

Discovering Enhanced Cultural Probes through a Rapid Ethnographic Evaluation of Emotional Design

Tsen-Yao, Chang, Art and Design Research Centre, Sheffield Hallam University – UK

Mike Press, Gray's School of Art, The Robert Gordon University, Aberdeen – UK

Simon Polovina, School of Computing and Management Sciences, Sheffield Hallam University – UK

Abstract

'Emotion' is a part of user experience that is known and accepted among the human-computer interaction (HCI) community. Indeed, as Norman states, "*Beauty and brains, pleasure and usability go hand-in-hand in good design*". Therefore not only is the utility and usability of Web designs important, but also their fun, pleasure, and visual aesthetics.

The rapid ethnographical approach provides a well-known, efficient collection of field methods, as well as providing a reliable understanding of user experience and a reduction in time pressures that is associated with other types of research. We thus explored a novel technique employing a hybrid context of cultural probes with a rapid ethnographical method for the evaluation of emotional design.

The results of this approach threw up a surprisingly rich amount of user data; indeed so much so that we are still in the early process of analysing it. The results highlight that the various artefacts of methodological thinking involved in user emotional interaction to Graphic User Interface (GUI) of web design, indicates the richness of considering cultural probes in the newly emerging field of 'Emotional design'.

Keywords: emotional design, visual representation, Human-Computer Interaction (HCI), Graphic User Interface (GUI), rapid ethnographic approach, cultural probes (CP).

Background

A major technological change in the twenty-first century is "*the merger of the infrastructures of communication and computer* (Norman, 1998:59)". The merger has many influences on daily life, such as the web communication. The web communication is vision based, as people see through the screen and what they interact with is taken directly from it. In terms of web communication, GUI is a critical device to help users manipulate their browsing experiences. In relation to GUI, the improvement of visual representation is to change the relationship between users and computer. Therefore, investigative techniques are becoming increasingly important to help uncover information from user emotional and aesthetic responses when having the interaction with the GUI.

The primary task of GUI design is to create a strong, consistent visual hierarchy with the major blocks of types and images which regularly occur in pages. In order for it to provide affective visual communication for the GUI, these visible consequences are certain to stimulate their vision to lift their emotional interaction. However, when the technical usability of GUI has been apotheosised through utilitarianism and functionalism, the emotional narratives of GUI have been considered to be the concern of HCI field.

Under such considerations, the initial impetus for this paper arose from a methodological interest of exploring the users' emotional interaction with the visual representation of the GUI. In order to efficiently gain intensive feedback from investigating user emotional interaction, a rapid ethnographic methodology will be shaped into this study. For the research, experimental methods will be employed using cultural probes (CP) (developed by Gaver and Dunne). To solve this problem, this paper will be involved with a hybrid contextual method in order to develop a concrete research case for illustrating the process of the manipulation of the rapid ethnographic approach for the evaluation of emotional design in terms of web design and user experience. Finally, the conclusion will settle on a methodology, located from the finding of this research using the more inspirational data found for further empirical investigation, indicating where an original contribution can be made.

Research questions

Concerning to seek a methodological approach in order to discover the intensive meanings behind the users activities with the visual representation of GUI. Therefore, the following is the main research question that dominates this paper: *How to develop adaptive research strategy to probe and observe user experience with GUI?*

A rapid ethnography study in applied emotional interaction analysis

The study involved obtaining the data for user emotional interaction with the visual representation of GUI, so as to be involved with watching and listening to the users during their interaction. Ethnographic research is good at developing “*an understanding of the culture of the group and people's behaviour within the context of that culture*” (Bryman, 2001: 291). However, the traditional ethnography “*is immersed in a social setting for a long*

time-frequently years (Bryman, 2001: 279)”. Contrary to the fast-pace changes of GUI development, it doesn’t allow researchers to spend months or even weeks in the field collecting data. Therefore, when one approach is running into time pressures, it has been called ‘Rapid Ethnography’, which is “*intended to provide a reasonable understanding of users and their activities given significant time pressures and limited time in the field*” (Millen, 2003:280).

Hence, according to the need for efficiency, credibility and validity, a cross-contextual research tool has been adapted in relation to the variation of user emotional interactions from the participants.

The overview of a rapid ethnographic method with cultural probes

Ethnography acknowledges that it is possible to reduce the amount of time needed by a more structured approach (Preece *et al.* 2002). Through pilot studies, we were able to refine the previous questions and make a concrete research map based on the knowledge gained during the studies. However, we found that it might have a bias if it is taken from a direct observation for a participant’s reaction; and a number of questionnaires have showed that they are more vaporous in attaining the truth (Nielsen, 2004). Therefore, we apply a rapid ethnographic strategy with an information gathering package- the CP which is contained in the study of Gaver *et al.* (1999). Initially, cultural probes were used as an inspiration for design rather than for information collection but in 2002, the probes are currently being used for information collecting, i.e. Hemmings *et al.* (2002). The probes could be postcards, a camera, questionnaires, a diary book, maps to be handed out to the participants/users- as an open way to get involved in the participants ongoing activities and ideas and to gain a greater understanding, instead of using direct observations and interviews. Therefore, we have developed an experimental method with the CP, in terms of rapid ethnography, for researching user emotional interaction via the visual representation of the GUI of a web site.

Define Method- *a hybrid contextual research strategy*

Beginning with the evaluation strategy, here is a list of five methods employed in our research of probe design activities. The techniques applied will be defined as the following:

- (□) Think-aloud interviewing technique
- (□) Self-completion Diary study
- (□) Mood board
- (□) Creative drawing
- (□) Personal Interview

(□) *Think-aloud interviewing technique*

The ‘Think-aloud technique’ is a convenient and cheap way of gaining qualitative feedbacks during the participants entries. Through the technique, the respondents could freely talk about their thoughts and feelings about the visual interface. By their verbal interpretation of the visual interface, the content of the video captured both visual and audio data simultaneously. Therefore, the record contained the respondents emotional responses and their criticism to the visual representation of each homepage. This way will contribute visual and audio contexts for future analysis.

Self-completion Diary study-

To capture the participants emotional experience, a self-completion diary is a useful tool to employ. Diaries are able to “*provide a record of what users did, when they did it, and what they thought about the technology* (Preece et al. 2002:377)”. So this tool has been used for the usability evaluations of the web design. Diaries may be an open-end format, highly structured or semi-structured format, which is according to the different research aims. Figure 1 shows the diary booklet we designed for this study and a part of contents.

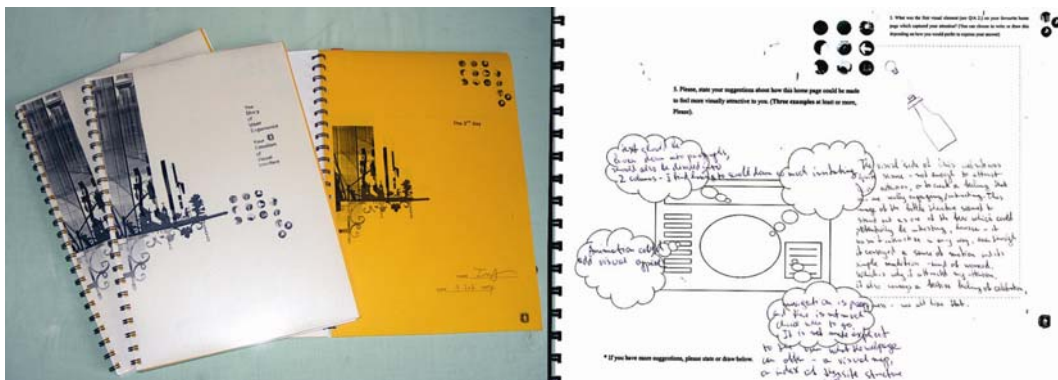


Figure 1, the diary of user experience- the subtitle is ‘your emotion of visual interface’.

(□) *Mood board* –

A ‘Mood board’ is collage exercise that uses the static representation of images, type treatments, colour palettes and other graphic elements to form an overall style for site look and feel (Pop Art, inc., 2003). In this exercise, the results don’t consider the style of layout. Instead, the mood board is completed by the participants emotional responses and by their personal life experiences which include their memory, preference, and personality, all represented through collages, see Figure 2.



Example A



Example B

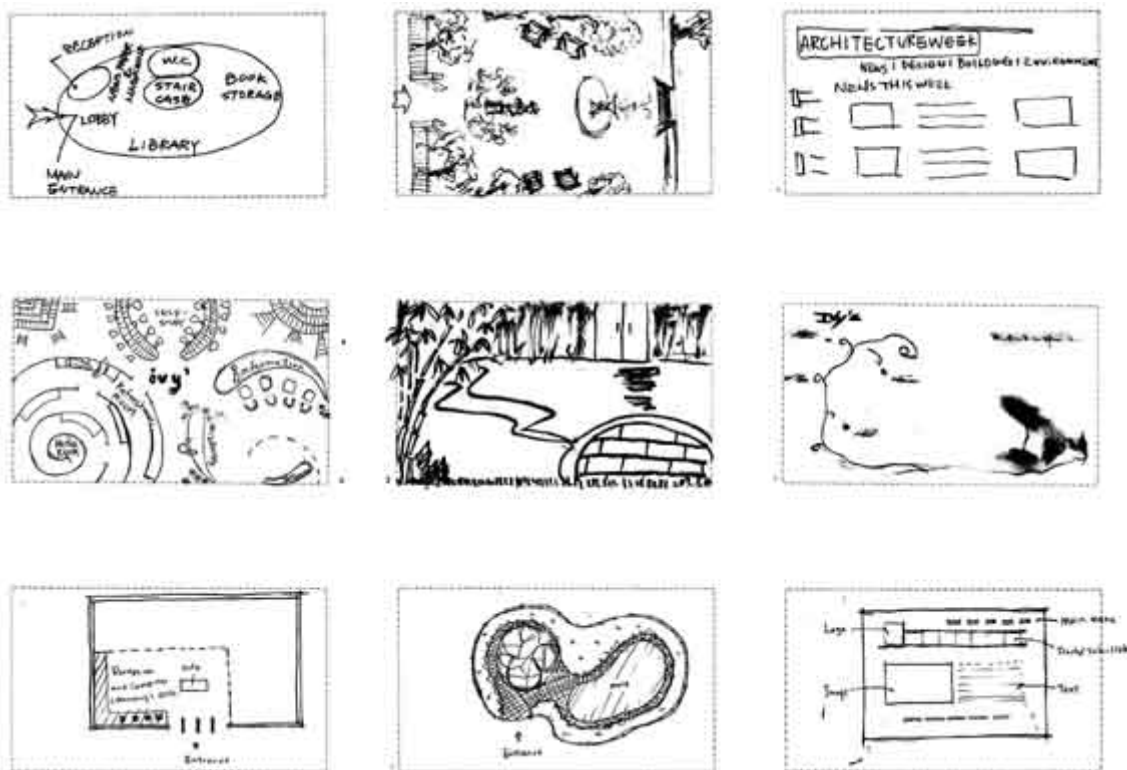


Example C

Figure 2, shows three different participants completed Mood board taken from the week long

(□) *Creative drawing-*

With different cultural backgrounds, people always respond in distinct ways to the interface of machine given 'personalities' by different emotional interaction styles. For the distinct responses, drawing is a visible way to show personality and cognitive psychology. According to Michael Goatman (2004), sketched landscape layouts may release the relationship between the graphic exercise, personality types and interface methods, which indicates that a generic relationship may be transferable to situations where interface methods can be involved in revealing the personality. Therefore, we have tried to organise a revised exercise for the participants so that they can draw their thoughts in relation to regarding their imagination of a garden layout (more emotive content), a library landscape layout (more rational content), and a personal home page (more personal content). Due to their different impressions, they can draw them from their life experiences. Therefore, through their sketches and a classification of personality (see figure 3); we will have an opportunity to see their work and gain a basic understanding of each participant's life experience.



Upper row: The category of 'Classical Symmetry', Middle row: The category of 'Mystery', Lower row: The category of 'Single from Amorphic'

Figure 3, a series of Creative drawings of the garden, the library, and the personal home page. (The categories referred to Coatman, 2004).

(□) *Personal Interview (before and after experiments)*

Before starting the diary survey, it is necessary to conduct an interview with the participants, so that we can explain how to proceed with the experiments. It will be like an instruction to make sure that participants know how to work through the experiments. When the participants finish their diaries, there will be a final interview that will serve as a check for the researcher to inspect the completeness of the recorded entries. The final interview will be associated with the collection of more sensitive data that has not been captured by the diary. As Corti (1993:2) states “*Often retrospective estimates of the behaviour occurring over the diary period are collected at the final interview*”. Therefore, the final interview assisted the diary study to help gain an understanding behind the respondent’s statements of what they did during the experiment.

The process

In the study, a convenient sampling selection was chosen. There are 10 volunteers for this survey. Each one was given an A4 diary booklet that would last a week. The design of the diary content took into account the participants emotional engagement and considered issues of usability for the respondents.

The content of the diary booklet was divided into three sections- Firstly, it contained instructions that explained how to use the diary. Secondly, it contained a personality test, which asked the user some basic personal details and three further questions relating to creative drawing (refer to (□) Creative drawing). Thirdly, it contained the main section, which would take the respondents a week to complete.

Starting with the main diary, they respondents needed to read through the instrument, where they would be given five key words that they needed to type separately into the same search engine, spending at least 15 minutes browsing different web pages during each daily session, concentrating mainly on the visual interfaces of the pages, rather than the contents. On the first day, we applied the think-aloud technique to interview the respondents and listen to their thoughts and feelings. Meanwhile, we also filmed the process with of the camcorder focused on the computer screen. For the remaining diaries, we would leave them behind and wait for them to return the rich data in just over a week. After their diaries were finishing, we would needed to collect them in person and conduct the final interview with each participant.

The main theme of the diary survey is centered on the topic of how the visual elements capture their attention. Therefore, the participants were to be asked questions around this theme. One of question concerned the construction of a mood board, based on that day's web search by selecting some images from magazines or newspapers. Each respondent had the same questions everyday; the question types included the close and open-ended format questions, creative drawing and mood board, see figure 4. Through the experiments, we can see the releasing of different cultural probes and intensive emotional reflections from the interaction between the users and their chosen web sites. Figure 5 shows three examples taken from our participants, giving different data for their emotional responses, which were output from their diaries. Through the figure, we will analyse the relationship of each user response.



Figure 4, a rapid ethnographic strategy with the CP is like a data mechanism which can explicate different visual materials to present user emotional responses.

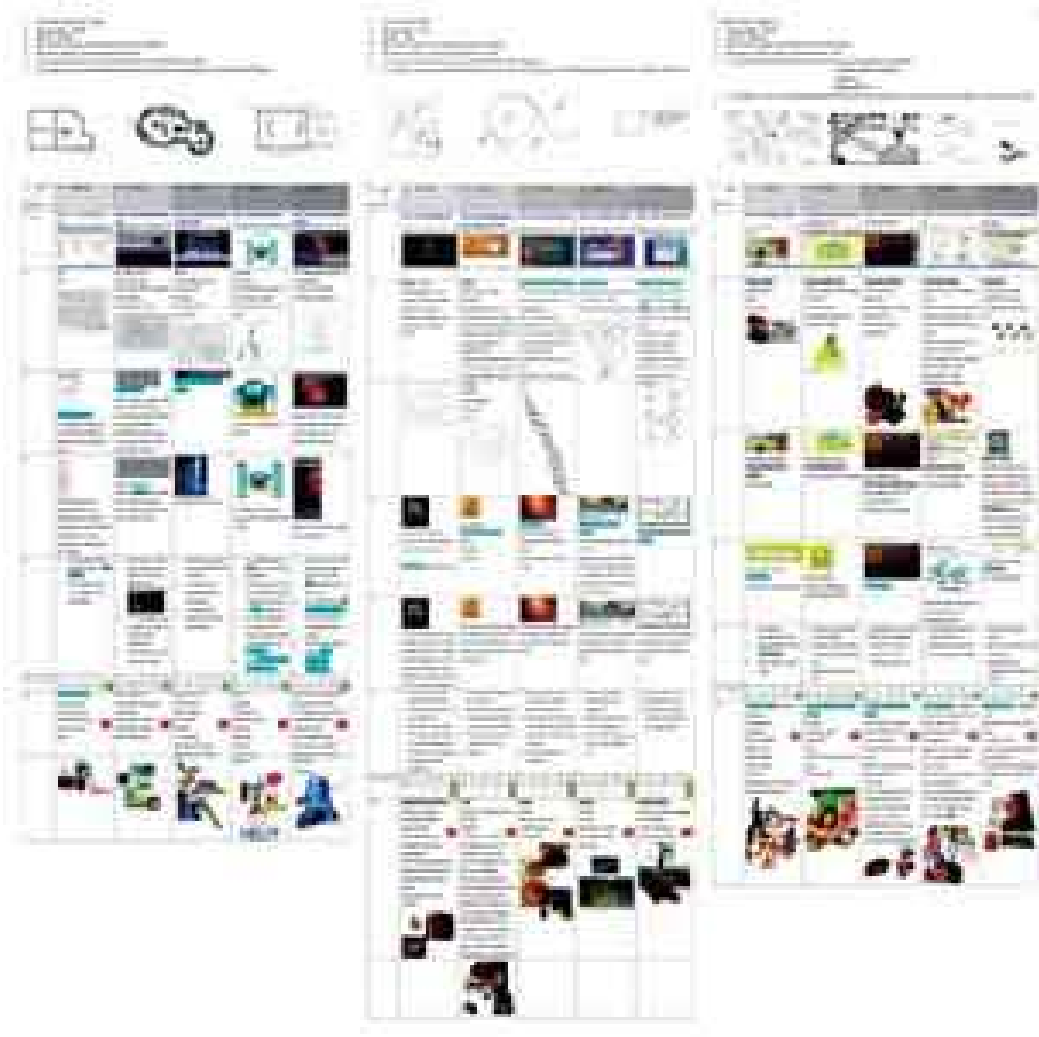


Figure 5, shows three examples taken from our participants, giving different data for their emotional responses, which were output from their diaries.

Conclusions

From the overall processes, we find that the user-participant completed the diary with the thoughts and feelings through drawing, writing, collage, and filling. Therefore, the finished diary is a methodological package containing different visual responses accomplished by the participant's emotional responses. The concern is to let users speak from their own experience, to document their own thoughts and feelings and to draw out the visual responses taken from their emotional responses.

In summary, we have identified that the combination of rapid ethnographies with cultural probes enables

- (i) the remarkably rich capture of aesthetic and conceptual data

- (ii) a rich evaluation environment by which users can easily explicate their use of visual materials to present their emotional responses in terms of the visual representation of the GUI
- (iii) a mechanism for unearthing values that users want reflected in future technologies and design

The results of this approach threw up a surprisingly rich amount of user data; indeed so much so that we are still in the early process of analysing it. This approach thus has implications for those methodologies appropriate to the newly emerging field of Emotional Design. Although at an early stage, this study has given us a means of developing alternative approaches to produce an intensive understanding between design professionals and users, and a sensitive and adaptive concept to approach the user real experience.

REFERENCES

Bryman, A. 2001. Social Research Methods, Oxford university press.

Corti, L., 1993. Using diaries in social research, social research update, University of Surrey. Available from URL: <http://www.soc.surrey.ac.uk/sru/SRU2.html>. [Accessed 12/12/2003].

Gaver, B., Dune, T. and Pacenti, E. 1999. Design: Cultural Probes, Jan. /Feb. 1999, interactions, Volume 6 Issue 1.ACM press. 21-29.

Goatman, M. 2004. Can personality categorisation inform the design of products and interfaces ? Edited by Design and Emotion: the experience of everyday things, [McDonagh](#), D., [Gyi](#), D., [Hekkert](#), P. and Erp, J.V., 82-86. London: Taylor & Francis.

Hemmings, T., Crabtree, A., Rodden, T., Clarke, K., and Rouncefield, M. 2002. Probing the probes: Domestic Probes and the Design Process, Available from URL: <http://machen.mrl.nott.ac.uk/PublicationStore/2002-hemmings-1.pdf>. [Accessed 27/02/2004].

Millen, D. R. 2003. Rapid Ethnography: Time-Deepening Strategies for HCI Field Research, In DIS'2000 [739], 280- 286.

Nielsen, J. 2004. Ricks of Quantitative Studies, [Jakob Nielsen's Alertobox](#), Available from URL: <http://www.useit.com/alertbox/20040301.html> . [Accessed 04/03/2004].

Norman, D.A. 2004. Emotional Design: Why we love (or hate) everyday things. New York. Basic Books.

Norman, D.A. 1998. The Invisible Computer: Why Good Products Can Fail, the Personal Computer Is So Complex, and Information Appliances Are the Solution, The MIT Press, the United States of America.

Preece, J., Rogers, Y., and Sharp, H. 2002. Interaction Design-beyond human-computer interaction, Wiley Text Books.

Pop Art, Inc. 2003. White Paper: Design Services, Available from URL: <http://www.popart.com/whitepapers/design-services.pdf> . [Accessed 09/05/2003]

Tsen-Yao Chang is a PhD student in Art and Design Research Centre, Sheffield Hallam University, UK. Her research is about emotional design in the field of computer mediated communication. She graduated from the postgraduate school of Commercial Design Department, Chung-Yuan Christian University, Taiwan, 2001.

Prof. Mike Press is the Head of Gary's School of Art, the Robert Gordon University, UK, the Chairperson of the European Academy of Design and the Director of the "Design Against Crime" programme for British Design Council. He was the Head of Art and Design Research Centre in Sheffield Hallam University.

Dr Simon Polovina is Senior Lecturer in Computing (Enterprise & Web Technologies, Usability), Sheffield Hallam University. He is also one of the founders for [SMDF](#), and is developing a [semiotic](#)-led approach to object-oriented analysis and design for enterprise & web technologies, accessibility and usability.