

Reflections of Gender, Reflections on Gender: Designing Ubiquitous Computing Technologies

Johanna Brewer

Donald Bren School of Information
and Computer Sciences,
University of California, Irvine,
Irvine, CA 92697-3425, USA
johannab@ics.uci.edu

Arianna Bassoli

Media and Communications,
The London School of Economics
and Political Science,
London, UK WC2A 2AE
a.bassoli@lse.ac.uk

ABSTRACT

Tangible and proximity based interfaces open up new avenues for interaction, but they also raise new questions and pose different problems with respect to the gendering of these technologies. In this paper we discuss the ways in which we might begin to uncover our cultural assumptions about gender. Using two examples of recent design cases, we explore the ways in which gender can constitute an important factor for emerging types of interfaces.

Keywords: Gender, tangible interfaces, proximity based technologies, embodied interaction.

INTRODUCTION

As computation moves off the desktop and into our everyday lives the gendered experience and gendering of technologies becomes an even more relevant topic. No longer can the questions of gender be put only to personal computers and the software and webpages designed for them, but now we are also faced with a wider variety of interactive artifacts to consider. Mobile phones, PDAs, MP3 players and the like proliferate, but what are the ramifications of all this computation running wild?

The question of gender and technological artifacts is not a new one and so before we focus explicitly on computational devices, let us consider the introduction of many modern conveniences into daily life. The telephone, for example, was originally marketed as a business tool, but over time, and with its move into the domestic sphere, it became a general communication technology. As phones and their use moved away from austere utility we began to see imagery of women chatting away while painting their nails—gabbing with their girlfriends.

Although not originally designed or marketed towards women, the phone was adopted and its use adapted by many females. Eventually, the design of the phone itself began to reflect, or, at least in the extreme case of the iconic “Hot Lips” telephone from Telemania (see Fig. 1), attempted to reflect, a distinctly “femi-



Figure 1: The Hot Lips Telephone

nine” aesthetic.

There are, of course, slightly more subtle ways in which objects reflect concepts of gender. van Oost, in her study of the evolution of shavers, points to the idea of a “gender script,” an extension of Akrich’s more general concept of a script, which she explains as “the representations an artifact’s designers have or construct of gender relations and gender identities—representations they then incribe into the materiality of that artifact” [5].

In her work van Oost describes the gender scripts inscribed into the Philips electric shavers. At first the shavers were designed with men in mind, but with the changing social climate, women began revealing more of their bodies and becoming more concerned about removing hair from what was newly unveiled. Philips first shaver for women included practical changes to accommodate the differences in women’s skin and hair, but beyond this they were similar in design to the men’s shavers. Only later on did Philips

mount an effort to produce shavers which hid the aspects of “technology” and “shaving” from the female user. The woman’s shaver was marketed as a cosmetic tool while the men’s version was presented as an electrical appliance.

For the shavers gender clearly plays a significant enough role to explicitly motivate different designs for the sexes, and after the initial division, the Ladyshave was inscribed with a gender script reflecting the current cultural norms. However, we are interested in further examining the cases in which gender scripts arise implicitly. Often designers end up unconsciously inscribing their technologies with gender scripts; the influence of culture runs deeply enough so that it is taken as natural fact. By the same token, it is possible that some users never actively register the gendering of a technology they are using. But as those who design and study technology, we must step outside our frame of reference and ask how do we address the often unwitting gender scripts which shape the technologies we make?

DEFAMILIARIZATION: STARTING A DIALOGUE

One way to start is by uncovering our own assumptions. In fact, Bell et al. state that “the challenge for researchers and designers is to see beyond the naturalizing of devices and experiences to their cultural roots” [2]. In order to do this they propose the technique of defamiliarization; it is literary device which is used to question everyday assumptions, specifically, in the context of their paper, assumptions about the objects in our lives which we take for granted. In their work they tell stories about homes on three different continents, stories which, rather than attempting to make definitive claims about the sites which are studied, seek to provide new insights and view points on the technologies in the homes, and by extension, the design process of future technologies. This method, which is more poetic than scientific, seeks to help designers free themselves of the taken-for-granted assumptions which they bring to the design process; it is meant to help us see things with fresh eyes.

This technique has rich potential for exposing the gender scripts commonly inscribed into the technologies that fill our lives. By talking about and considering devices such as mobile phones, MP3 players, or other new interfaces as if they were foreign objects, and by trying to see how they figure in the world around us, we can begin to appreciate some of the strangeness in these everyday technologies. Hot new handheld devices are often labeled as “sexy”. Though endowing objects with this quality raises interesting questions in itself, it is not a new phenomenon, and so we might go further and ask how is it that some technologies, such as the iPod, are deemed sexy by men and women, whereas others are only find resonance with one gender?

While asking such questions can lead to interesting

insights we must move beyond inquiry and begin to take action. Bell et al. point towards the technique of creating designs which don’t cater to the current needs of users, but rather, designs which will help users to alter those needs in light of their newly uncovered assumptions.

REFLECTIVE DESIGN: SHAKING THINGS UP

This process of creating these sorts of disruptive technologies is given a more thorough treatment by Sengers et al. in their work on reflective design [4]. Whereas Bell et al. focus more on the ways in which language, story telling and discussion can help us to uncover our cultural assumptions, reflective design centers around the ways that technology itself can play this role.

Sengers et al. assert that critical reflection on the role that technology plays in our lives should not be limited to the design phase alone, but rather the technologies themselves should engender reflective practices in designers and users alike. Without this reflection certain values and norms might be adopted by users unwittingly. The underline this point by stating that “reflection is not a purely cognitive activity, but is folded into all our ways of seeing and experiencing the world.” In other words, reflection on our cultural assumptions, on the gendering of technologies, is a process which the technologies themselves have the power to support or obscure. Sometimes, as Sengers et al. suggest, the only way to uncover certain values which we take as natural fact is to experience them in profoundly new ways. However, in other cases, we do not necessarily want to create a radical shift, but to encourage, or even only to be mindful, of the way in which gender is playing a role in the technologies we build.

DESIGN STUDIES: LESSONS LEARNED

Often when working on designing technologies in which gender does not ostensibly play a large role, it is easy to forget about it all together, especially because within the Human-Computer Interaction community it can be a somewhat taboo topic. In this section we would like to discuss two design experiences which we have had, and to explore the somewhat surprising, but nonetheless significant, role that gender played.

The projects we introduce here constitute two different examples of tangible, social technologies, implemented to support collaboration and communication between people in relative proximity with one another. Designed for a general audience, they have not been targeted to a specific gender, yet the user studies conducted to evaluate the technologies showed interesting differences in the ways in which men and women interacted with the interfaces. Although only the results of two design processes, we have strong examples of the appropriation of new technologies

following a creative, autonomous and unpredictable course.

tunA

tunA is a software application running on WiFi-enabled PDAs which allows people to create a profile and share music with others in range [1]. With this technology people can tune in to what others are listening to in a synchronous way, and they can send messages as well. tunA has been mainly targeted to young people who usually consume music on the move. The user study which was conducted in Dublin with six students, four males and two females, showed, among other things, that gender affected the way in which people used the application. Men felt more picky about choosing whom to connect to; they would not, for instance, listen to songs that did not fit their music interests. On the other hand, women seemed more flexible and open about listening to others' songs. Surprisingly, men demonstrated a higher level of interest in the possibility to send messages to each other about music, while women seemed more concerned about issues of privacy and security. Women expressed that they wanted to make sure that personal information was not made visible to strangers in proximity, and they suggested adding a feature for setting their status to busy, in order to not be bothered by others. Men seemed concerned as well about sharing information with strangers, but they seemed more contradictory, as they felt that being able to see the people they interact with could lower the level of risk. Finally, men seemed more comfortable with playing and experimenting with the technology; at the same time, they were the ones expressing concern about using PDAs, suggesting that having a less delicate device would make them feel even more comfortable in using the application.

Despite the fact that tunA user study involved a limited number of participants, these results show that the same technology can be interpreted and used differently depending on gender. Mobile proximity-based technologies present new opportunities and raise new concerns beyond those seen with desktop-bound interfaces. People often misrepresent their gender in online interactions, but as pointed to by some of the questions raised in the study, there is no longer such a high degree of anonymity in proximity-based technologies. Furthermore, the way in which men and women view this diminished level of ambiguity, as a danger or as an opportunity, should be considered in further iterations of the design process. From the form factor of the device, to the nature of the social interactions it gives rise to, gender is a significant, yet subtle factor.

nimio

nimio is a system comprised of a series of physical objects designed as individual playthings, but wirelessly networked via RF to act as both input and output devices for a collective visualization of

distributed activity [3]. These hand-held, translucent silicone toys have embedded sensors (for input) and 3 colors of LEDs (for output) which allow them to be reactive to both sound and touch. Action around one of the nimios will cause the others to glow in different patterns and colors. The interaction design is deliberately open-ended, in order to allow the emergence of distinctive patterns of collaborative engagement in real groups.

We designed and built nimio for a group of ten people, only three of which are men, who manage a multi-disciplinary information technology research institute. They reside in two spacious suites across the hall from each other and so, while they are in relative proximity, they are often out of ear-shot or sight of one another.

In designing nimio we sought not only to create a device which would provide peripheral awareness of group action for the users, but also to produce a physical object which matched the high-tech aesthetic of the institute. We worked closely with group of users during the design phase, seeking their feedback. Our initial sketches of the toys were met mostly with enthusiasm, however, one of the male users cautioned that he didn't want anything to "cute" showing up on his desk. We began to realize that what to us as designers thought was "inviting" he found to be a sign of weakness.

Eventually we settled on the use of high-grade translucent white silicone for the bodies of the toys, and glowing LEDs for output. This was an attempt to present a modern look while remaining friendly to the touch. However, these choices were not without problems. Although in other venues of presentation for our design we typically do not emphasize this point given its taboo nature, the nimios are made out of a material also commonly used for sex toys. A surprising, or perhaps not so surprising, number of people have felt the need to point this out to us. Initially, we had also planned to use vibration as a source of feedback, but given the overwhelming amount of slightly off-color comments which we received from our colleagues about this, we decided perhaps it was not the wisest choice for a workplace interface. Navigating through this mine field of sexual connotation during the design process was no small feat.

In the end we produced 12 toys in total, of which there are four different shapes: pyramid, cube, dome and cylinder. Additionally, each shape features a colored base: red, green, or blue. The shapes and colors serve to delineate subgroups which have stronger interactional ties between them. When the design was first deployed for use, two of the women from a group of three who we see as the most social "clique" in the office immediately snatched up the pyramids. The two women who were present during the deployment chose the red and blue pyramids because they found

them most appealing. They decided to give their absent colleague the green one, but to tell her that the nimios had been assigned, that they were not allowed to choose.

The dome-shaped nimio has also received some special attention. Each shape affords a different kind of interaction; people hold them and move them in different ways. After we deployed them we noted that often people cannot help but squeeze the domes with a somewhat naughty glow in their eyes. Many jokes have been about their resemblance to breasts or breast-implants. This was not something that crossed our minds during the early design phase, but once we had created the first toy in that shape, we could not help but laugh ourselves. Although the shape itself is rather benign, the fact that it is made out of a slightly rubbery material seems to incite certain behaviours. It is perhaps not too much of a coincidence that two of the three male users chose dome-shaped nimios.

We perform regular maintenance on the toys, changing their batteries, attending to loose connections in the hardware, and often times the women who had taken the pyramids refer to the toys using male pronouns; "I think I broke him," "He seems to have stopped blinking," etc. So far they are notably the only ones in the office who have so anthropomorphized the toys and developed a bit of affection for them.

Contrastingly, when visiting the office of the male user who initially expressed concern about the "cuteness" of our design, we often notice that his nimio has been relegated to a far corner of his desk. However, whenever we begin opening the toys for maintenance he usually becomes more interested and comes over to have a look and ask a few questions.

It is interesting, then, to see that even in the design of an interface for collaboration gender plays a significant role. While the toys were intended to help provide awareness for the users who were collaborating with each other, and to be swapped around as necessary, the women who were the closest friends chose similarly shaped toys in order to reinforce and demonstrate that bond. Perhaps by chance or unawares two of the men chose the most sexually-shaped toys. These anecdotal observations made it clear to us that even in the workplace, certain connotations and assumptions that users have are not checked at the door. Our aim is not by any means to erase or avoid these, but to be aware of them and to see if they have a long-term effect, negative or positive, on the dynamics of the system use.

CONCLUSIONS

The design cases which we presented are not intended to be universal or final, but instead to open our eyes to the ways in which gender can play an important role in the places which we might consider least likely. With these emerging types of interfaces it is doubly important to be cognizant of gender, both

on the level of the physical properties of the technology itself and with respect to the interactions it facilitates. While these devices are intended for use by men and women alike, the ramifications of the designers own cultural assumptions must be accounted for. We do not mean to say that we should attempt to design for the space in which gender has no influence, or moreover, we wish to point out that this space quite possibly does not exist. Rather, we wish to emphasize that, like it or not, gender will manage to play a part in interactive technologies when we least expect it. As the work of Bell, Senger, et al. suggests, we must be vigilant in bringing unconscious assumptions to the fore. Not all designs need challenge these assumptions head on, but it would be remiss, and likely damaging, to presume that they do not exist.

ACKNOWLEDGMENTS

This work was supported in part by the National Science Foundation under award 0133749.

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