the wider issues surrounding their work end up at a disadvantage "not only because their attention [is] divided, but also because their beliefs about big-picture issues such as justice and social impact [cause] them to stop, think and question". In the competitive atmosphere of university or the workplace, there is no time to consider such issues and those who focus narrowly on their assigned tasks end up at an advantage over those who don't. Over time, a student's natural curiosity develops into what Schmidt calls "assignable curiosity": the ability to direct all effort to problems and tasks assigned by others.

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

If we emerge from our design training as ideologically disciplined thinkers, happy to work only on problems businesses find profitable, we shouldn't be surprised to find that the bottom area of Papanek's triangle continues to remain neglected.

The Future

Interaction design is still a fairly young field and as students we can still influence how it develops. But the consequences of going with the flow are apparent in other fields. Dmytri Kleiner and Brian Wyrick have written about the business forces which advanced certain technologies at the expense of others in the emergence of Web 2.0 [4]:

...because Web 2.0 is funded by Capitalism 2006, Usenet is mostly forgotten. While everybody uses Digg and Flickr, and YouTube is worth a billion dollars, PeerCast, an innovative peer-to-peer live video streaming network that has been in existence for several years longer than YouTube, is virtually unknown...

Nicholas Knouf, a PhD student at Cornell University, sums up Papanek's position: in contrast to many who feel today's design problems can be solved by staying within the capitalist framework, Papanek was "critiquing the very nature of capitalism itself" [5]. Knouf writes:

With market pressures, relationships with totalitarian regimes, and a legally-bound slave relationship to shareholders, how can we expect corporations to be able to use design as part of the process of social emancipation? And what would be the alternatives? This act of thinking an alternative requires a process of reflection that would focus on ... the designer's role within existing structures of power...

To aid this process of reflection, in addition to reading Papanek's *Design for the Real World* [7], design students who'd like to better understand professional training and learn how to survive with their values intact could learn a lot from reading Jeff Schmidt's Disciplined Minds [8].

The aim of this paper has been to highlight the conflict between corporate aims and real world needs in the hope that we can begin to challenge the corporate propaganda around us. We cannot rely on our professional training programmes to do this for us or to encourage us to act. Despite our study of lateral thinking and problem solving techniques, we appear unable or unwilling to see the elephant in the room. If we did, perhaps we'd start to use some of our methods and design tricks to fundamentally transform these dominant selfish institutions rather than collaborating with them as we do today. And then perhaps we'd find our work becoming meaningful again.

To end this paper, I think Papanek's rallying call bears repeating today: "Design, if it is to be ecologically responsible and socially responsive, must be revolutionary and radical in the truest sense." [7, p. 346]

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.

References

1. BAKAN, J. (2005). *The Corporation : The Pathological Pursuit of Profit and Power,* Constable, http://www.thecorporation.com/index.cfm?page_id=47
2. BEDER, S. (2009). *This Little Kiddy Went to Market : The Corporate Capture of Childhood*, London, Pluto Press, http://works.bepress.com/sbeder/28/
3. GREENFIELD, A. (2006). *Everyware: The dawning age of ubiquitous computing*, New Riders, http://speedbird.wordpress.com/my-book-everyware-the-dawning-age-of-ubiquitous-computing/
4. KLEINER, D. & WYRICK, B. (2007) *InfoEnclosure 2.0*, Mute Magazine, http://www.metamute.org/en/InfoEnclosure-2.0
5. KNOUF, N. (2009). *HCI for the real world*, in Proceedings of alt.chi 2009, Boston, MA, http://zeitkunst.org/publications/HCI-real-world
6. LANGLEY, C. AND PARKINSON, S. (2009). *Science and the corporate agenda : The detrimental effects of commercial influence on science and technology*, Folkestone, UK: Scientists for Global Responsibility, http://www.sgr.org.uk/SciencePolicy/CorporateInfluence.html
7. PAPANEK, V. (1984). *Design for the Real World*, (2nd. ed.), London, Thames and Hudson, http://www.thamesandhudson.com/9780500273586.html
8. SCHMIDT, J. (2001) *Disciplined minds : A critical look at salaried and the soul-battering system that shapes their lives*, Lanham: Rowman & Littlefield Publishers, Inc. http://disciplinedminds.com

This paper is the written part of a text + video submission to the SIDER '10 Conference. The full submission, including video file can be found on www.ingredientsingradients.com

In : MOUSSETTE, C. ; JAVOR, L. AND ANDERSSON, N. (Eds.)
'Ingredients in Gradients', Proceedings of SIDER '10. 24-26 March 2010, Umeå Institute of Design, Umeå University, Sweden.