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# Designing an enhanced web user experience: the use of "emotional probes" as a user-centred methodology for designing emotionally-engaged web interaction.

CHANG, T.-Y.

2006

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**DESIGNING AN ENHANCED WEB USER EXPERIENCE:  
THE USE OF “EMOTIONAL PROBES” AS A USER-CENTRED  
METHODOLOGY FOR DESIGNING EMOTIONALLY-ENGAGED WEB  
INTERACTION**

**TSEN-YAO CHANG**

**PhD**

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**VOLUME 1**

# **Designing an enhanced Web user experience:**

The use of “emotional probes” as a user-centred methodology for designing  
emotionally-engaged Web interaction

**TSEN-YAO CHANG**

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requirements of  
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# Abstract

This research project explores the importance of balancing aesthetics and usability of Web design to enhance user experience. It aims to develop an effective methodology to better understand the dimensions of users' emotions experienced in interaction with Web pages. The proposed methodological approach, called "Emotional Probes" (EPs), combines ethnographic surveys with the Cultural Probes (CPs) approach. The EPs method is applied to investigate the ongoing phenomenon of Web communication, for the impact of emotional factors on users has received insufficient attention from Web designers and researchers.

The shift in communication from person-to-person to person-to-computer interactions has created a demand for Web designers to be more aware of users' emotional responses. The dominant user experience research paradigm in Computer Mediated Communications (CMC), influenced by Human Computer Interaction (HCI) methodologies, focuses on usability. Usability engineering understands user experiences primarily in cognitive or behaviourist terms. Recent years, however, have seen growing interest in seeking alternative perspectives capable of embodying human emotional experiences during design, using ethnographic methods to understand users' needs, perspectives, and experiential preferences. Following these new directions, this thesis employs CPs and rapid ethnography to develop a hybrid contextual strategy—EPs—which is used to explore users' emotional experiences in the use of Web-based visual communication.

This study provides an in-depth review of users' emotional engagements with Web interface technologies. It describes the development and the application of methods with creative practices, such as mood board, drawing, and think-aloud techniques. The results of this research contribute to the field by: 1) proposing a framework for modelling users' emotional experience of the visual impacts of Web interfaces; 2) providing a methodological rationale for designers; 3) utilising "EPs" as a design/research toolkit for user experience studies; and 4) producing more emotionally-engaging communication between designers and users of websites. For future research concerning user experience, extending the application of "EPs" to the design process will provide Web designers with more creative inspiration and insight in their efforts to enhance users' visual and emotional experiences.

**Key word:** user experience research, visual aesthetics, emotional response, Web interface design, user-centred design, cultural probes, rapid ethnography, usability, design toolkit.

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I dedicate this thesis to my dear parents.

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# Chapter One—Introduction

## 1.1 Research background and rationale

The World Wide Web (WWW) is an interactive medium for global communication. It is a widely used platform for releasing, seeking, exchanging and receiving digital information, based on an information-retrieval system initially proposed by Tim Berners-Lee in 1989 and announced in 1991. Its use has since grown rapidly, and the WWW has become the backbone of our daily communications, education, entertainment, commerce and politics. As the Web has grown into a popular platform for conveying information, the Web interface has become the entry-point for users to gain access to electronic information, services and networks. The Web interface is a type of Graphic User Interface (GUI), which is realised visually to provide users with a communication channel. The interface is designed differently from software application interfaces and computer operating systems; with hypertext links which allows users to access every single page to obtain the information they need.

As websites have evolved, the graphic interface has perhaps become the most common and immediate communication platform because it offers users fundamental tools to control their navigation. In order to offer a satisfying user experience, the interface's visual expression integrates both functional requirements and aesthetic considerations,

both of which are tailored to interact with human emotions through visual stimuli and cognitive experience. With a well-designed graphic interface, users can have pleasurable experiences in which physical, emotional, and cognitive actions converge harmoniously. However, most design guidelines tend to overlook the importance of Web aesthetics by overemphasising interface usability based on utilitarian concerns (e.g. Baecker, Grudin, Buxton, & Greenberg, 1995; Dix, Finlay, Abowd, Belle, 2004; Nielsen, 2000a; Preece, Rogers, & Sharp, 2002; Shneiderman, 1998). This reflects the fact that the Human-Computer Interaction (HCI) community is less interested in the role of aesthetics (Badre, 2002) and users' emotional experiences.

The emotional aspect of Internet use is currently emerging in user interface research, under headings such as “user pleasure” (e.g. Douglas & Hargadon, 2000; Green & Jordan, 2002), “user satisfaction” (e.g. Frøkjær, Hertzum, & Hornbæk, 2000; Lindgaard & Dudek, 2002a, 2002b, & 2002c), “emotional usability” (e.g. Kim, Lee, & Choi, 2003) and in consideration of the relationships between visual impact, aesthetics and usability (e.g. Badre, 2002; Karvonen, 2000; Kurosu & Kashimura, 1995; Schmidt, Bauerly, Liu, & Sridaran, 2003; Thielsch, 2005; Thorlacius, 2002; Tractinsky, 1997). Even though different terms are used to describe user experience, all these authors have indicated that aesthetic influence does affect users' emotional experiences when they navigate to a particular site. In other words, positive visual stimuli are linked to pleasing experiences and associated with the improvement of usability, as is expressed by the concept of Norman's provocative idea (2004:17): *attractive things work better*.

When considering how to improve user experience, usability analysts have



addressed methodological issues through two classic approaches: 1) Usability evaluation (for Human Factors Engineering) and 2) Ethnographic studies (for testing utility) (Schiano & Nardi, 2003). However, there is still a lack of knowledge about users' emotional reactions and perceptions, and the discrepancy between the visual impact of interface communication and Web usability evaluations.

Due to such considerations, the primary aim of this research is to develop a methodology for an intuitive and intimate approach to probing users' emotional experiences with the Web instead of highly-controlled laboratory testing of Web usability.<sup>1</sup> Furthermore, due to increasingly shorter cycles of product realisation in design processes, more emphasis has been put on seeking time-efficient methods for carrying out usability assessments. A rapid ethnographical strategy was therefore put together because of its one significant advantage: greater time-flexibility over conventional ethnographic research.

On the other hand, this thesis experiments with different methods in order to approach the ongoing phenomena of user experience from different angles. In reference to the "Cultural Probes" (CPs) approach, which is a design-led approach to understanding user experience (Gaver, Dunne, & Pacent, 1999), the researcher has adopted and refined the cultural probe with the rapid ethnographic strategy. So, the "Emotional Probes" (EPs) approach has been developed to visualise users' emotional responses and engage with user experience in order to provide designers with more creative inspiration. This research

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<sup>1</sup> Usability laboratories typically set up one-way mirrors separating the observation room from the test room to allow experimenters or developers to discuss user actions without disturbing the users. The basic equipment for test rooms includes several video cameras which are used to record users' interactions with the prototypical website that is being tested (Nielsen, 1993: 200-205).

concludes with preliminary findings published in four papers to show the development and application of EPs within user experience research (see Appendix 1). Other researchers at the conferences cited in Appendix 1 provided feedback which sustains the practicality and efficacy of emotional probes (e.g. Chang, Press, & Polovina, 2004; Chang & Press, 2005).

In brief, this research is interdisciplinary, moving between Web technology and visual aesthetics, user perception and designer intention. It focuses on providing accessible approaches that rectify misunderstanding of emotional design and usability in terms of user Web experience. The utilisation of emotional probes, which contain a diary survey, participant observations, interviews, think-aloud techniques, drawing exercises, and mood board exercises, will facilitate future design research into understanding user experience. The present study suggests that if emotional probes are used in the early stages of website design, they will help generate ideas about users' real needs and forms of emotional engagement. The EPs approach should also be applied at other stages in conjunction with Web usability evaluations.

The concept of EPs is likely to create an opportunity for designers to assess the emotional and aesthetic value of visual communication through Web interfaces, instead of overemphasising usability engineering for Web communication technology. Reaching an understanding of the user's emotional experiences, the designer will become involved with more emotionally-engaging interactions with users, in order to instil an intrinsic value in future Web designs. In this way, the concept of the EPs approach will also be applied to other relevant design areas to explore users' needs in order to implement user-centred design in Web communication.

## 1.2 Research aims and objectives

The present research aims to build an in-depth understanding of the emotional aspects of Web users' needs and experiences. The development of appropriate methods for investigating user experience will discover vital connections between Web interface design and user experience. To this end, the research aims at four intermediate objectives:

1. Gaining an in-depth understanding of how graphic design<sup>2</sup> influences features of Web interface usability: such as the navigation system, accessibility, information arrangement, interactivity, and the “look and feel” of the Web in terms of Web interface studies.
2. Obtaining empirical perspectives from design practitioners and users in order to embed emotional associations within future Web interface design.
3. Evolving an appropriate research strategy — termed “Emotional Probes” — to look into users' experiences and understand their needs and feelings when they use Web interfaces.
4. Developing practical tools to integrate more emotionally-engaged Web interaction into interface usability.

As the above four objectives show, this research will make four main contributions.

First, it will make a communication bridge between the points of view of graphic designers

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<sup>2</sup> Graphic design can include various visual elements (e.g. colour, shapes, lines, and motion) in still pictorial images or time-based media (e.g. flash movies) to create a visual display for a website for information processing.

and usability analysts in order to build understanding between them. Secondly, it will provide designers with a design/research tool for appreciating users' emotional experiences and resolving methodological problems—a lesser concern of emotional evaluation. Thirdly, it will develop a methodological framework for exploring emotional experience that is able to encompass users' needs and feelings. Finally, this research will offer research insights that incorporate theoretical and practical knowledge of user experience research into future design development.

### 1.3 Research method and framework

This study is based on qualitative data and sets out to explore and define the emotional dimensions of Web user experience. The research framework provides a brief overview of user experience research in Web design. The research process consists of six steps, including 1) the generation of research motivations and questions, 2) literature review, 3) data collection, 4) data analysis, 5) results evaluation, 6) contributions (See Figure 1-1).

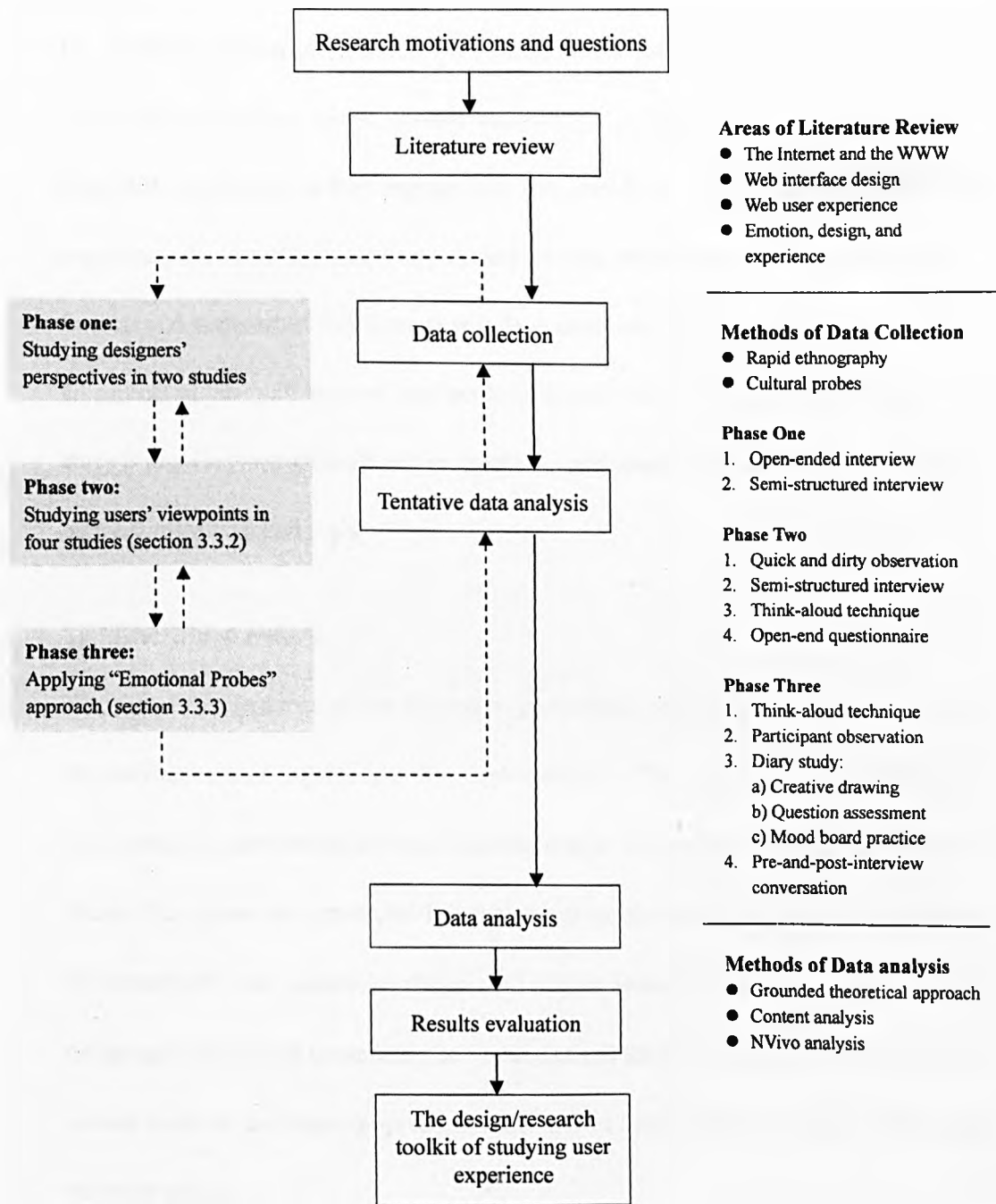


Figure 1-1: The research framework.

### **1) The generation of research motivations and questions**

The research objective was to explore the influence of graphic design on Web users' emotional experiences as they engage with Web interfaces. In order to understand user experience, the researcher sought appropriate research methods that effectively map users' feelings and needs when they interact with Web interfaces. By systematically questioning all aspects of the confluence of user aesthetic experience and Web usability design, this study is impelled to propose alternative methods, conceptualised as creating a conversation between researcher and users .

### **2) Literature review**

The aim of the literature review focused on generating a comprehensive understanding of the development of Internet and Web communication, Web interface design, Web user experience, the connections between emotion, design, and experience, and other relevant issues. This phase was conducted in order to expand the relationships and perspectives associated with user experience design, and also to assess the use and efficacy of Web design guidelines so as to establish the foundations of the present research. It also locates current methods and existing approaches that embed functional associations within Web interface design.

### **3) Data collection**

This project centres on exploring user emotional interactions with Web interfaces. Instead of using complex psychological tests, it is intended to develop intuitive and observable methods for investigating user experience. Taking advantage of the efficiency of a rapid

ethnographic structure, this research utilises cultural probes, which can be applied as tools in user research, and has developed a series of practical activities. The study is divided into three phases and seven activities. Phase one was conducted separately and consists of interviews with ten designers. Phase two is based on the rapid ethnographic approach and was conducted with four different activities with user groups: quick and dirty observation, semi-structured interviews, think-aloud techniques, and open-end questionnaires. Phase three employs the “Emotional Probes” (EPs) approach, which has been developed from the methods of rapid ethnography and cultural probes. EPs consist in interviews, observations, think-aloud techniques, self-completion diary studies, mood board practices, and creative drawing; data is collected in written, verbal, drawing, and collage formats in the hope of clarifying questions concerning emotional aspects of design and user experience.

#### **4) Data analysis**

The data analysis is based on the grounded theory approach. The research also adopts content analysis and computer-assisted software: QSR NVivo to assist the data analysis process. The grounded theory approach is adopted to generate theory from data emerging from the data collection and analysis phase. The process involves continuing comparison of the data until the theory emerges. There is a repeated alternation between data collection and analysis in such a way that the data analysis of any one cycle plays an important role in guiding the collection of data in the following stage. In Phases one and two of data collection, the tentative results generate a survey strategy for Phase three, such that the concept of EPs can be developed to discover the actual state of user experience.



## **5) Results evaluation**

The results of the above studies provide the thesis with a greater understanding of the application of the Emotional Probes (EPs) approach. Interviews with designers were conducted in order to understand the practicability of EPs and evaluate their application. In response to the designers' suggestions, a modified model was developed to provide a manageable research model, one that is capable of efficiently investigating user preferences and combining users' perspectives into the design process as early as possible.

## **6) The design/research toolkit for studying user experience**

The preceding analysis and the results of the research process show the importance of developing a design toolkit which provides a methodological approach for designers. Using "Emotional Probes," designers can adopt this method as a "brainstorming" process for designing user experience. The investigative process can provide more emotionally-engaged communication between designers and users. It is shown that EPs are not only of benefit to Web communication and interaction design, but also inform other design areas which might support the application of EPs. The data collected from various user experiences can be used to construct a blueprint for building a user-experience database which is able to assist designers in customising user experience, in order to satisfy diverse user interests and preferences in future designs.

## 1.4 Research limitations

Much research has been done on Web studies. The present research mainly focuses on three areas: “design,” “interface,” and “user” (see Figure 1-2). The research is concerned with how Web interfaces communicate with users and satisfy their needs through graphic design. The Web interface is the visual representation of Web pages (as defined in Appendix 2); its functions are related to many design issues, such as usability design, interaction design, emotional design and other design issues, which will be discussed in section 2.3.4. These design issues concern the connections between graphic design and its interface functions. However, the term “users” does not here indicate specific user groups, but instead, highlights users with individual interests in Web information.

“User,” “design,” and “interface” are connected together by three salient themes: the graphic design of the Web interface, users’ requirements, and user experience (Figure 1-2). At the intersection is user “emotion,” the core that links all the subjects together. This research project mainly explores how the graphic design of Web interfaces bridges the communication gap between users’ emotional experiences and Web usability design. The research focus is on discussing the users’ visual experiences; other sensual communications, such as sound, smell, and touch, are not explored further in the current study.

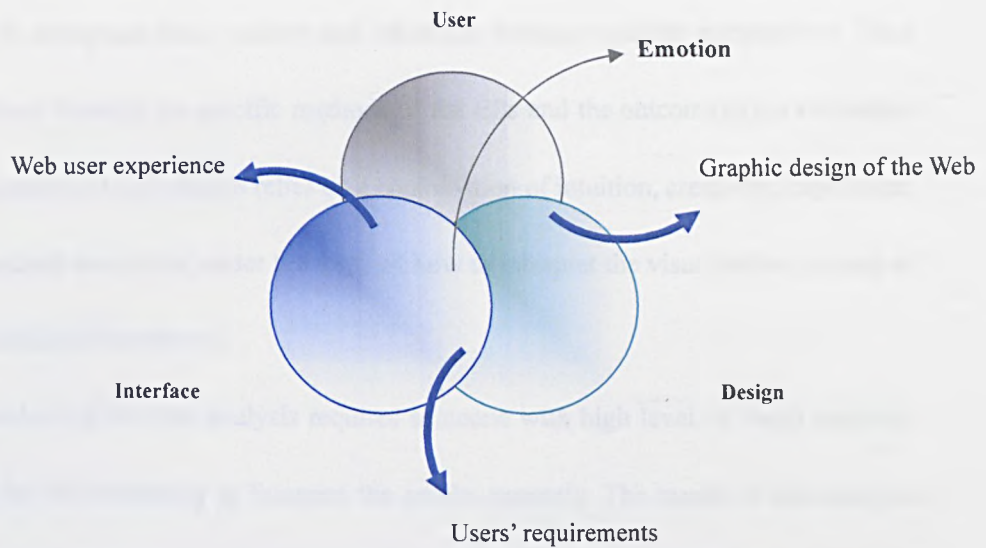


Figure 1-2: The main theme of this research is the connection between the user, design, and interface resulting in an emotional response to a Web page.

On the other hand, the issues discussed in this thesis map directly onto this diagram. This research does not discuss programming or the mark-up language supporting the graphic interface. Telecommunications infrastructure and technological factors, such as the speed of the Internet and download limitations, as well as the limitations to the resolution of Web images are not dealt with either.

Throughout the thesis, we will attempt to keep technical jargon to a minimum in order to maintain readability. Most of the terms used are common in the field of graphic design.

The practical aim of this research is to provide a set of applicable design/research tools for exploring user experience to include emotional dimensions, which this PhD

research has termed “Emotional Probes” (EPs). EPs were developed as a set of hybrid methods to strengthen their validity and reliability through multiple perspectives. Data are generated through the specific methods of the EPs and the outcome of the evaluation of users’ emotional experiences relies on a combination of intuition, creativity, experience, and theoretical awareness, under the logic of how to interpret the visualisation process of users’ emotional experiences.

Conducting the data analysis requires someone with high level of visual expertise in order for the researcher to interpret the results properly. The results of data analysis may also indicate whether emotional probes are appropriate tools for reflecting users’ real experiences and may explore how emotional probes are able to help interpret users’ thoughts for designers. Potentially, EPs may be adopted in a wide range of design areas which are concerned with user-centred design. However, the method has to date not been evaluated by other design researchers, so its wider application has not yet been tested and therefore its value remains open to debate.

The research does not aim to acquire comprehensive information about users’ general experiences but intends to explore what kind of research methods could be useful in developing an understanding of users’ emotional reactions. As a result, the limitations of the research reflect the central aim of developing new knowledge of users’ emotional experiences.

## 1.5 Thesis structure

This thesis consists of six chapters; the contents are shown in Figure 1-3. Each chapter has its own theme and reflects a different stage of the research process.

**Chapter One** is an introduction and presents an overview of the background to the research, its aim and objectives, limitations, methodology and framework, and the research position and perspective.

**Chapter Two** is a literature review that surveys all the significant and relevant issues in previous research, and provides a knowledge base from which exploration can begin into such areas as Web design, user experience, and emotionally-engaged interactions.

**Chapter Three** concerns methodology and provides a set of research strategies. The methodological chapter introduces the methods applied in data collection and analysis. It also states the theoretical basis for each method in this chapter.

**Chapter Four** comprises the data analysis of the tentative studies. This process is created through a combination of interviews with designers and preliminary surveys of user experiences. The designer interviews have been broken down into two stages: the first stage was conducted with only one designer and the second with the other nine. The themes of the second stage were set up by reference to the findings from the first. Through these two different interview stages, the researcher has been able to gather information on the

designers' perspectives.

The user experience survey is broken down into three studies, which incorporate four different techniques. The first study, attempting to gain first impressions without an excessive empirical burden, was conducted through quick and dirty observation; the second study was conducted with the think-aloud technique with semi-structured interviews; and the third survey was performed using open-ended questionnaires. Through examining the different techniques, the researcher is able to gain an understanding of the practicability of each technique.

**Chapter Five** presents the data analysis of the final experiment conducted with “*Emotional Probes*” (EPs) and is based on grounded theory and content analysis. In addition, the analysis has been processed with qualitative data analysis software (NVivo) to yield systematic data. The whole process was conducted with the consideration of validity and reliability in mind.

**Chapter Six** presents the final conclusions of the research and highlights the contributions that it has made. Recommendations for further research are also made.

The proposed methodological approach, using Emotional Probes (EPs), has been selected owing to the efficiency of rapid ethnography and the intimacy of cultural probes in the study of user emotional experience. Incorporating different methods, EPs offer three recommended paths for future research: 1) Factoring in cultural or gender difference in

researching user experience; 2) Developing alternative probes for evaluating other types of sensuous experience; and 3) Extending the application of Emotional Probes into other designs. As these viewpoints highlight, EPs can be explored further to improve the methodological and practical problematics of user research and other relevant design fields.

<b>Chapter One</b>	Introduces the research background and highlights the aims and rationale, including an overview of the research questions, limitations, and framework.
<b>Introduction</b>	
<b>Chapter Two</b>	The literature review of foregoing theories, grouped under four themes: 1) the Internet and the World Wide Web, 2) Web interfaces design, 3) Web user experience, 4) Emotion, design, and experience.
<b>Literature review</b>	
<b>Chapter Three</b>	Introduces the methods used in this research and explains how the information was collected and the data analysed.
<b>Methodology</b>	
<b>Chapter Four</b>	Five studies conducted for this thesis in order to gather preliminary suggestions for the final experiment.
<b>Tentative studies</b>	
<b>Chapter Five</b>	Analysis of the data gathered from the “ <i>Emotional Probes</i> ” study that has been processed by qualitative data analysis software with special consideration for validity and reliability.
<b>Analysis</b>	
<b>Chapter Six</b>	Stating the conclusions of the research, addressing the contributions made, and providing recommendations for further research.
<b>Conclusion and contribution</b>	

Figure 1-3: The structure of this thesis.

## 1.6 Research position and perspective

The present work discusses user research through the perspective of visual design, as opposed to functionally advanced Web technologies. By means of direct visual contact with graphic design, user experience becomes aesthetically and emotionally engaged. However, Web developers and designers seem to disregard the emotional and aesthetic influence of graphic design on users, so, in seeking to improve the quality of user experience, we find that there is a fundamental gap between interface usability and Web aesthetics.

User experience research is fundamental in developing the knowledge that will enable us to satisfy user needs. Kuniavsky (2003:3) explains that user research is the process of understanding the impact of design on a user in order to fulfil their needs and facilitate their actual use. The impact of design includes sensuous, emotional, physical, and cognitive aspects of the interaction process between product and user. The emotional aspect of Web users' experiences are directly influenced by the visual impact and aesthetic communication of interface design. These visual aesthetics seem to be easily overlooked when usability design dominates the central research on user experience. Badre (2002:174) says, "*[the] HCI community has ignored the role of aesthetics completely.*" According to Maslow's hierarchy of needs, usability design improves the level of the user's physical and cognitive satisfaction. However, there are further emotional needs beyond merely utilitarian experience.



This thesis was motivated by the researcher's background in graphic design, which has led her to attempt to overcome the gap between aesthetics and Web engineering. Beyond the technology of function, it is important to consider how the appeal of the visual experience can make users feel favourably about the design. Thinking carefully about the functions of graphic design for Web interfaces, it can be seen that it is more than just usability that is at issue in aiding users to obtain what they want from a site and make the most of their experience. Visual pleasure can make information more readable and understandable to users when they first visit a website. Graphic arrangement can be subtle enough to convey emotive messages to attract and captivate the user from the very first impression. More often, however, graphic interfaces are designed to assist Web accessibility, navigation, and interactivity, which can bring benefits in terms of usability. Such user experiential involvement seems to raise important questions about how users experience visual interaction via Web information exchanges.

In order to help create an experience that resonates emotionally and functionally with user needs, this thesis provides alternative perspectives from usability engineers and programmer designers that allows us to explore user experience and interface usability. The results have the potential to lead to improvement in the quality of user satisfaction and interface usage through a better understanding of the visual impact of Web design on the emotional aspects of the user's experience.

## Chapter Two—Literature Review

### 2.1 Introduction

This chapter presents a review of literature, focusing primarily on research issues arising from the visual impact of Web interfaces on user experience. In order to develop an understanding of Web users' needs and experiences from the three salient themes of this research: 1) design, 2) interface, and 3) user, this chapter will discuss four further aspects: 1) the Internet and World Wide Web; 2) Web interface design; 3) Web user experience; 4) emotion, design and experience. These issues are integrated to construct the current research project's knowledge base to motivate further exploration.

Figure 2-1 presents a list of the results of searching through relevant literature from different databases. Preliminary results present hundreds of items related to web user experience. However, there is little that directly addresses this core research question, while this literature review reveals a significant number of sources which relate to the broader issues of the study. The lack of a developed understanding of emotional responses within user experience leads to neglect in adding the aesthetic touch to Web user interfaces. This insufficiency in the literature indicates a research direction that will generate better understanding about users' emotional and visual reactions in terms of user experience research.

Database	Keywords	Preliminary result	Relevant research	Derivative issues
ACM digital library	User experience Web interface Visual aesthetics	200	2	<ul style="list-style-type: none"> <li>• HCI</li> <li>• User interface design</li> <li>• Emotional design</li> </ul>
ACM digital library	Emotional experience Usability Web aesthetics	200	2	<ul style="list-style-type: none"> <li>• Emotion- e.g. pleasure &amp; trust</li> <li>• Web usability</li> </ul>
Web of Knowledge database	User experience	157	2	<ul style="list-style-type: none"> <li>• Design quality</li> <li>• Ethnographic methods</li> <li>• Visual design</li> </ul>
Elsevier Engineering Information <sup>3</sup>	User experience Web interface Emotional experience	7	1	<ul style="list-style-type: none"> <li>• Communication</li> <li>• Web accessibility</li> <li>• Cognitive processes</li> </ul>
Elsevier Engineering Information	Web design Emotional design Interface	12	2	<ul style="list-style-type: none"> <li>• Readability scores</li> <li>• Web architecture</li> <li>• Empirical studies</li> </ul>
DAAI: Design and Applied Arts Index	User experience Web interface	0	0	<ul style="list-style-type: none"> <li>• Design guidelines</li> <li>• Individual perceptions of Attractiveness</li> </ul>
DAAI	User experience Web	3	0	<ul style="list-style-type: none"> <li>• Web site design</li> <li>• Metaphor design in user Interfaces</li> </ul>
Emerald <sup>4</sup>	User experience Web interface Emotional	118	0	<ul style="list-style-type: none"> <li>• User-centred design</li> <li>• Evaluation</li> </ul>
Emerald	Web user Interface design Visual experience	325	0	<ul style="list-style-type: none"> <li>• First impressions</li> <li>• Graphical user interfaces</li> <li>• Animation</li> </ul>

Figure 2-1: The searching results of information databases for relevant literatures.

The derivative issues listed in Figure 2-1 may be associated with the four aspects mentioned above to build a literature review which can provide a basis for conducting scrupulous investigations within each issue, as illustrated in Figure 2-2

<sup>3</sup> Elsevier Engineering Information database, including: Engineering Village 2™, ChemVillage™, Paper Village 2™, Encompass™, Compendex®, The Engineering Index®, Chemical Business NewsBase®, Chimica™ and PaperChem™.

<sup>4</sup> Emerald database—subjects include: management, information science, and construction.

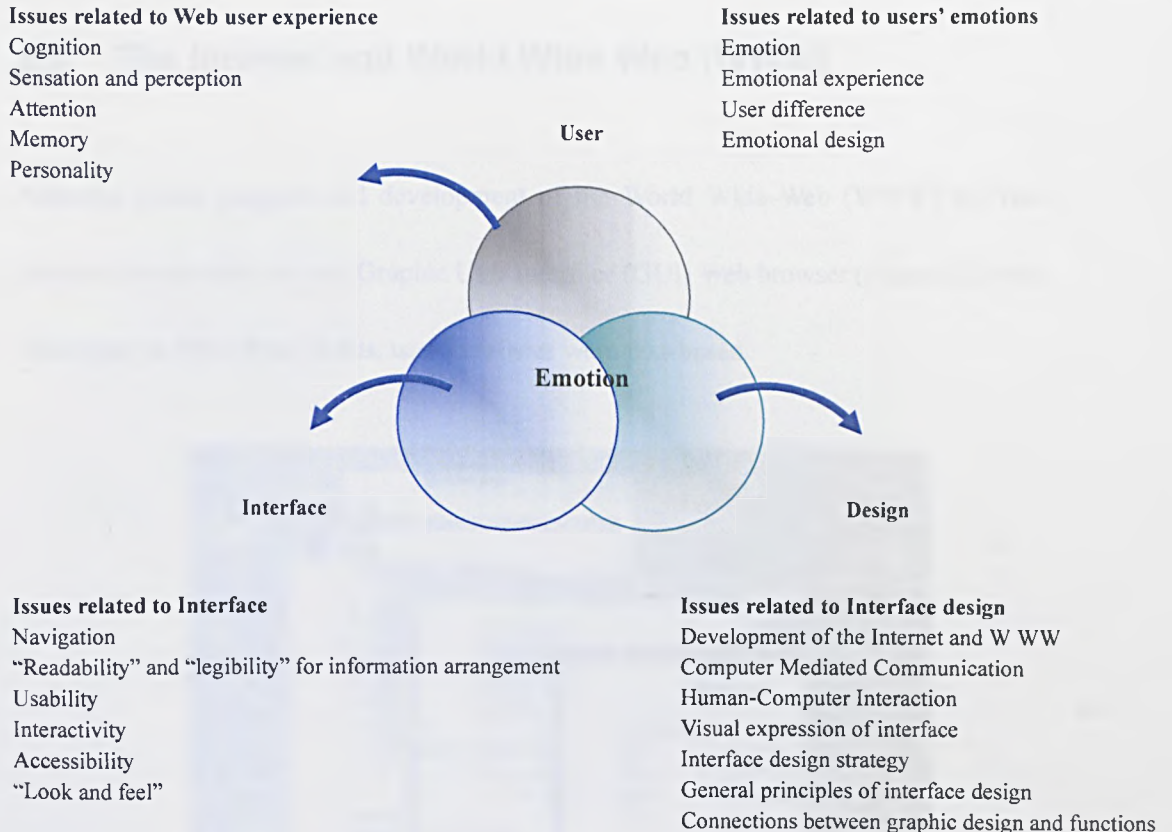


Figure 2-2: The research scope of the literature review.

This chapter draws upon the literature of the three related fields of Web interface design as shown in Figure 2-2, that is, Web user experience and the value of graphic design are connected through by emotional contact. By identifying the relationship between these issues of inquiry, we may provide design insights to inform Web designers with more rigorous knowledge about users' emotional needs. Furthermore, this literature review lays the ground for discussing various perspectives of how Web interfaces design affect users' emotional reactions and experiences as a whole. It is expected that this knowledge could help to develop a rigorous methodology for exploring user experience further.

## 2.2 The Internet and World Wide Web (WWW)

After the initial proposal and development of the World Wide Web (WWW) by Tim Berners-Lee in 1989, the first Graphic User Interface (GUI) Web browser (Figure 2-3) was developed in 1990. Prior to this, user interfaces were text-based.

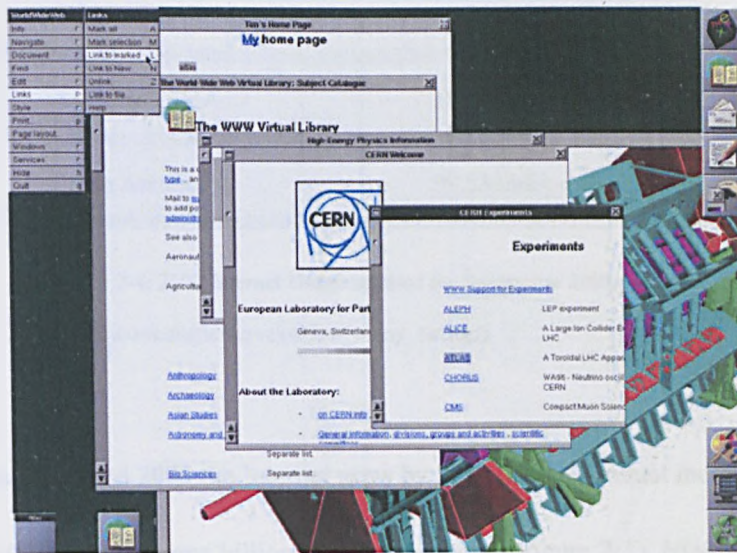


Figure 2-3: The first GUI invented by Tim Berners-Lee (source: <http://www.w3.org/People/Berners-Lee/WorldWideWeb.html>).

With the popularization of graphic-oriented user interfaces and the widespread adoption of personal computing technology, the WWW and the Internet have become essential tools for daily information exchange, communication, commerce, and entertainment (Johnson, 2003:1). According to the 2002 ClickZ report, by September 2002 the number of online users had risen to over 605.60 million (Figure 2-4).

Geographic region	2002 Online users
World	605.60 million
Africa	6.31 million
Asia/Pacific	187.24 million
Europe	190.91 million
Middle East	5.12 million
Canada & USA	182.67 million
Latin America	33.35 million

Figure 2-4: 2002 Internet Usage updated for September 2002 (source: [http://www.nua.ie/surveys/how\\_many\\_online/](http://www.nua.ie/surveys/how_many_online/))

Between 2002 and 2005 the Internet grew by 82%, with an annual increase of 18%, and now, in 2005, stands at one billion Internet users (see Figure 2-5). Nielsen (2005a:1) has predicted, “*A second billion users will follow in the next ten years, bringing a dramatic change in worldwide usability needs.*” It is conceivable that the Internet and the WWW will become the major devices for information exchange and communication. New users, the total number of visits, websites, and e-commerce are increasing at a rate that makes the integration of interpersonal communication into the digital world of cyberspace increasingly certain. Judging by this rapid growth of the Internet and the WWW, it is necessary to have an understanding of how these technologies influence our lives. The following sections will discuss four relevant issues: 1) The development of the Internet; 2)

World Wide Web; 3) Computer-mediated Communication; and 4) Human-computer Interaction.

World Regions	Population ( 2006 Est.)	Internet Usage, Latest Data	% Population ( Penetration )	Usage% of World	Usage Growth 2000-2005
Africa	915,210,928	22,737,500	2.5 %	2.2 %	403.7 %
Asia	3,667,774,066	364,270,713	9.9 %	35.7 %	218.7 %
Europe	807,289,020	290,121,957	35.9 %	28.5 %	176.1 %
Middle East	190,084,161	18,203,500	9.6 %	1.8 %	454.2 %
North America	331,473,276	225,801,428	68.1 %	22.2 %	108.9 %
Latin America/Caribbean	553,908,632	79,033,597	14.3 %	7.8 %	337.4 %
Oceania / Australia	33,956,977	17,690,762	52.9 %	1.8 %	132.2 %
<b>WORLD TOTAL</b>	<b>6,499,697,060</b>	<b>1,018,057,389</b>	<b>15.7 %</b>	<b>100.0 %</b>	<b>182.0 %</b>

Figure 2-5: Internet Usage and World Population Statistics updated for December 31, 2005 (source:

<http://www.internetworldstats.com/stats.htm>).

### 2.2.1 The development of the Internet

The Internet developed as a non-centralised system of sharing and distributing data across computer networks (Millon, 1999:13). In 1969, the U.S. Department of Defence began funding the Advanced Research Projects Agency Network (ARPANET), which developed technologies for information exchange through computer network communication for remote research based on a small number of mainly University-based computer systems.

The Internet evolved from this initial ARPANET. In 1974, Vinton G. Cerf and Robert E. Kahn addressed the concept of “*A Protocol for Packet Network Interconnection*,” which represented a great conceptual breakthrough for computer-based communication networks (Cerf & Kahn, 1974). Six years later, the “Transmission-Control-Protocol” (TCP) was developed by researchers at the Xerox Palo Alto Research Centre (PARC), thus establishing a set of interrelated protocols which now govern the Internet. By the mid 1980’s, several academic computer networks, such as Usenet, BITnet, CSnet and NSFnet had been set up, which combined with ARPANET to form the Internet (Naughton, 1999).

The computers that made up most of the nodes composing the Internet originally ran the UNIX operating system created by Thompson and Ritchie. In 1977, Ward Christensen wrote a program called MODEM with the aim of transferring files between two personal computers via telephony (Naughton, 1999). Through the Internet and other innovations, such as Electronic mail (Email), Bulletin Board Systems (BBS), the World Wide Web (WWW), newsgroups, chat rooms, computer conferences, and on-line computer games, worldwide citizen-to-citizen conversation and connection have been enabled. Communication is the most important aspect of the Internet, which takes on a variety of forms such as real-time interactions, storing and forwarding messages, one-to-one communication, and broadcast communication, together with information sharing for various purposes.

In a decade and a half, the WWW has rapidly evolved to offer a communication platform that enables users to combine text, images, audio, animation, and video and can be accessed by anyone in the world who has the proper connection and equipment. The



WWW has experienced massive growth since the early 1990's and has rapidly become the most popular portion of the Internet, growing faster than other services (Alberton, Fine, & Zender, 1995:56). Indeed, for most users the WWW is the Internet (see Figure 2-6).

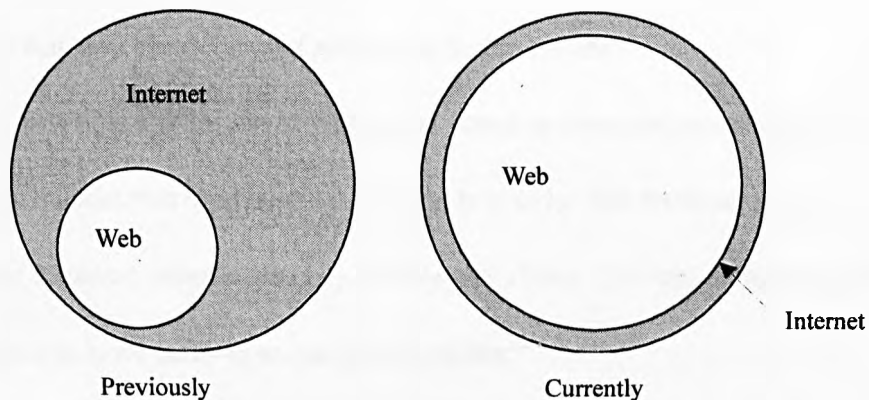


Figure 2-6: Web use now dominates the Internet.(source: Thurlow et al, 2004:29).

The WWW may be undergoing a further transformation with the proposed shift to Web 2.0. This stage in its evolution is associated with open source software, blogging, wikimedia, social networking and real-time virtual communities (O'Reilly, 2005). This has stimulated considerable debate on the cultural and political consequences of this new phase of development. However, in providing an even wider range of interactive communication opportunities, this development further underlines the need to ensure that the emerging technologies are capable of providing effective emotional engagement for users.

### 2.2.2 World Wide Web

In order to understand how the Internet and the World Wide Web (WWW) have been developed, it is necessary to consider some of the specific and technical issues regarding the WWW that have been a focus of attention in design research.

The WWW is a collection of Web pages, stored on computer servers and accessed through the Internet, that distributes data that can be read by Web browsing software, such as *Internet Explorer*, *Mozilla Firefox*, *Camino* and *Opera*. The use of hypertext links enables users to move easily from one page to another.

*Mosaic*, the first Web browser to provide graphic support (as opposed to Berners-Lee's text-only version) was designed by Marc Andreessen in 1992. When *Mosaic* turned the Web from an information switching network to a storehouse of multimedia fun, computer games, and real-time audio devices, the WWW rapidly became the most popular part of the Internet. The WWW contains three significant elements (Bouvin, 2000): HyperText Transfer Protocol (HTTP), Uniform Resource Locators (URL), and coding language called HyperText Markup Language (HTML). The WWW is based on the protocol known as HTTP, which is a set of rules that tell Web servers and browsers how to communicate and transfer files. A Web page is accessed through its unique URL, and a Web server sends the requested Web page to the client. A Web page consists of a text document composed in HTML and associated objects, such as images. In some cases, more sophisticated computer codes are used, such as Perl and Java languages.

HTML is a simplified version of the existing SGML (Standard Generalised Markup

Language), the international standard for defining website structure and the content of different types of documents. HTML code defines how a webpage appears and indicates how hypertext linked documents perform to display information. Additionally, other markup languages such as Extensible Markup Language (XML) and the Document Object Model (DOM) provide similar capabilities, although they offer additional features and more flexibility. Web interfaces are created predominantly through the use of these markup languages with interactive links between graphics, text, or multimedia documents. The information processed by visual sensation from graphics or text information can be communicated to readers using current Web browsers like *Internet Explorer* and *Netscape*.

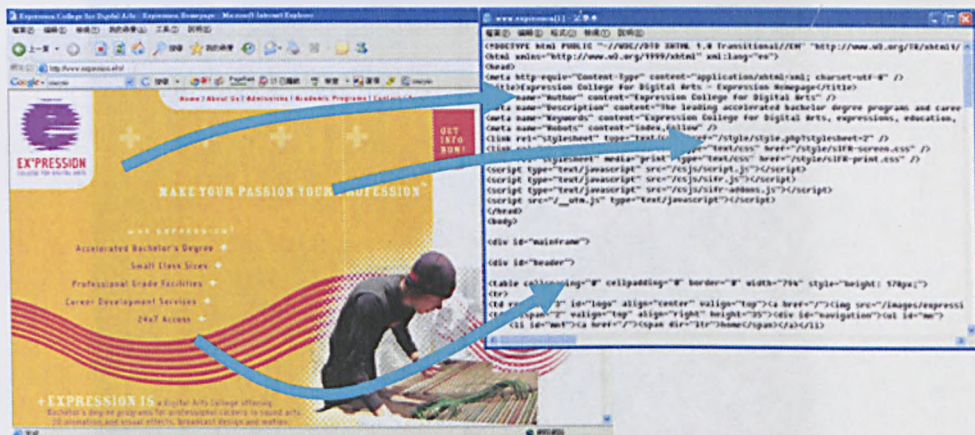


Figure 2-7: An example of how HTML (right) creates a graphic Web page (left). The arrows point to those visual elements (left) created by the corresponding code (right) (image source: <http://www.expression.edu/>).

As telecommunication technology improves and bandwidth grows, WWW is being used more and more with a variety of media, such as video, audio, and animation to

enhance website interactivity. The Web user experience is moving forward into digital dynamic aesthetics. According to Sterne (1995:81), there are three basic reasons for using multimedia: 1) decoration, 2) navigation, and 3) information display. These uses of multimedia are not different from the uses of static visual materials, but adding multimedia to a site engages users in a more intimate and intensive manner. For example, the official website of the Sydney opera house is designed with a virtual tour space which allows visitors to be immersed in a realistic interactive experience which closely models the real world (see Figure 2-8).



Figure 2-8: The official website of the Sydney opera house (source: <http://www.sydneyoperahouse.com/>).

The interface, moreover, helps Web users to navigate more easily, and it makes complex techniques eye-catching and easy to communicate to users. With an increasing

number of Web users, the WWW has captured the attention of artists, designers, politicians, writers, marketers, and educators all over the world. The WWW, supported by speedy broadband services, has changed the way wired individuals look for information and has also developed an enormous number of opportunities for the marketing and entertainment industries. Rapid advances in computer graphics have created a plenitude of aesthetic experiences available in cyberspace. Internet communication is becoming more common as a part of our day-to-day activities and continually stimulates our thoughts and learning.

### 2.2.3 Computer Mediated Communication

Computer-Mediated Communication (CMC) is defined as “[A] process of human communication via computers, involving people, situated in particular contexts, engaging in processes to shape media for a variety of purposes”

John December, 1997, CMC Magazine

CMC has already become a part of modern life, with the visual context being perhaps the most direct form for communication. As Naughton (1999:13) puts it, “*the machine comes to life.*” With the development of networked telecommunications systems and the popularisation of broadband transmission, the Internet and the WWW have become the dominant CMC media for daily interpersonal communication. By interacting with a website, users can obtain various types of information through the WWW as it is no longer only text but incorporates images, video, animation and sound, and can contain multimedia

formats for information exchange. Because of the predomination of the visual experience, the visual aspects of Computer-Mediated-Visual-Communication (CMVC) have highlighted the importance of visual impact on user experience. In order to improve the quality of Web design, it is essential to understand a number of theoretical perspectives about how to support CMVC in a Web-based context.

The visual interface of websites is perhaps the most direct medium for communication and information exchange. Information conveyed through graphic design, which *“is often used as a means of addressing the selective attention of the audience,”* (Morgan & Welton, 1992:60), is easy for users to access because the visual interfaces of websites can be designed in various ways to fit user requirements in Web-based communications. Beyond the interface, users seek not only textual information but also a social context. *“Users start to perceive their behaviour in terms of person-to-person rather than person-to-machine relationships, even though they may know that they are addressing software”* (Light & Wakeman, 2001:326). However, early research in the CMC field produced results from laboratory experiments that seemed to characterise CMC as having fewer social cues and less social presence than face-to-face communication (Baym, 1995; Bubas, 2001; Chenault, 1998). It was also found to be experienced as impersonal with less social-emotional content than other forms of communication (Patterson, 1996).

In Burnett’s research (2000:7), he mentions that the content of social interaction can be generated when electronically exchanging information. Conveying information through the computer seemingly brings emotional aspects into communication with readers, through forms such as online chatting and gaming. Campbell and Pisterman (1996:12)

assert, “*Emotions are integral to all human interactions and play a particularly important role in interpersonal communication.*” It cannot be denied that emotional stimulation is taking place, once information has started to pass between the two sides of informational addressers and receivers, because information is ultimately communicated from person to person, not person to machine. In this respect, through users’ direct visual contact with the Web interface, visual impact is often linked to emotional engagement, for example as experiencing certain feelings while viewing a Web page.

The visualised interface of a website transforms technical computing language into an accessible medium where the user interface is the first stage of providing a communicative medium. Communication always has a specific goal formed by communicators to convey information to someone. As Morgan and Welton (1992:134) contend, “*communication [is] as shared experience.*” Arranging visual elements for sharing experience on screen seems to involve a sense of understanding users’ requirements. Although it is arguable whether CMVC in a Web interface might have less social interaction it is possible that CMVC could engage more successfully with emotional associations in order to support user exploration of cyberspace.

#### **2.2.4 Human-Computer Interaction**

In recent publications, the definition of Human Computer Interaction (HCI) has become hard to lock down, as it depends on the content, subject, and who is asking (Faulkner, 1998:1-6). Hewtt et al. (1992:5) provide a working definition:

*“Human Computer Interaction is a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them.”*

In discussing experience of Web use, it is essential to take into account how users interact with computing systems to extend their communication ability.

An interactive computing system can be based on either computer hardware or software. In the present study, the term “interactive computing system” is specifically used to denote the Web-based communicating system of websites. Figure 2-9 shows that HCI is a multidisciplinary field that aims to gather various fields of knowledge and disciplines to make a significant contribution to making *“people’s experience with computers more productive, more time-efficient, and more pleasant”* (McCracken & Wolfe, 2004:4). The research objective of this study is to investigate user experience of interacting with Web interfaces, focussing specifically on the area of graphic design. Other less relevant aspects are not explored further here.



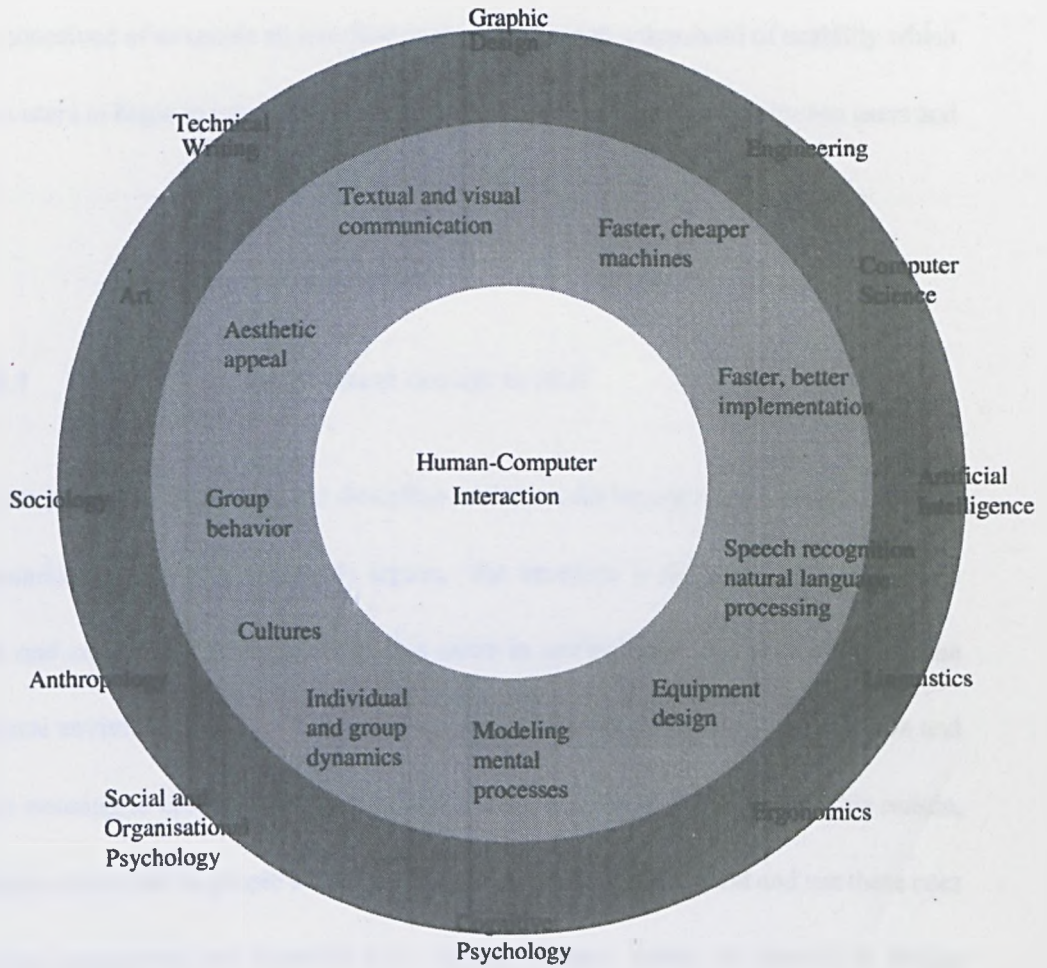


Figure 2-9: Disciplines that contribute to HCI (Source: McCracken and Wolfe, 2004:6).

The central focus of HCI is on building an interactive relationship between one or more users and one or more computerised applications. HCI endeavours to provide an understanding of both users and the computerised system, and it aims to make interaction between the two sides easier and user experience more satisfying (Faulkner, 1998:1). Creating a Graphic User Interface (GUI) may be the key to making Web information and technology accessible and useable for end users. In Human-Web communication, in order

to be conceived of as usable an interface system must reach a threshold of usability which allows users to begin to interact effectively and thus creates interactions between users and Web.

#### 2.2.4.1 The importance of visual design in HCI

HCI has proved itself an essential discipline and focus for research in developing WWW communication. Fleming (1998:64) argues, “*the interface is the intermediary between users and content.*” The interface guides users in navigation around a website. In the graphical environment of the Web, interface design has to express a logical structure and visual meaning to create a “cohesive user experience” (Fleming, 1998). For this reason, designers often refer to people’s behaviours and actions in the real world and use these cues as visual metaphors and materials (e.g. colour, images, icons, or shapes) to design websites (Badre, 2002:37).

Web communication can process visual meaning and life experience through interactive contact with Web interfaces, which allows the user to make sense out of what they have viewed on screen. When a user visits a website, they act in accordance with their previous knowledge and expectations; therefore, it is important to develop a mental model that will enable them to quickly learn a system and use it effectively (Badre, 2002; Preece et al., 2002). A well-designed interface can support users by forming a consistent model that is connected to their previous experience (Badre, 2000:33). Metaphor design is one of the approaches that links user habits to cyberspace behaviour.

The role of metaphor is to provide a reference to real-world actions, concepts, and objects (Badre, 2000:33). As Norman says (2000:17), “make thing visible”: the meanings embedded in metaphor design can be understood by human information processing systems, human perception (Light & Wakeman, 2001), emotional responses (Light & Wakeman, 2001), memory (Badre, 2002; Morgan & Welton, 1992), affection (Badre, 2002; Norman, 1968), and even further, according to the cultural context of the Web environment (Brusila, 2003; Morgan & Welton, 1992). In the interaction process, visual metaphor seems to integrate with hyperlinks in assisting user Web navigation. By means of visualisation, visual metaphors and the materials of a user interface can affect a user’s mental and behavioural reactions to communication. The visual design of a Web interface is influential in developing an interactive system for users engaging with Web information.

#### **2.2.4.2 Interaction design**

According to a report by the UK Design Council, “Interaction Design” is an essential skill in creating an interface through which information technology can be manipulated by users (Macdonald, 2005:1). Interaction design is likely to become the key design skill for developing the overall quality of the Web experience.

The central concern of interaction design is to develop usable values in interactive products. Preece et al. (2002:2) suggest that the goal of interaction design is to “*bring usability into the design process.*” In essence, they argue, usability is about developing

interactive products or services that are associated with user perceptions, in that they are “easy to learn,” “effective to use,” and “enjoyable to use”.

However, interaction design is not only about how to use technology but also how to interact with people. To understand user interaction, designers should place themselves in a user’s position and observe users’ online behaviour. Campbell and Pisterman (1996:1) echo such concerns, “*the Internet challenge also includes designing experiences that engage and are ‘fit for’ a user’s emotions*”. Even though the quality of interaction design always relates to the effectiveness and efficiency characterising user experiences, the focus has shifted and now centres upon concerns about the user’s emotional requirements, such as feelings of security, privacy, and the pleasure of Web-using experiences. The emotional usability of Web interaction design has also been discussed in the context of evaluation, in terms of knowing if the design goal has been met or the emotional target reached (e.g. Kim & Moon, 1998).

The emotional quality of the interaction process can be described as “engaging,” “immersive,” “participatory,” “responsive” and “reactive” (Laurel, 2002:37-45). In contrast to functional techniques, these emotional involvements have only recently received attention in interaction design. However, human imagination and powers of association are often triggered by different concerns and produce emotional engagements with the objects concerned. For example, the emoticons on MSN’s Messenger, invented in 1979 by Kevin Mackenzie, were created to convey emotions using graphic representations of facial expressions. Emoticons were further developed by Scott Fahlman, a computer scientist at Carnegie Mellon University, who proposed symbols, such as “:-)” (happiness),

“ :-o ” (surprise), and “ >:-c “ (anger) as a means of indicating those parts of messages posted on bulletin boards which were jokes or not to be treated seriously (Chang and Press, 2003:5; Chang, 2003:9).

This simple typographic device has been further developed by Microsoft into more graphically elaborate emoticons (Figure 2-10), which are available to users in the MSN Messenger service. The launch of the Microsoft Tablet PC in 2002 was accompanied by a range of “designer emoticons” (see Figure 2-11) developed by Aardman Animations who also produced the Wallace and Gromit films. While the written word has the potential to convey the full range of human emotions, the time-efficient “shorthand” communication that has evolved with the computer is often emotionally ambiguous. As Dorai (2001:11) argues “[t]he affective computing media aim to understand and enable computers to interpret and respond to user’s emotional states.” Graphic representation that is used both to beautify visual elements and convey information through visual and emotional expression has proved its effectiveness, with the result that users are more enthusiastic about interacting with computer media.

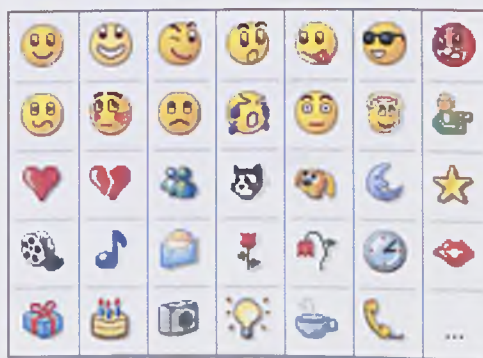


Figure 2-10: “Emoticons” for online communication in MSN Messenger (Source: www.msn.com).

With the emoticon, CMC allows people to present and see “feelings” on the screen, just like speaking to someone face to face. The emoticon is considered a kind of empathic design. “Empathy,” is supposed to be about “relationships;” Wallace and Press (2004) discuss “empathy” in design, and conclude that it could create a rewarding experience for users in a “personally significant emotional way” in e.g. an engaging film, or an inspired computer game. In cyberspace, these graphic expressions are not only used to decorate Web pages but are also designed to incite a more emotionally-engaging interaction with users.

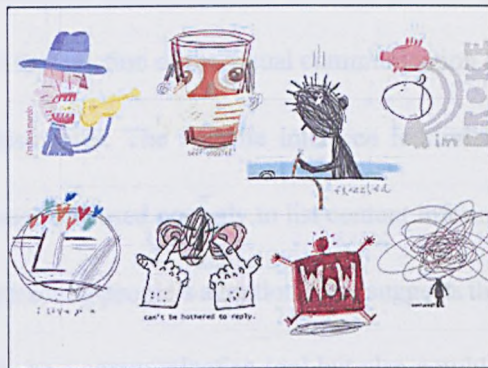


Figure 2-11: The Microsoft Tablet PC in 2002 was accompanied by a range of “designer emoticons” developed by Aardman Animations (Source:<http://www.ananova.com/>).

## 2.3 Web interface design

For the Web visitor, a Web interface functions as the entrance to the whole website. The Web interface is usually considered a package of informative content for a product, service, or information resource.

According to Huang's research (2005), the concept of physical packaging functions can be transferred to the virtual environment and designers can take advantage of the digital context to better design product presentation and information in order to enhance consumers' online shopping experience and promote products. The concept of online packaging is based on the function of the visual communication of a Web interface, which can benefit online businesses. The website interface is similar to the *packaging* of a physical product because it is used not only to list content information but also to promote the product itself by attracting people's attention. This suggests that the visual packaging of a website can not only be a communication tool but also a publicity medium (Lynch and Horton, 1999).

More people and businesses have joined e-commerce and rely heavily on Web-based services. Even though websites vary in purpose, product position, organisation, information content, and design style, all websites are primarily designed to provide information with certain corresponding visual elements in terms of their graphic design. The follow sections will discuss four issues relevant to Web interface design: 1) Visual expression of interface; 2) Interface design strategy; 3) General principles of interface

design; and 4) Connections between graphic design and functions.

### 2.3.1 Visual expression of interface

The design of a Web interface is determined by identifying the specific content that is of interest to users (Nielsen, 2000a:18). The primary layout decision is based on how dense graphics create the website's visual expression (Lynch & Horton, 1999). Visual expression can be created with static or dynamic graphical presentation, depending on design ideas and purposes.

Normally, the visual expression of an interface is defined on the home page (or the front page) that acts as an intuitive entry point into the other pages of the site (Lynch & Horton, 1999). Subsequent pages generally remain consistent with the format style of the home page, maintaining consistency in the information display to provide a website with a sense of visual cohesion.

The home page also functions as an "emotional entry," which means that when a user opens a home page, the colour, layout, shape, and other visual elements give a first impression, including the "mood" of the website. Peck (2001:64) describes the "mood" of a Web page, saying "*mood can best be described for a Web page as the emotion that a colour combination and set of graphic images draws from a visitor,*" this description shows that creating mood is much like providing an emotional access for users to go through. Another function of the home page is to create an instant overview of the "visual mood" of a website, e.g. an energetic business-like website or a child-friendly website. Each website



has its individual mood to attract visitors.

According to a survey of use of the global Internet in 2005, users spent an average of 43 seconds viewing each Web page (Nielsen//NetRatings, 2005), while the average in 2003 was 1 minute. According to this report, the duration spent by users viewing pages is getting shorter. This relatively short amount of viewing time demands that the page design rapidly communicate critical information to users and instantly grab their attention. This might explain the change that has been referred to in relation to Huang's (2005) research. He discovers that consumers on an e-commerce webpage are more easily attracted by visual images, such as graphics, pictures, and animated images, than pure text, and that consumers spend a relatively short time browsing before they intuitively click on a product's image. Therefore, a good impression during a user's brief visit is crucial, considering the difference in the amount of browsing time between graphic-based and text-based interfaces.

### **2.3.2 Interface design strategy**

Various design elements and typologies have been identified by researchers. Burstein (2004:1) identifies fifteen design elements of Web design variables: links, colour issues, images, image maps, animated images, spacing, tables, frames, style sheets, cookies, JavaScript, Java, plug-ins, screen size, and file distribution. These elements are arranged to form a page interface according to the design purpose and user interests. Michael Twyman (1982:2-22) classifies the format style into three modes: 1) pictorial, 2) verbal-numerical,

and 3) schematic style. Alan Dix (1999:4) refers to the amount of text and categorises it into two types: 1) content-rich, text-heavy pages, and 2) image-rich, CDROM-style pages; the former being more common for service providers such as search engines (although the Google interface is a significant exception, see <http://www.google.com/>), and the latter existing mainly on corporate sites delivering e-commerce services.

A home page is the ideal place to locate news, information, and menu listings to guide visitors about a site. It is perhaps the best place to attract visitors' initial attention, and therefore designers tend to create a variety of styles and visual compositions to draw users' attention.

Nowadays, few websites, except for database-oriented websites, consist of a purely text-based interface. Generally, images and colours make a Web interface more visually appealing. Strong graphics can be effective in grabbing a user's attention, assuming that download times are acceptable. Lynch and Horton (1999:36-41) define different types of interface style according to Web functions and objectives: 1) *Menu home pages*, 2) *News-oriented home pages*, 3) *Path-based home pages*, and 4) *Splash screens (or site covers)*. A fifth style also appears frequently to create alternative visual expression for a website—the “Three-dimensional object interface,” which is created by spatial cognition and playful interaction with users (Figure 2-12). A website can sometimes combine two or more styles in an interface to present information more creatively.

Design strategy	Examples
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**Menu home pages:**

Basically, menu-like lists usually dominate the page. The page generally provides graphic icons and text links (with less visual impact) to guide users to explore further (Lynch and Horton, 1999:37).



<http://new.egg.com/>

**News-oriented home pages:**

Organizations such as BBC News, CNN News, and the New York Times need to announce late-breaking news and calendar events, or change information. This design format normally remains unchanged over time in order to keep users familiar with the site and make it easy for them to gather the information they are looking for (Lynch and Horton, 1999:38).



<http://news.bbc.co.uk/1/hi/world/>

**Path-based home page:**

This is an approach that splits the audience into different interest groups through content-links on menu pages that offer them specific and relevant information. The audience can follow specific links to seek the desired information (Lynch and Horton, 1999:39).



<http://www.2advanced.com/flashindex.htm>

**Splash screens:**

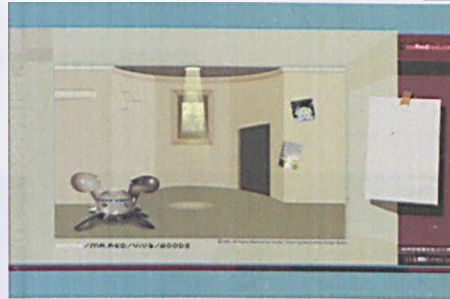
A pop-up window is used to attract user attention before they actually read the content. The success of splash screens depends heavily on the expectations of the site's visitors.



<http://www.bubble.be/>

**Three-dimensional object interface:**

This design is created with three-dimensional objects or a virtual-reality environment. Instead of text links, users can click on certain objects which are designed with an emphasis on intuitive reactions and the recognition of visual metaphors.



<http://www.redcapsules.com/index2.htm>

Figure 2-12: Examples of the classification of Web interfaces which are defined by their interface structure and menu style.

Besides Twyman's classifications according to text quantity, and Dix's interface styles defined by graphical format, there are other flexible ways to define interface styles according to the layout style or design purpose. Layout styles concerned with structuring information have developed in print media. For instance, Lynch and Horton (1999:11) state, "*Although networked interactive hypermedia documents pose novel challenges to information designers, most of the guidance needed to design, create, edit, and organize multiple forms of media does differ radically from current practice in print media.*" Much like adding interactive character to Web design, layout styles can give designers more opportunity to create new plans. However, conventional standards of editorial and graphic

design are still useful for creating a clear, readable, consistent page for general information communication. For personal websites, on the other hand, designers may like to use experimental and novel styles to create a good first impression on users and to offer useful and enjoyable experiences in art, entertainment, and commerce (Lynch & Horton, 1999; see Figure 2-13). For different purposes and users, the visual expression of an interface can apply basic design guidelines to generate various appearances.



Figure 2-13: The BBC news website (right) possesses a visual aesthetic that differs from that of a personal website—Skillsfactory (source: <http://news.bbc.co.uk/> ;<http://www.skillsfactory.it/> ).

### 2.3.3 General principles of interface design

From sketching the components of a user interface and layout to illustrating commercial products and public services displayed on a website, graphic design is not just decoration: it is a critical component in influencing how people communicate, collaborate, and compete (Muoio & McCauley, 1999:1). The primary consideration of design usability in a Web interface, Jacob Nielsen (2000a:100) suggests, is “simplicity.” From the viewpoint of Web usability, simplicity is the key principle behind creating a usable design because the

content of the website is the main focus of the Web user's attention. Figure 2-14 shows, in relation to considerations of Web usability, the concerns for design principles held by other researchers, such as Shneiderman (1998:74-5), Lynch and Horton (1999:62-5), Badre (2002:148-161), Thurow (2002:34), and McCracken & Wolfe (2004:18-22):

Researcher	Design principles
Shneiderman (1998:74-5)	<ol style="list-style-type: none"> <li>1. Strive for consistency</li> <li>2. Enable frequent users to use shortcuts</li> <li>3. Offer information feedback</li> <li>4. Design dialogues to yield closure</li> <li>5. Offer error prevention and simple error handling</li> <li>6. Permit easy reversal of actions</li> <li>7. Support internal locus of control</li> <li>8. Reduce short-term memory load</li> </ol>
Lynch and Horton(1999:62-5)	<ol style="list-style-type: none"> <li>1. Consistency and predictability</li> <li>2. Grids bring order to the page</li> <li>3. Vertical stratification in Web pages</li> <li>4. Design for screening information</li> <li>5. Sample page grids</li> </ol>
Nielsen (2000a:97&100)	<ol style="list-style-type: none"> <li>1. Simplicity</li> <li>2. Content is the number one issue</li> </ol>
Badre (2002:148-161)	<ol style="list-style-type: none"> <li>1. Consistency</li> <li>2. Coherence</li> <li>3. Information placement</li> <li>4. Information coding</li> <li>5. Colour</li> <li>6. Text clarity</li> </ol>
Thurow (2002:34)	<ol style="list-style-type: none"> <li>1. Easy to read</li> <li>2. Easy to navigate</li> <li>3. Easy to find;</li> <li>4. Consistent in layout and design</li> <li>5. Quick to download</li> </ol>
McCracken & Wolfe (2004:18-22)	<ol style="list-style-type: none"> <li>1. Proximity</li> <li>2. Alignment</li> <li>3. Consistency</li> <li>4. Contrast</li> </ol>

Figure 2-14: Different design principles are generally developed for different concerns regarding information organisation in Web design (source from, Shneiderman (1998); Lynch and Horton (1999); Nielsen (2000a); Badre (2002); Thurow (2002); McCracken & Wolfe (2004)).

The principles listed in Figure 2-14 have generally been developed to reflect concerns about the organisation of Web information and Web design. Most of these principles are likely to focus less on visual aesthetics because of their emphasis on effective design. Jakob Nielsen (2000a) emphasises that the importance of content should be fundamental to the arrangement of a well-structured layout and the consideration of a Web page's visible zone for the average user.

The ultimate goal of these design principles is to make users feel satisfied when receiving information and services. In designing a user interface for users' needs, it is important not only to make the site effective but also to bring users to "engage in meaningful or pleasurable experiences" (Campbell & Pisterman, 1996:12). With regard to pleasurable experiences, as Badre (2002:147) points out, "*A positive experience can happen for many design-related reasons, ranging from good usability to attractive graphics.*" It is possible to seek a balance between attractive visual expression and interface usability in order to create a positive user experience in terms of emotional engagement.

Turning to the emotional aspect of Web usability, Kim and Moon (1998:4) have defined "emotional usability" as "[taking] the informative function of emotions into account when designing human-computer interfaces," because "the interface may elicit a variety of emotions, ranging from the basic affective feelings, such as joy or fear, to non-basic feelings, such as trustworthiness or sophistication." Emotional value and usability design seem to converge in the concern of providing users with positive experiences. The present research is also interested in seeking an understanding of how the

visual impact of Web interfaces can be more effectively integrated with Web usability in communication. Seeking a solution to this question should start with exploring users' emotional experiences.

### **2.3.4 Connections between graphic design and functions**

Since 1980, usability has been the dominant issue in designing a “user-compatible” and “user-friendly” interface (Badre, 2002:5). There are many issues relevant to the development of the usability of Web interfaces. In order to develop an understanding of the visual impact of Web interfaces, we shall focus on six basic aspects of Web functions, all of which are connected to graphic design: 1) Navigation; 2) “Readability” and “Legibility” for information arrangement; 3) Usability; 4) Interactivity; 5) Accessibility; and 6) “Look and Feel”. Through a discussion of these six issues, the relationship between usability and graphic design can be drawn out.

#### **2.3.4.1 Navigation**

The navigation system of a website plays an important part in a user's browsing experience. Navigation design is also an essential feature in estimating the usability of a website. As McCracken and Wolfe (2004:110) claim, navigational elements are based on the visualisation of the text and graphic content, in order to display the user's options and current position in a site. To develop a directional guide for users, the Web design analyst



Jakob Nielsen (2000a:188) raises three questions to cover user's navigational questions:

- 1) *Where am I?*
- 2) *Where have I been?*
- 3) *Where can I go?*

He suggests that these three questions should be answered by a well-structured navigation system. The basic concern is rooted in the maxim *do not let users get lost*. It is also an essential concern of this research to explore what graphic design can do for navigational cues. Since it is not only used for decoration, graphic design should consider and clearly incorporate a sense of location into Web navigation to improve user experience.

In a Web interface, there is a diversity of navigational cues to guide a user to explore a website, including navigation bars, menus, sitemaps, links, buttons, icons, content lists, indexes, site-search engines, landmarks, and historical trails, as shown in the squares in Figure 2-15.



Figure 2-15: An interface example showing a diversity of navigational cues: navigation bars, menus, sitemaps, links, buttons, icons, content lists, indexes, a site-search engine, landmarks, and historical trails—shown within purple squares. The image source is from <http://www.cats.org.uk/>.

To improve user experience of a site, it is important to maintain consistency in graphical navigation devices throughout the whole site. It is the equivalent of building a “wayfinding” system in the physical world, which allows people to continuously redefine their position in the environment, and makes the site more familiar to them through their continued exploration in cyberspace. In 1990, Peponis et al. aptly described *wayfinding* as “*the ability to find a way (from a starting point) to a particular location in an expedient manner and recognise the destination when reached*” (Germanchis, Cartwright, & Pettit, 2005:2). Some research has explored how to improve the use of visualisation techniques to transfer users’ intuitive wayfinding behaviour from the real world to cyberspace in order to create a more easily navigable experience in a virtual realm (Cheng, 1998) such as computer gaming environments (Germanchis et al., 2005) and the WWW (Bachiochi et al., 1997).

Navigation is the process of determining an answer to the question: “where does a user want to go?” Much recent research on wayfinding has begun to discuss how to improve navigational aids in order to diminish negative user experiences on the WWW (Bachiochi et al., 1997). Sign design, which in the physical world provides directions to one or more supplemental destinations to support people’s wayfinding behaviour, is able to sustain user attention and enhance memory for directions on the Web as well.

Those icons, menus, and buttons functioning as signs in a Web interface should imply a sequence of actions and should be made available for retrieval from memory to guide users (Badre, 2002:141-2). A consistent visual hierarchy of Web graphic design is essential for designers to arrange the content both logically and predictably (Lynch &

Horton, 1999:53). Graphic design plays an important role in arranging navigational cues in a well-structured layout, and therefore it is able to visually guide users through the interface content. Through visual scanning processes, users can build up a first impression of a Web interface and are encouraged to further explore the site. Generally, users first view an interface as a large mass of shapes and colours which are contrasted against the background field, and hence, they often quickly scan the content instead of reading it (Lynch & Horton, 1999:53). Colours and shapes are useful elements to assist visitors to “organise chunks of information” (Badre, 2002:186).

Indexing, labelling categories, structuring a site map, or allowing the typing of keywords into a search engine are methods commonly used by websites to support user browse and search activities. Although Web interfaces/pages share many graphic, functional, and editorial similarities, the graphic design on screen is not as it is on the printed page. Typically, the difference lies in the users’ interactive experiences because the choice of route lies with the reader and not the designer/writer. Some websites may contain excessive repetitions of navigational cues on a single page in order to prevent users skipping important information that designers wish to be read. However, this can result in a visually cluttered layout.

According to the design principles shown in Figure 2-14, when it comes to balancing usability requirements and effective information processing, simple designs seem to be most acceptable. However, there is another factor to consider with respect to “encouragement” and “inspiration.” When users visit a website, the home page or entry page is not there simply to offer them a navigational tool, but also to encourage users to

explore the site further and lead them to visit the site again. When utilising search engines, such as Google Search, Yahoo Search, and MSN Search, users gather information from the search results that guide them to certain websites. In this instance graphic design can exert influence on users' first impressions and their decisions on subsequent visits. Indeed, Badre (2002:175) correctly observes, "*A visitor to a website may decide whether to navigate further into a site based solely on the aesthetic appeal of the home or entry page.*" The potential of graphic design for a website seems to mean more than visual decoration because emotional interactions can greatly enrich user experience. Besides providing navigational functions, the graphic design of a Web interface needs to be considered further as to its potential influence on the emotional dimension of user experience.

#### **2.3.4.2 "Readability" and "Legibility" for information arrangement**

Designing a website depends to a large extent on how designers structure the site's information content (e.g. text, images, and multimedia) into user-centred dimensions to satisfy users' needs through a combination of browse, search, request or interaction mechanisms. Over the last 20 years Information Architectural design (IA design) has become an essential issue for developing websites with good content.

In relation to information frameworks catering to the special needs of individual organisations, IA design is one of the key approaches for creating a positive user experience by incorporating two other fields: technical design and graphic design. When building a website, designers can catalogue and detail possible contents in an

organisational scheme. Once the content structure has been drafted, designers might build small-scale prototypes to represent design ideas. A prototype allows designers to test potential user reactions as part of Web usability evaluation, which normally involves inviting users to participate in tests. To organise informational content in a website, “readability” and “legibility” can be discussed in two respects: one is related to the understanding of the information context for both terms and the other concerns the different readability and legibility requirements of a home page and sub-level pages.

In terms of information context, “readability” is mainly related to whether the content of information, such as phrases, words, titles, and labels (or links, icons, and fields), accords with the target user’s understanding (Badre, 2002:160). A site’s level of readability will decide whether a user can read it fluently without interference; thus, designers should avoid unconventional terms, technical jargon, and vague, ambiguous wording within a single textual link.

“Legibility” mainly refers to the idea that good typography can influence textual clarity by employing visual contrast between different font types and sizes, and between text blocks, headlines, and surrounding white space (Lynch & Horton, 1999:81). By applying these forms of visual contrast using different colours, sizes, and fonts, a website can attract the audience’s eyes and minds.

*Readability* and *legibility* work together to improve the quality of the information provided in a site. However, if a website contains information that is crammed together or text that is too dense or too long, its visual presentation will be insignificant because users are more likely to be discouraged from exploring the site further.

From 1963 to 1988, Klare treated *readability* as indicating the ease of understanding or comprehending a two-dimensional material (Zibell, 2000). However, from a readability angle and from the perspective of Web usability analysts, the presentation of information on the Web has changed from a linear scanning method into a three-dimensional environment with hyperlinks and interactive devices. In order to improve quality in structuring readable and legible information, designers might better avoid the following weaknesses, listed in Figure 2-16:

Weakness	Description
Inconsistency	<ul style="list-style-type: none"> <li>• Visual cues that tell the users nothing or provide misinformation</li> <li>• A low-degree of uniformity in the layout within and across pages</li> <li>• Visual identity systems that do not match from one page to the next</li> <li>• Visual labels, metaphors and icons that do not match from one page to the next</li> <li>• An unstructured and incomplete site</li> <li>• Cluttered layout and structure</li> <li>• No visual hierarchy</li> <li>• Incorrect highlines and contrasts in the text and background colour combination such that the content cannot be read properly</li> </ul>
Bad colour scheme	<ul style="list-style-type: none"> <li>• Not creating colour consistency or focus from one page to the next</li> <li>• Wrong visual implications to information by different colour connotations in different cultures</li> </ul>
Insecurity and low interference environment	<ul style="list-style-type: none"> <li>• No notification that any information a person gives is secure</li> <li>• No mention that the information will not be shared</li> <li>• No confirmation that the information has been received</li> <li>• No explanation of how the security of the site works</li> </ul>
Incorrect link labels	<ul style="list-style-type: none"> <li>• Links that do not lead users to where they claim to</li> <li>• Links that do not provide information as promised</li> <li>• Text that looks like a textual link but links to nothing after clicking</li> <li>• Links that do not offer users the opportunity to go “back” and “home”</li> </ul>

Figure 2-16: The common weaknesses in structuring readable and legible information (sources modified from Rosenfeld & Morville (1998); Hargis (2000); Zibell (2000)).

The above principles concerning readability and legibility are not hugely diverse in terms of Web interface design and they may be subjective in their interpretation of potential mistakes in Web design. However, they do provide examples of the most common weaknesses when structuring colours, links, and text information in a site.

There are different requirements for readability and legibility in a home (front) page and sub-level pages. A homepage performs a variety of functions as an entry to a site. It establishes the site's visual identity and gives a clear introduction to domain-specific information (Badre, 2002:161). By using visual metaphors such as links, buttons, tabs, and icons, users can navigate about the site and seek useful information. With a hierarchical visual organisation of the home page, a site tends to provide the users with an attractive, appropriate, and effective environment to obtain what they are looking for.

The home page organises several different functions for sub-level pages, such as news and menu listings, advertisement displays, navigational systems, and organisation. The home page is not only developed with function-oriented considerations but also with visual aesthetic needs in mind, because it is the front line for the promotion of the content of a site. Figure 2-17 shows a website from its home page to other sub-level pages: it is designed with cohesive aesthetic and emotional stimuli in order to provide a particular visual atmosphere for visitors to immerse themselves in.



Figure 2-17: A series of pages of a website presenting its particular aesthetic to trigger audience emotions (<http://www.agatharuizdelaprada.com/swf/index.html>).

On the other hand, some sites tend to be too dense with text and information, both of which restrain users' ability to scroll down a home page. Nielsen's usability studies suggest that scrolling navigation pages are unsuitable for most users because they make it difficult to view all the available options and information on a single page at the same time. Too much information appearing on the same page might lead to an increase on the user's memory load, which compromises usability and increases the risks of errors (Nielsen, 2000a:115). The sub-level page, as a destination page that presents specific content and fewer navigation options, is a less harmful destination for scroll bars. Normally though, users prefer not to use scroll bars when viewing pages (Nielsen, 1999:1).

In sum, the principles of readability and legibility are based on how users feel and experience, and are related to issues of usability and visual pleasure. Site readability and legibility need to be designed with a balance of functionality and aesthetics and to better answer users' needs and interests, which are the focus of user-centred design.



### 2.3.4.3 Usability

In making usable site interfaces, various usability guidelines have been applied to improve users' levels of satisfaction, and these have been established by many researchers (e.g. Ivory & Hearst, 2001; Lynch & Horton, 1999; Nielsen, 2000a; Preece et al., 2002; Rubin, 1994; Shneiderman, 1998). "Usability" is an essential concept for mapping users' requirements and needs. It is found in research on user behaviour and deals with the final system or product working in practice (Nielsen, 2005b:1; Faulkner, 1998). The content of the concept of usability consists of three main aspects: 1) effectiveness, 2) efficiency and 3) satisfaction (Frøkjær et al., 2000).

With respect to the aspects of effectiveness and efficiency, they are easy to associate with effective and efficient learning experiences, which are related to the length of learning time. Satisfaction is more complex and it is harder to define a single meaning for this term. It can be associated with many emotional involvements, such as feeling happy, secure, comfortable, and entertained.

As Quesenbery (2001) states, usability is not meant to be simply "ease of use;" it is more about satisfying user needs and consists of five main characteristics. As Figure 2-18 shows, the engaging characteristic seems to define a fashionable space for discussing website aesthetics (though Quesenbery did not mean to cover visual aesthetics in usability engineering as does the mainstream theory of the HCI community). However, the scope of visual design has been intuitively involved with aesthetic and emotional issues relating to visual experience because people have the ability to tell the difference between the

beautiful and the ugly, for this is a part of human nature. It is hard to take away such nature from individual visual interactions.

Characteristic	Description
<b>Efficient</b>	Efficiency can be described as the speed (and accuracy) with which users can complete the tasks for which they use the product. ISO 9241 defines efficiency as the total resources expended on a task. Efficiency metrics include the number of clicks or keystrokes required or the total "time on task".
<b>Effective</b>	Effectiveness is the completeness and accuracy with which users achieve specified goals. It is determined by looking at whether the user's goals are met successfully and whether all work is correct.
<b>Engaging</b>	An interface is engaging if it is pleasant and satisfying to use. Visual design is the most obvious element of this characteristic. The style of the visual presentation, the number, functions and type of graphic images or colours (especially on websites), and the use of any multimedia elements are all part of a user's immediate reaction.
<b>Error Tolerant</b>	The ultimate goal is a system which has no errors. But, product developers are human, and computer systems far from perfect, so errors may occur. An error tolerant program is designed to prevent errors caused by the user's interaction, and to help the user in recovering from any errors that do occur.
<b>Easy to Learn</b>	One of the biggest objections to "usability" comes from people who fear that it will be used to create products with a low barrier to entry, but which are not powerful enough for sustained use.

Figure 2-18: Usability evaluation is based on five characteristics which must meet the user requirements of a product (Source: Quesenbery, 2001:1-3).

With respect to “error tolerance”, almost all websites are likely to have a structured Web page with a logical path of entry. Therefore, one way that is often used to maintain user interest in further exploring a website is not to let the users get lost. Visual elements and metaphors play an important role in improving the quality of Web usability. Besides affective appearance, those visual metaphors are designed to promote technical functions more effectively and more intuitively.

Each of these subjects refers to how easily an interface system can be learned, used, memorised, and accessed by users. The subjects can be turned into usability criteria which enable the improvement of usability and create pleasing interaction between interface technology and user (Preece et al., 2002:18). However, in relation to this, visual pleasure has been discussed and debated mainly in terms of emotional values versus functionalism.

In 1987, Maslow famously said the hierarchy of human needs, from the basic satisfaction of survival, safety, social, and personal needs to sublime “*self-actualisation*,” is a process of developing human talents, capacities, and potential to the fullest (Bar-on, 2001:85-86; see Figure 2-19). Website usability improves physical and cognitive satisfaction; however, there are emotional needs beyond utilitarian experience.



Figure 2-19: Maslow's Hierarchy of Needs— Abraham Maslow developed the hierarchy of human needs to show that people have to satisfy basic physiological needs before other higher needs can be satisfied (Santrock, 2005:430).

The use of graphics for aesthetic expression has raised considerable debate over the balance between usability and aesthetics for user browsing experience. Norman's theory (2000:155) has been used to emphasise the major focus of design and it is to "be used, to be understood." In 2004, Norman turned his attention to emotional design and since then has redefined aesthetic value as referring to positive user experience, such as pleasure and enjoyment. From a competing perspective, Meads and Nielson (2001) argue that "Usability is not Graphic Design," and that the industry has ignored the fact that aesthetic expression is a fundamental factor in enriching user experience. Several textbooks, such as Dix et al. (2004), Shneiderman (1998), Baecker et al., (1995), have paid little attention to the aesthetic value of user experience. The HCI community, in fact, has been ignoring aesthetics in Web design completely (Badre, 2002: 174).

*“Graphics, when effectively designed, can be useful tools for information processing”* (Badre, 2002: 186). In emphasising the aesthetic use of graphic design, graphics are equally important for effectively facilitating users in obtaining Web information or services because the user interface supplies indexes, menus, and buttons. Additionally, colour can be used to highlight the important information and aid users in how to read information in a particular order. For example, an appropriate colour scheme can match a website’s visual personality<sup>5</sup> and prompt users to organise chunks of information accordingly. Designers can use different colours to highlight important information, or use other visual illusions to create three-dimensional Web gaming. Graphic applications on the Web are related not only to aesthetic expression, but also to users’ emotional and cognitive needs as well as facilitating users’ visits to and interactions with the website.

In “Emotional Design,” Donald Norman (2004) offers provocative ideas that address the impact of usability and emotion in design. He shifts usability away from being ugly and boring to being more evocatively beautiful and pleasing. This is an important argument, which respects the aesthetic quality of usability engineering. In today’s Web interfaces, usability is designed with a diverse range of visual elements. When evaluating user experience, aesthetic and emotional experiences cannot be ignored and we need to focus on how visual design can improve usability in order to complete user experience.

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<sup>5</sup> Visual personality: used to describe the inner character of a design or product, which is itself defined by visual elements, such as colour, shapes, and structures. For example, a bright site, alive with pink, white, and yellow can be seen as female, peaceful, and energetic (Peck, 2001).

#### 2.3.4.4 Interactivity

Web interfaces have been studied through looking at the interaction between user and system, as well as how interaction is affected by visual interfaces, so design interactivity has become crucial in influencing user reactions and sequences of user actions. The relationship between Web communication and real-time is dynamic, so interactivity is one of the differences between the Internet and print media. When developing interactive designs, to explain the interactivity that takes place on a Web interface researchers tend to refer to Donald Norman's (2000) design principles: 1) visibility, 2) feedback, 3) constraints, and 4) mapping. It is useful to understand the relationship between these issues and interactivity when designing a Web interface.

Visibility—making things visible—is clearly definable (Norman, 2000:17). Preece et al. (2002:21) have further explained: *“The more visible functions are, the more likely users will be able to know what to do next.”* More visible design tends to provide users with more control over their experience. In a user interface, visual cues (e.g. icons, graphics, buttons, and broad texts) denote functions beyond visual decoration. If a user can understand these visual cues, they will easily control their navigation in the Web. Interface visibility seems to extend the user's ability to easily direct their experiences, which reflects the quality of usability.

Feedback is related to the concept of visibility, and involves a sequence of actions where users send back information about which actions have been completed. It allows them to continue the activity, for example by clicking on a pull-down menu and hyperlink

to access the content of the following pages. The corresponding sequence takes place between Web server and user. Interactivity is crucial because if an error occurs it can be dealt with through the system feeding back to the Web server and solving the problem as soon as possible (Dix et al., 2004).

The concept of *constraint* refers to giving users certain visual hints which determine user interaction within a sequence of possible actions. For example, a common design practice in Web interfaces is to alter the appearance of certain menu links by changing their colour in order to remind users where they have already been. Norman (2000:82-6) categorises constraints into four types—physical, semantic, logical, and cultural—all of which can influence user actions. For example, cultural constraints are related to learned conventions, such as using red, which can mean a warning or danger (Preece et al., 2002).

Mapping concerns the relationship between controls and their effects. A good example of mapping is the Web button design used to represent the movement of an interactive button object as it is pressed and released. These behavioural sequences make it easy for users to determine their subsequent actions and their effects. Thus, when creating an interactive design for a Web interface, mapping is important in order to help the user follow common conventions or simple cues for certain actions. Graphic design has also influenced how this mapping can be read by users (See Figure 2-20).



Figure 2-20: Four possible graphic combinations of arrow-key mappings for users to test which is the most natural (source: Preece et al., 2002:23).

There are other sensuous interactions involved in Web design to extend users' sensuous interactive experience. To date, interactive sounds, smell and touch have also been developed further for use with the Web. The last two are not common; examples include "ismell" which makes smells involved in interactive experience with personal scent (<http://contourinc.com/p/prod15.html>) and "remotehome" which turns furniture and architectural elements into tangible means of communication (<http://www.remotehome.org/>). Both of these are in the experimental stage.

As we have seen, the interactivity of the Web interface connects visibility, feedback, constraints, and mapping to facilitate user experiences and interactive relationship with Web functions. Feedback on interactivity (Preece et al., 2002:21) seems to indicate that it makes a fundamental difference to users' experiences when designers translate two-dimensional visual elements into dynamic interactive relationships. Through real-time visual clues and feedback, the user can feel more at ease when navigating online. Web interactivity has been proven to considerably improve usability.



#### 2.3.4.5 Accessibility

*“The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect”.*

Tim Berners-Lee, The inventor of the World Wide Web (<http://www.w3.org/WAI/>)

In 1994 Tim Berners-Lee founded the World Wide Web Consortium (W3C) at the Massachusetts Institute of Technology (MIT) Laboratory for Computer Science (LCS) in collaboration with CERN, DARPA, and the European Commission (W3Consortium, 2005a). One of the topic areas for W3C’s attention was Web accessibility, which has been detailed by the Web Accessibility Initiative (WAI) and is an outgrowth of the commitment of the W3C institution.

According to WAI guidelines (see Figure 2-21), Web accessibility means that people with disabilities, including visual, auditory, physical, speech, cognitive, and neurological disabilities, should be able to perceive, understand, navigate, and interact with the Web, and that they can actually contribute to the Web. The principle of accessibility also benefits others, such as older people with diminished vision, hearing, dexterity, or memory. For example, people suffering from colour-blindness cannot recognise some colour combinations, such as yellow on green, green on red, red on green, blue on red, red on blue, and red on black (Vest, Crowson, & Pochran, 2004:94). Subtle design is required to improve the legibility of these colour combinations (see Figure 2-22). Further examples of how to improve accessibility can be found in McCracken and Wolfe (2004:210-231) and W3Consortium (2005b:1).

**Web Content Accessibility Guidelines** (Source: W3Consortium, 2005b)

1. Provide equivalent alternatives to auditory and visual content.
2. Don't rely on colour alone.
3. Use markup and style sheets and do so properly.
4. Clarify natural language usage.
5. Create tables that transform gracefully.
6. Ensure that pages featuring new technologies transform gracefully.
7. Ensure user control of time-sensitive content changes.
8. Ensure direct accessibility of embedded user interfaces.
9. Design for device-independence.
10. Use interim solutions.
11. Use W3C technologies and guidelines.
12. Provide context and orientation information.
13. Provide clear navigation mechanisms.
14. Ensure that documents are clear and simple.

Figure 2-21: These guidelines explain how to make Web information accessible to people with disabilities, source: "*Web Content Accessibility Guidelines 1.0*," part of a series of accessibility guidelines published by the Web Accessibility Initiative (<http://www.w3.org/TR/WAI-WEBCONTENT/#Guidelines>).



Figure 2-22: Some users are colour-blind and cannot see red type on a black background (as shown in the image on the left), so designers leave a white space between the red and black parts in order to enable colour-blind users to process the information, as the right image demonstrates (image source Vest et al., 2004:94).

The core aim of the WAI guidelines is to reach the goal of “universal access” (McCracken & Wolfe, 2004:225). According to McCracken and Wolfe (2004), the WAI guidelines relate to two general themes: 1) ensuring the graceful transformation of page content and 2) making content readable, legible, understandable, and navigable. These two themes can be incorporated by appropriate graphic design and visual arrangement. To assess their quality, they can be evaluated through user experiences and visual reactions. The intangible quality of the graphic elements on a website is at work in welcoming and guiding visiting users, in order to improve accessibility. As the interface’s graphics and layout are integrated with a navigational system, usability engineering, and interaction design, the accessibility of the design is essentially connected with producing pleasing experiences for users.

#### **2.3.4.6 “Look and feel”**

In brief, a user can think of an interface in terms of look and feel. *“The look comprises the screen layout, graphics, wording and so on, and the feel is the behaviour and processing”* (Snyder, 2003:49). The look and feel of an interface might *“catch users’ attention and interest”* when they first see it and try it out (Mandel, 1997:32). In general, visible elements of the “look,” including colour, animation, shapes, text, graphics, and screen layout, are to present information to the users. These visual elements work together to create the first impression of the interface for users to process. Therefore, understanding how visual presentation and its aesthetics make users feel helps designers to question established

practices and assumptions, and therefore solves existing problems.

However, “Web aesthetics” has been misunderstood owing to the fact that the central research on user experience is dominated by “the usability of technology” (McCarthy & Wright, 2004:42). In order to speed up the design process, most designers develop their understanding of users’ needs from their own experience or from findings on usability testing in laboratories. Campbell and Pisterman (1996:10) express concern about this oversight of user values because “*the accelerating growth in popularity of the Internet poses a unique challenge for effective design of interactive services.*” Something more than *efficiency* and *utility* is required to meet users’ needs—things such as pleasure, enjoyment, and other emotional experiences are involved. In the traditional approaches to user research, there is less concern about the importance of users’ emotional needs. “*Technological innovation will only be fully accepted by users if their emotional requirements are also understood and met*” (Campbell & Pisterman, 1996: 11). For users the first impression of a website comes from the “look” of an interface, which is responsible for taking on the emotional and aesthetic dimensions of user experience. For example, the “beauty” of design is based on the emotional interaction between personal aesthetics and interface aesthetics. The “look and feel” is equivalent to “aesthetics and emotional engagement,” which are always linked to “design quality.”<sup>6</sup>

According to the IBM look-and-feel iceberg (Figure 2-23), visual presentation and aesthetics are there to generate the most obvious part of a user interface for conveying

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<sup>6</sup> Karvonen (2000: 2) explains “design quality” as a “professional design” referring to the received skilfulness of the end result—e.g. creating pleasure for users.

information. Visual aesthetics and representation are just the tip of the iceberg, which is the least important yet the most obvious part of the interface. The second layer is the “feel” of the interface, which is about user interaction areas, such as the keyboard, function keys, and other input devices, and also includes how the system provides feedback on user actions. The bottom part is the most important but least visible part of the user interface, and concerns object properties and the relationships between objects. This is “*where designers determine the appropriate metaphors to match the users’ mental model of the system and the tasks they are trying to do*” (Mandel, 1997:34).

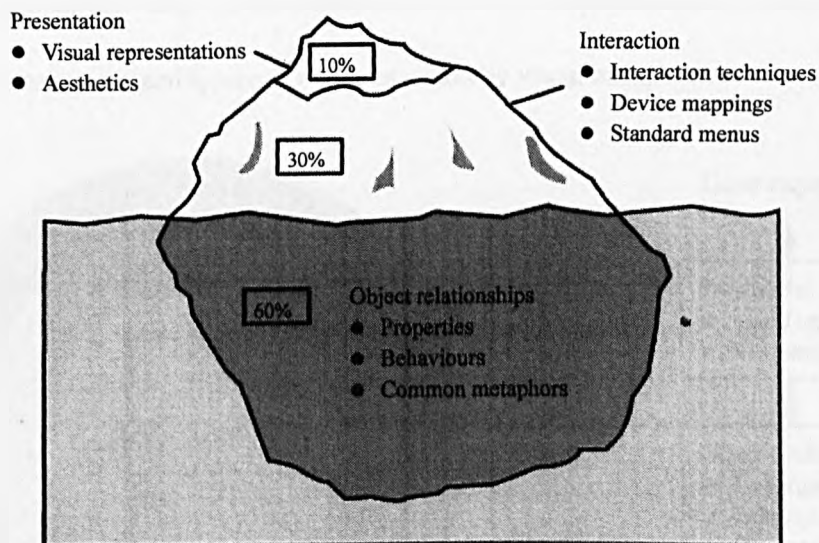


Figure 2-23: The look-and-feel iceberg (source: Mandel, 1997:33-34).

In comparison with the look-and-feel iceberg, the present research aims to modify user interaction in line with Figure 2-24. When a user sees a website, their first contact is with the visual interface, then they start to realise the meanings which lie behind the icons,

images, and visual metaphors, and their decision-making system starts to give them signals to act (This description refers to Jakobson's communication model, see Figure 2-25). When designers create a graphic user interface to convey information, images, and textual elements are received by users; through their cognitive process, their brains decode the messages received and make decisions about what to do next. Users' emotions are correspondingly triggered to respond to the first visual interface with which they come into contact.

If the visual metaphor cannot clearly indicate its meanings or functions, it may easily confuse the user and they may not know where to click for the desired information. In this kind of situation, the "look" of the interface is not only about aesthetics but also about functional interactions and symbolic communication by visual metaphors.

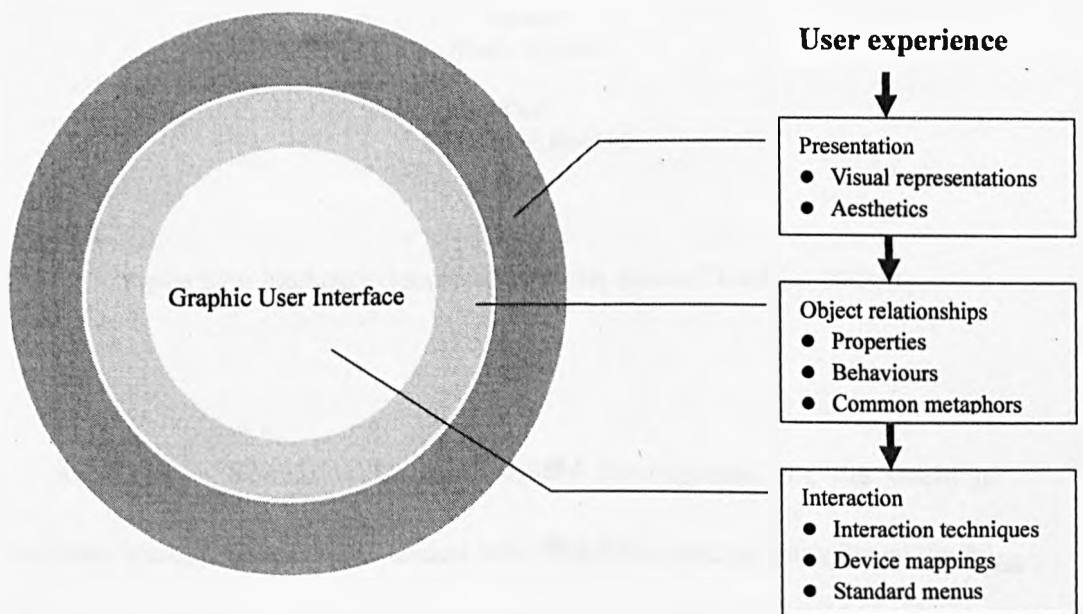


Figure 2-24: This diagram represents how users interact with an interface in communication processes; the first contact with the user interface is at the level of visual representations and aesthetics, the following contacts are through object relationships and interaction design.

User-centred designers try to develop appropriate approaches to understand users' individual experiences in order to gain insights greater than those found in aggregated market research reports (e.g. Black, 2006:1). In the traditional approach to user research, user values are often not involved in the early stages of design development; so final designs might not fulfil end-user needs. Since the look and feel of user interfaces is essential to a successful user experience, investigating the user's first impression and performance can help develop an understanding about user emotional engagement with interfaces and user decision-making processes.

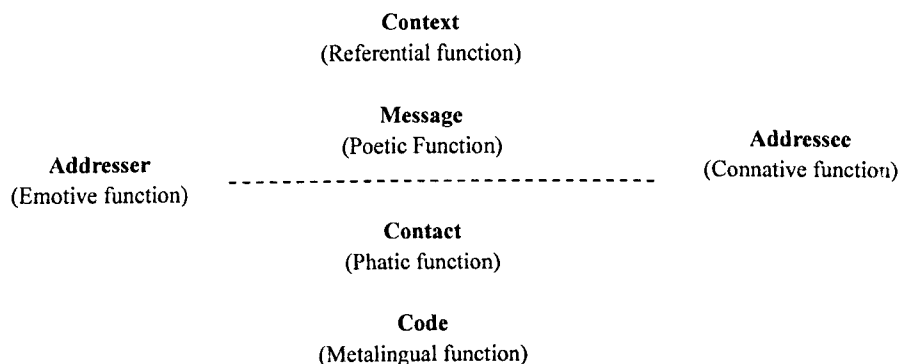


Figure 2-25: Jakobson's communication model (source: Thorlacius, 2002:86)

According to Norman, utility and usability are important, but life would be incomplete without the emotional contact with aesthetics, such as being happy, joyful, angry, fearful, amused, and excited. He also argues that “*Good designers worry a lot about the physical feel of their products. Physical touch and feel can make a huge difference in your appreciation of their creations*” (Norman, 2004:79). “*Touch and feel*” are hard to





## 2.4 Web user experience

User experience when browsing the Internet is generated by different forms of interaction with the World Wide Web (WWW). According to the Nielsen Norman Group (2003:1):

*“ ‘User experience’ encompasses all aspects of the end-user’s interaction with the company, its services, and its products. The first requirement for an exemplary user experience is to meet the exact needs of the customer, without fuss or bother. Next comes [sic] simplicity and elegance that produce products that are a joy to own, a joy to use. [...] In order to achieve high-quality user experience in a company’s offerings there must be a seamless merging of the services of multiple disciplines, including engineering, marketing, graphical and industrial design, and interface design.”*

The primary concept in designing user experience is to reduce user frustration, but this concerns functional requirements in the early stages of website development. As computing technologies advance, the design concerns shift to creating a pleasing experience. Graphic design is one of several design disciplines which aim to improve user experience, especially through aesthetic engagements with technology. However, many people are still having poor user experiences with websites. Poor experiences that result in site abandonment usually occur in a website with cluttered design, which can easily aggravate users.

From an HCI viewpoint, it is essential to take into account the user’s cognitive and

perceptual limits and capabilities which govern how they interact with different designs. Therefore, we shall explore five factors concerning how user experience is created: 1) Cognition; 2) Sensation and Perception; 3) Attention; 4) Memory; and 5) Personality.

An understanding of how these five factors work together to generate user experience is essential when considering the connections between users' cognitive and perceptual experiences. Cognition is a dominant issue when discussing user experience in terms of HCI. Sensation and perception are connected with users' emotions. Catching users' attention is the first step in attracting users who are visiting a website. Users' memory can influence their attention span. And their past learning can impact on their current decision-making. When users first get an impression of a website, their cognitive ability will lead them to make a decision whether to explore the site further or not. These factors interact with each other to influence a user's subsequent behaviour. This section will discuss definitions of these five terms and their influence.

### 2.4.1 Cognition

The cognitive process concerns how people perceive, learn, remember, and think when they interact with their surroundings, including people, objects, and events. The term *cognition* means “*the act or process of knowing*” (McCracken & Wolfe, 2004:16). The word *cognition* is used to describe “*the interpretation of information from the outside world that is received through the senses*” (Faulkner, 1998:12). It is what enables human perception of objects and events, and includes the ability to interpret them as existing or

occurring (Faulkner, 1998:12). People's actions accord with what they sense after their mind has sorted through the information received.

One famous concept of interface design, WYSIWYG<sup>7</sup>, aims to replicate the formatting of the printed document. It emphasises that a user does not need to spend a long time learning how to operate a user interface, which is designed with consideration for the user's cognitive ability. With an understanding of human cognitive processes, designers can understand how to design in ways that shorten users' learning time and reduce errors. Cognitive psychology is an important knowledge base for developing a user interface with usability, for instance in designing an arrow-key mapping for users to understand how to navigate through a site. An understanding of users' cognitive behaviour is essential knowledge for developing usability of design through user experience design (Norman, 2000:1).

## 2.4.2 Sensation and perception

Information about the world is collected through the sensory system before it is interpreted (Faulkner, 1998:13). Through the sensory organs (i.e. eyes, ears, nose, tongue, and skin), people receive information about external stimuli and have a sense of the world. The

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<sup>7</sup> WYSIWYG is the acronym for What You See Is What You Get, and pronounced "wizzy-wig" or "wuzzy-wig". In Web terms, it means allowing Web designers to design Web pages on screen so that the design is displayed as it appears in the software, when it is viewed in a browser (Gauntlett, 2002). However, Jakob Nielsen has a different perspective of WYSIWYG on the Web. He says that the, "Web is not WYSIWYG because of the variability in supported platforms [...] Furthermore, Web style sheets are merged with the user's style sheet to create the ultimate presentation" (Nielsen, 2000a:82).

process of sensory stimulus is the shift of sensations towards perception (Gavin, 1998:21-22).

Sensation and perception help us know the world. Santrock (2005:223) states that, *“Sensation is the process of receiving stimulus energies from the environment. Perception is the process of organising and interpreting sensory information to give it meaning. Sensation and perception are integrated. Perceiving the world involves both bottom-up and top-down processing.”*

Sensation is generated by the stimulation of the sensory receptors (e.g. eyes and ears) and the transmission of sensory information (e.g. about light and sound) to the central nervous system (e.g. the spinal cord and the brain). The process of receiving stimulation produces human sensations. Perception is not automatic but an active process where sensation is organised to outline an inner representation of external stimuli. Perception sometimes works at the same time as the corresponding sensation begins, or it can happen in the form of personal experiences and expectations that make sense of the sensory stimuli (Rathus, 2004). When sensory and perceptive abilities are integrated, they make people aware and conscious of the information they receive from sensory stimuli. In this process, their emotions are also triggered in preparation for their subsequent actions.

Emotion is the sensation of physical change, whereas feelings are thoughts or unconscious experiences (Candland, 2003). In the cognitive aspect of Web communication, i.e. the process of perceiving visual stimuli, perception is connected with the relationship between “communication,” “feedback”, and “sign conveyance” (Dimbleby & Burton, 1998:68). In Web communication, sensation, perception, and emotions are integrated in

stimulating the user's positive and negative experience. Sensation, perception, and emotions are hard to separate in users' feelings about Web-using experiences.

### 2.4.3 Attention

In 1890, William James declared that: "*Every one knows what attention is, it is the taking possession by the mind, in a clear and vivid form, of one out of what seem several simultaneously possible objects or trains of thought*" (James, 1890:403-4).

Attention takes effect when the action of concentrating and focusing mental effort is activated (Gavin, 1998:33-42). To give users a positive first impression of a website, it is essential to understand how to instantly catch their attention. If a user cannot be attracted to stay at a website even for a few seconds, the site will fail in its purpose.

A user's physical capability to sense information at any one time has its limits, especially in the Web environment which is filled with distracting stimuli. Selective attention is most relevant to the web design when designers intend to attract users' attention to their websites (Badre, 2002:42). Selective attention can steer the user's visual focus onto specific information and ignore the rest (Johnson & Proctor, 2004:341). Lindgaard, Fernandes, Dudek, & Brown, (2006:1) conducted three studies to ascertain how quickly people form opinions about the visual appeal of a Web page. The results indicate that visual appeal can be assessed within 50 milliseconds, which suggests that Web designers have about 1/20th of a second to create a good first impression. This is little time to catch the interests of the potential audience. The visual impact of the first page can influence the

viewers' perception when they further explore the site. Before the viewers perceive Web usability and information, visual aesthetics steers their emotional judgments in further interactions. Appealing visual expression is the first step in attracting users' attention and thus their interest in the content of the site.

#### 2.4.4 Memory

Human memory consists of a series of operations that assist people in having conscious experiences. Through sensible interactions with the Internet and Web, a Web user primarily acts as "*an information processor*" (Badre, 2002:79). The effectiveness of usability design partly relies on the users' compatibility in terms of their information-processing capabilities and limitations (Badre, 2002:79).

When users process information in an interactive environment, memory is the ability to remember information over time through encoding, storage, and retrieval (Santrock, 2005:306). There are three basic common memory abilities for human-computer interaction: 1) Long Term Memory (LTM); 2) Working Memory (WM) or Short Term Memory (STM); and 3) Sensory Memory (SM), which can assist in the retrieval of information (Faulkner, 1998:33-37).

The STM is a highly dynamic and vigorous working memory system that is linked to the attentional system and enables people to hold a limited amount of information for a short time (Gavin, 1998:51-54). STM deals with multiple units of memory, usually five to nine items at once. This grouping increases the likelihood of rapid information processing

(Miller, 1956:81-87).

The LTM is where the brain stores information that we have received, for retrieval even after very long periods of time. In the information storage process, over time people translate the more impressive information from the STM to the LTM. The retention of information from past experiences likely affects human activities very effectively, such as in decision-making, reasoning, planning, learning, and problem-solving.

Sensory Memory appears to consciously deal with information coming via the sense organs, such as the ears, nose, eyes, and tongue (Faulkner, 1998:36). It is a separate store from the STM. In the World Wide Web, visual interaction is more common than other forms of sensuous experience. The quality of information conveyance in a user interface is related to the ability to stimulate visual memory to be more durable and effective.

Memory is critical for a Web user to be able to navigate a site. Users tend to follow the simplest possible rules: “*do minimal work for maximal effect*” (Powell, 2002:31), which means reducing memory load of the learning processes as much as possible in order to allow them to perform their tasks with less difficulty. Therefore, if any features of a Web interface operation system requires recollection from the LTM, this might slow down user activity (Faulkner, 1998:35). The information stored in the STM can be processed more quickly than information retrieved from the LTM. Understanding the limitations on memory can help designers know how to organise information in a Web interface and make it easier for users to quickly gather information.

### 2.4.5 Personality

In psychology, personality is defined as “*a pattern of enduring, distinctive thoughts, emotions, and behaviours that characterise the way an individual adapts to the world*” (Santrock, 2005:477). Due to the unique pattern of the individual, everyone reacts differently to a given situation. According to Bandura’s Social Cognitive Theory, personality is learned and influenced by environment and experiences (see Figure 2-26). Through interaction between behaviour, environment, and personal/cognitive factors, the personality is gradually generated. Alternatively, Skinner’s behaviourist model presents an understanding of personality such that it is not necessarily created through internal traits and thoughts, and biological, or cognitive processes. Since personality is not determined by these factors, observing what people do is an important tool for understanding personality (Santrock, 2005:485-489). Skinner and Bandura have different perspectives on the influence of personal behaviour and stimulation by the environment.

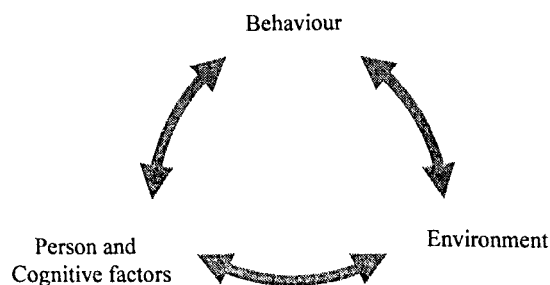


Figure 2-26: Bandura’s Social Cognitive Theory emphasises reciprocal influences between behaviour, environment, and person/cognitive factors (Santrock, 2005:487).



Their statements indicate the potential interaction between users and the Web world. From Skinner's perspective, individual personality can be observed from human interaction with the environment. As for Bandura's, he reminds us that the Web environment and activities can influence user behaviour and their interaction with the surroundings. For online entertainment (e.g. online games), creators should not use graphics that incite inappropriate behavioural results.

The influence of personality on Web design encompasses several issues: branding (e.g. Eccher, Hunley, & Simmons, 2004), site personality (e.g. Duyne, Landay, & Hong, 2002), user experience (e.g. Badre, 2002), and interface preference (e.g. Goatman, 2004). The first two are more relevant to image identification and design style for users, for they concern visual expression and visual communication. The last two are related to users' reactions and perceptions.

Badre (2002:74-75) explains three main personality factors which influence user experience: 1) "tolerance level," such as the degree of a user's patience in learning, design novelty and downloading time; 2) "affective factors," including personal attitude, morale, interests, and motivation, which are considerable issues for the design of a website; 3) "cognitive style," encompassing several dimensions of the different ways that users think about and perform tasks. These factors reflect the differences that determine how individuals decide to interact with and navigate a website. Personal differences have a large effect on entertainment-oriented websites. Coming to terms with users' various differences is still a big challenge to the creation of a satisfying user experience.

Goatman (2004:85) sketches six personality types which are reflected in his six

garden drawings (see Figure 2-27). As Shneiderman (1998:22) says, “*there is no simple taxonomy of user personality types.*” Goatman’s research is intended to generalise individual difference into statistical categories, which indicate emergent connections between personal preferences and interface design. Goatman’s classification with sketched landscape layouts seems to reveal a potential relationship between the graphic exercise, individual personality, and the forms of interfaces. His study seems to indicate that a generic relationship may be transferable to situations where interface methods can be applied and are involved in revealing human personality.

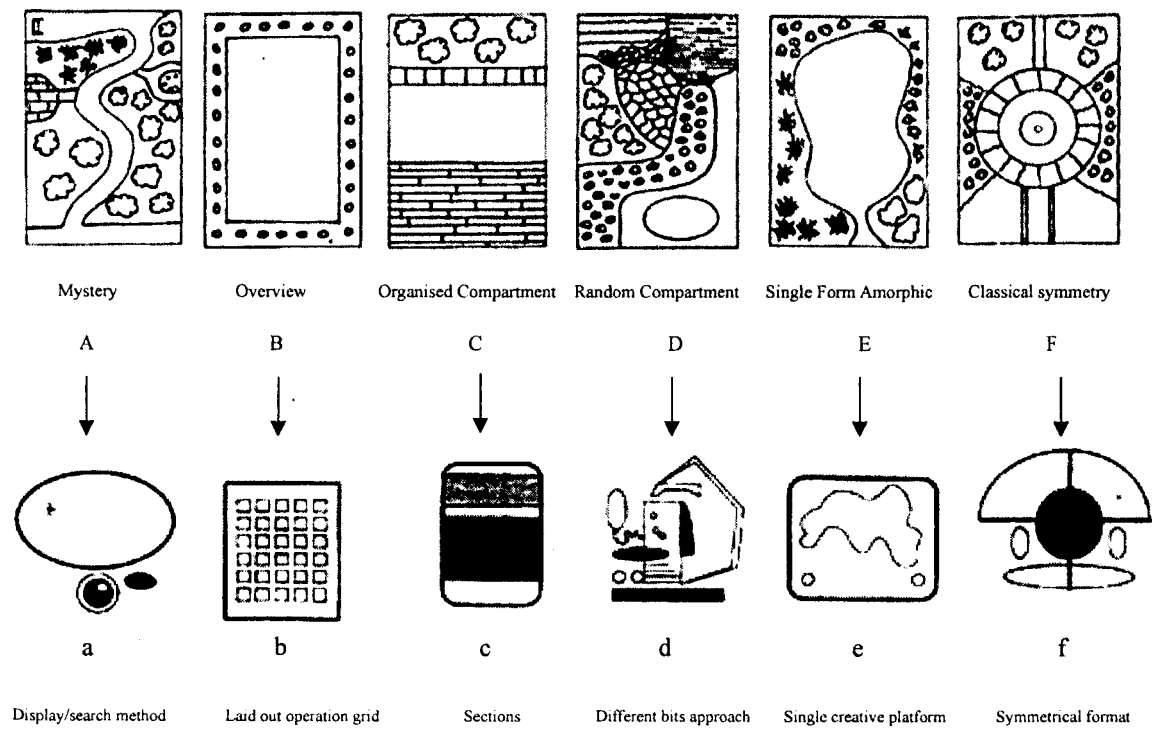


Figure.2-27: The six images (from A~F) are kinds of garden drawing identified by graphic features. The six images (from a~f) are generic examples of product interface demonstrating an experiential relationship with the six garden drawings. The relative visualised interface formats are provided by Goatman (2004:85).

This study will modify the elementary results of Goatman's research (see section 5.3.2 for further discussion of Goatman's research) and add to the garden drawings with another two drawings of library layouts and personal websites for use in user examinations. Over three rounds of testing, this research method intends to enhance the inner validity of the test when it is adopted with small-scale sampling. The outcome could encourage researchers to rethink how to locate user research in the early stage of the design process, in order to shorten the development schedule of website design.

## 2.5 Emotion, design, and experience

Emotion combines in its meaning references to “*feeling*”, to “*thinking*,” to “*a person’s bodily processes/events*” (Wierzbicka, 1999:1-5). With all these implications, emotions can and need to be studied, for they are “*ways of thinking, ways of feeling, ways of living, the links between ways of living and ways of thinking, the links between thoughts and feelings, the link between what people feel and what happens inside their bodies, and so on*” (Wierzbicka, 1999:5).

As a result, emotion cannot be pinned down to any particular framework. Even though emotion studies are highly complex, the value of emotions and their own influences have raised questions in many research fields, e.g. art and design research (Norman, 2004), cognitive psychology (Santrock, 2005), user behaviour and experience research (Kjeldskov et al., 2005), communication studies (Dimpleby & Burton, 1998; Morgan & Welton, 1992), Web studies (Kim, Lee, & Choi, 2003; Kim & Moon, 1998; Peck, 2001; Thielsch, 2005), and Human-Computer Interaction (Hayes-Roth, Ball, Picard, Lisetti, & Stern, 1998). When the visual aesthetics of design makes users pleased with their experience, then design, emotion, and experience are connected together to produce different interactions between users and designs. The following sections will discuss four relevant issues: 1) Emotion; 2) Emotional experience; 3) User difference; and 4) Emotional design.

### 2.5.1 Emotion

The study of emotions began thousands of years ago, at least as early as Aristotle (384-322 BC). He wondered what emotions exist and how artistic artefacts in paintings, words, sounds, and other forms might affect viewers, audiences, and participants (Kurtgdzu, 2003:2). Recent times have seen many other classic theories of emotion, such as James-Lange's theory (1884), John Broadus Waston's behaviorist theory (1913), Cannon-Bard's theory (1915), Sartre's phenomenological theory (1939), Schachter-Singer's theory (1962), and Robert Plutchik's theory (1980). Similar studies can also be found in the fields of cognitive appraisal theory and facial feedback theory. These prominent theories interpret emotions variously through the perspectives of cognition, thought, psychological and physiological change, and external expression or personal behaviour. Buck (2002:35) presents the following typology of emotions:

- Biological emotions: based on specific neuro-chemical systems, such as by arousal, reward-punishment, agonistic and prosocial processes.
- Social emotions: based biologically on attachment, such as pride and modesty.
- Cognitive emotions: based biologically on expectancy, such as interest, boredom and curiousness.
- Moral emotions: based on a combination of social attachment and expectancy.
- These emotion activations provide consequent interactions with the world and make life meaningful.

With respect to more practical approaches to emotions analysis in the design process, we tend to blur these typological boundaries and narrow the research focus onto how to assess users' emotional interactions with Web interfaces. Therefore, due to the complexity

of emotion theories, the research has occasionally been vague in discussing users' emotional experiences; whereas in much user research, it has been widely acknowledged that emotions have a strong influence on user experience design in customer/user oriented product developments (Kurtgdzu, 2003:49-59).

According to Picard (1998, Preface:x ), emotions play a critical role in influencing decision-making, perception, learning, memory, creativity, and a variety of other cognitive behaviour, and it also has an influence on human physical movements. For instance, Kim and Moon (1997 and 1998) attempt to design customer interfaces for cyber banking systems that will induce target emotions, e.g. trust, and feelings of security and reliability. Their research finds that basically a computer interface can elicit common target emotions because the interface resembles a collection of films and slides that are composed of diverse visual and auditory stimuli (Kim and Moon, 1997:2). In addition, the results of their research show that design factors, such as format, graphics, menus, main clipart, and colour, can have different emotional influences on people's feelings of trust about Web banking services (Kim et al., 2003:899-940; Kim & Moon, 1997:1, 1998:1-29).

These findings show that the visual elements of interfaces have confused the relationship between emotional and design factors, which can have different effects on users' emotional experiences. This is also the central concern of the present study. Despite usability issues dominating the HCI field, effective website design encompasses a larger and more complex aspect of design considerations than general users may at first perceive (Chou, 2002:22-8). Therefore, Web design needs to seek a balance between aesthetics and sophistication in the interface. So, it is clear that visual aesthetics have a vital influence on

user perception and experience and on-line communication, so this research project will explore these issues by making the observation of user emotional experience its first concern.

## 2.5.2 Emotional experience

*“Emotional experience can be considered a distinct kind of subjective awareness; different emotions correspond to different varieties of this kind of awareness”* (Frijda, 1986:176).

Each person’s emotional experience, generated by various interactions with the external world, is unique. Russell (1991:1) says, *“Motion, love, anger, happiness, and anxiety express concepts that influence people’s life”*. Translating those sensuous stimuli into human perceptions, emotional experience has a strong influence on personal value-judgements about one’s life. Emotional aspects of experience guide people in appropriate decision-making to move away from the bad and toward the good. Emotions are hard to separate from a person’s cognitive ability (Norman, 2004:7).

Emotional influences make users sensitive to their experiential processes. Positive and negative emotions have strong influences on user behaviour (Desmet, 2003:4-13) including value-judgements and decision-making. Insofar as a Web interface can act as a mediator between human and computer, understanding user emotional experience might be the first step to improving design quality.

Norman’s (2000:151-5) point of view in: *“The Design of Every Day Things”* is to emphasise understandable design with less aesthetic value, which leads him to argue that

“utility”, “usability” and “functions” are far more important than “emotions” and “aesthetics”, and “attractiveness,” even though he is infuriated by poorly designed objects. Forlizzi et al. (2003) have responded that designers seem to lack a shared understanding of emotional engagement with design context. In his newer design concepts that go beyond dominant usability-features, Norman (2004:19) has reversed his position and come to appreciate how “emotions” and “aesthetics,” and “attractiveness” make people feel engaged and think creatively. Developing knowledge of user emotional experience is a starting point to enhancing user interaction with design.

Exploring emotional experience is one important part of an interdisciplinary study of human-computer interaction. According to Desmet (2002:38), “*Emotions are multi-component entities, consisting of expressive reactions (e.g. smiling), physiological reactions (e.g. heart pounding), behavioural reactions (e.g. approaching), and subjective feeling (e.g. feeling happy).*” These different emotional reactions are of research interest in terms of design areas. User experience design has recently started to integrate hedonic values, such as giving pleasure, enjoyment, being fun to use (Knight & Jefsioutine, 2003:1). More studies have been conducted in relation to emotional experience research, e.g. Prof. Paul Ekman (<http://www.paulekman.com/>), who endeavours to understand emotions and evaluate truthfulness, Prof. Sylvan Tomkins (<http://www.tomkins.org/home/>) who studies emotion and psychological affection, and Prof. Rosalind W. Picard of the MIT Media Lab’s Affective Computing Research Group (<http://affect.media.mit.edu/>). These studies have brought further insights to the study of emotional impact.



### 2.5.3 User difference

On a Web page, text, icons, symbols, pictures and colours are there to convey information.

Designers can make use of different visual metaphors to express “*concepts or convey functionality*” (Badre, 2002:222). Web usability has traditionally focused on increasing ease of learning for users, especially for novices (Nielsen, 2000b:1). Taking into account different levels of user experience with computer and devices such as mouse, keyboard, and touch screen, and playing computer games, normally user types can be divided into *novice and occasional users* and *expert and frequent users* (Lynch and Horton, 1999:2), although terminology may differ. Users belonging to these two user types have different abilities to recognise computing operational design.

Differences in user personality, memory capacity, and cognitive ability can have an influence on interactive experiences with Web interfaces. As Lynch and Horton (1999:2) point out, novices tend to be wary of complex text menus. Both user types prefer attractive and clearly arranged layouts to complex and cluttered visual presentations. Visual appeal functions to directly activate viewers’ attention. Lindgaard, Fernandes, Dudek, and Brown (2006:1) discover that “*visual appeal can be assessed within 50 ms*”, which suggests that Web designers have about 50 ms to make a good first impression to engage with users’ emotional judgments through visual means.

In the early 1980s because of the great concern for “learnability” (Nielsen, 2000b:1), interfaces were constructed to be *easy to use* for novice users rather than being designed for visual aesthetics. The usability of websites was supposed to be about cognitive processing

and ergonomics rather than aesthetic issues. With the improvement of Web technologies, the Web has now become a mainstream communication tool, and the number of novice and occasional users is shrinking daily (Lynch and Horton, 1999:2). Visual aesthetics, as *emotional* usability, is now becoming more important in assisting Web usability. The aesthetics of Web interfaces is playing an important role not only in creating a good impression on users but also in providing information support. Users tend to enjoy usable design with visually pleasing experience (Norman, 2004). Therefore, this research takes this issue into account and explores user differences in three aspects: 1) Users' first impressions when they visit a website; 2) Users' emotional engagements with Web designs; and 3) Users' preferences towards interfaces. Associated with these questions, this research develops a series of methods for understanding user experience.

#### **2.5.4 Emotional design**

Emotion is a fundamental component of being human which enables us to feel happy, angry, proud or sad, and motivates action and brings meaning to enrich human experience. As Norman (2004:11) says, emotions are inseparable from cognition, as everything people do and think is tinged with emotion, with some emotions and affective states being driven by cognition, which might be subconscious or conscious processing.

In the fields of art and design, emotional experience such as joy, love, pleasure, fright, fear, and surprise, have been portrayed in order to enrich aesthetic experiences. So emotional engagement is an essential characteristic when defining the concept of

emotional design.

As Norman says, “*The human emotional system plays an essential role in survival, social interaction and cooperation, and learning*” (Norman, 2004:162). It is therefore understood that emotion corresponds to a person’s experiential process and responses to their surroundings. It can be a mental state related to an interactive relationship between people and surroundings, so it can permeate the atmosphere and create a distinctive experience. According to Beucker and Bruder (2004:246), “*Architects, designers, psychologists, sociologists, and especially poets mention how emotional design creates distinctive atmospheres.*” This distinctive atmosphere is partly connected to aesthetic context and empathy.

In product design, emotional considerations are brought into the design process to satisfy the qualitative needs of users. The emotional connection can be seen in “branding” (e.g. Eccher, Hunley & Simmons, 2004:96), “product personality” (e.g. Norman, 2004:56-60), “colour schemes” (e.g. McCracken & Wolfe, 2004:150-169), and “advertising” (e.g. Norman, 2004:41), in regard to “soft function/design”. It includes “*intangible qualities, such as emotional bonds, familiarity, aspirations, desire, sentimentality, aesthetics, personal taste, touch, smell, feel and personality.*” Relatively *hard* functions concern usability—including physical and cognitive functions, such as “*how it works, what it does, construction and materials*” (McDonagh-Philp & Lebbon, 1999:37). When designing a product, it is a basic requirement for designers to create a usable product with *hard functions*; however, it is essential for designers to engage in an emotional relationship with users and products in order to enhance the user’s quality of life

(McDonagh-Philp & Lebbon, 1999:32).

Emotional impact has recently been brought into the design brief for interactive design, as can be seen in Campbell and Pisterman (1996), Sklar and Gilmore (2004), Roberts, Wood, and Gibbens (1996), and Norman (2004). There has also been research into product design by McDonagh-Philp and Lebbon (1999), Desmet (2003), Forlizzi, DiSalvo and Hanington, (2003), and McDonagh and Watson (2004).

Emotional issues in design have been considered for many centuries. In art and design history, different forms, styles, and contexts have provided specific aesthetics, such as the baroque art of S. Carlo Church (Rome, 1665-67), the rococo Clock Room at Versailles (Paris, 1699-703). Take Kemp's (2003:4) observation for instance: "*Knowledge of the cultural or historical situations portrayed in art will create emotional connections with the viewer to allow him to see aesthetics forms clearly.*" So aesthetics is gradually learned from life experiences. Observing user experience is an opportunity to understand how users have an emotional interaction with such aesthetic experiences from life, which can lead researchers to have a better understanding of user aesthetic needs and emotional responses.

Aesthetic experience in design has a similarly appealing function which can make people feel positive and creative. As visual aesthetics colour a product, the user's emotional response can be improved by their experience of using a device, such as the Apple iPod (Figure 2-28). Design aesthetics create affection, inspire human emotions and improve the quality of the using experience.



Figure 2-28: In 2001 Apple launched the iPod music player, which combines design aesthetics, structure and functionality to create a unique visual and audio experience (source: <http://www.apple.com/ipod/ipod.html>).

However, the dominant paradigm for user experience research in Computer Mediated Communications (CMC) is usability, which has been driven by perspectives from the field of Human Computer Interaction (HCI). The HCI community continues to ignore the role of aesthetics in user experience (Badre, 2002:174): an emerging design—“User-Centred Design” (UCD) <sup>8</sup>—has initially aimed to improve the usability and usefulness of everything in line with Norman’s suggestions (2000:187-217), including software development, information systems, and interactive design. As such, the concept of User-Centred Design concerns itself both with usefulness and usability (Katz-Haas, 1998:1).

Norman (2004:8) states that the consideration of usability and usefulness in product design is not enough, as people feel good when they are inspired. Emotional connections

<sup>8</sup> Raïssa Katz-Haas (1998:1) states, User Centred Design (UCD) is “a philosophy and a process. It is a philosophy that places the person (as opposed to the ‘thing’) at the centre; it is a process that focuses on cognitive factors (such as perception, memory, learning, problem-solving, etc.) as they come into play during peoples’ interactions with things.”

occur when one is interacting with positive aesthetic experiences. This has reminded some designers how long they have ignored the existence of end-user perspectives because of their experience with sophisticated design that has little concern for user research. Emotional design, here, means to emphasise the importance of understanding user experience and emotional responses, which involves prioritising reaching and satisfying end users.

As Black (2006) shows, such examples as the Apple iMac (1999), the Google user interface (1998), Nokia mobile phones (1992), the Sony Walkman (1979), and the QWERTY keyboard (1868), are examples that show how user-centred design can be a basis for developing innovative service concepts by drawing together “*practical, emotional and social aspects of people’s experience*”. The concern for emotional engagement cannot be ignored when designing the quality of user experience.

In Norman’s new (2004) theory, he addresses the concept of emotional design through three levels: visceral, behavioural, and reflective. He finds human attributes that reflect three levels of the brain and process interaction with external stimuli. “Visceral design” is mainly related to the initial impact of the product’s appearance. “Behavioural design” refers to its look and feel, relying on the entire user experience of using a product or service, such as the pleasure and effectiveness of use. The third level is “reflective design” which is connected to reflection, and concerns how a person’s thoughts can make them feel, suggesting that the relationship between cultural influence, personal satisfaction, memories, and self-image development, can also reflect the user’s sense of taste and value-judgments by other people.

<b>Three levels of design: visceral, behavioural, and reflective</b>	
<b>Visceral design</b> — about the appearance	Visceral designs are about the initial impact of a product, about its appearance, touch, and feel (p. 37). Visceral designs are all about immediate emotional design (p. 69). For example, good graphics, cleanliness, and beauty play a role influencing the visceral level, which is dominated by looking, feeling, and sound (p. 67).
<b>Behavioural design</b> — about the pleasure and effectiveness of use	It is about use and appearance, where rationale does not really matter, even though the performance does (p. 69). It is about the experience with a product. Experience itself has many facets: function, performance, and usability (p. 37).
<b>Reflective design</b> — about self-image, personal satisfaction, memories	Reflective design is all about the message, about culture, and about the meaning of a product or its use (p. 83). Beauty comes from the reflective level. Beauty looks below the surface, and comes from conscious reflection and experience (p. 87).

Figure 2-29: Norman's three levels of design that affects emotional experience by different functions (source: Norman, 2004).

In relation to Norman's three levels of design, he suggests that people have different functional needs for their own purposes (see Figure 2-29). Sometimes, these needs can be combined with some or all of the levels of reflective, behavioural and visceral design for cognition and affect. Emotional engagement with user experience can also be divided into these three levels. For different emotional and functional needs, aesthetics seems to bring a balance between functional engineering and the users' emotional needs.

According to Press and Cooper (2003:72), "*Aesthetics provides an emotional experience based on the form, style or sculptural content of a product,*" So, visual language seems to connect with the user's emotional response but designers tend to use familiar

visual languages and forget whether users can understand their design or not. Understanding user experience is vital for seeking resolutions.

The design paradigm of modernity, *form follows function*, was modified into the postmodern *function follows form* with *form* (or image) being prioritised over *function* (utility), making usability less of a dominant concern. However, Baskinger (2001:7) says that “form is independent of function”, suggesting a new aesthetic that can bridge the gap between the users’ needs and the designers’ aesthetic priorities. He states that “*Rather than drawing cues from functional requirements, these objects use form to elicit an emotional response.*” Kim, Lee and Choi (2003:900) also state that, “*the advance of computer graphics increases the importance of aesthetic design of user interfaces, which provide users with emotional experiences.*” This new aesthetic should engage with human emotions by transforming designers’ concerns and priorities through computer-mediated visual communication, by concentrating their attention on people’s everyday interaction with their surroundings. A more concise formulation of this argument is expressed by Hartmut Esslinger’s design credo—*form follows emotion* (Cooper and Press, 1995:10).



## **2.6 Preliminary summary and proposed research question**

Reviewing the literature is an ongoing process which enables us to throw light onto research questions. There is relatively little research which, through discussion of the relevant issues, has explored the visual impact of graphic interface on user experience. The domain of research exploration is related to Web usability testing. However, Web activities start working from the moment a user decides to visit the website. The importance of Web visual design is to catch a user's attention in order to influence their decision-making processes. According to the literature review of the present research, visual design of Web interfaces can directly influence not only the usability of Web functions but also their users' visual and emotional experiences. A user's first impressions of a website can strongly affect their interest in further exploring it. The following sections will discuss the summary of literature review and the proposed research questions.

### **2.6.1 Summary of literature review**

A visually-enriched Web design may be regarded as an effective device for stimulating users' perceptions and emotions and changing their cognitive activities. With the popularisation of Web use and various forms of user involvement, the visual interface has become important in creating a sense of welcome and pleasure that can visually attract users. In terms of Web usability, navigational visualisation brings user-friendly and visual

aesthetics into play with solid usability engineering. The research considered in this literature review shows less concern for these emotional values and users' aesthetic needs. Many of the design principles discussed in section 2.3.3 are less concerned with aesthetic design.

We shall address three issues to conclude the literature review: 1) Emerging concerns about Web visual aesthetics and users' emotional needs; 2) The increasing need to develop design with an awareness of emotional interactions with users; and 3) Developing alternative methods for investigating user experience.

### **1) Emerging concerns for Web visual aesthetics and users' emotional needs**

It seems the Human Computer Interaction community has begun to pay attention to emotions because involving users' emotional participation to improve design has become an important issue (e.g. Desmet, 2002; Douglas & Hargadon, 2000; Forlizzi, DiSalvo, & Hanington, 2003; Green & Jordan, 2002; Marcus, 2003; Norman, 2004). McDonagh, Hekkert, Erp, and Gyi (2003) observe that over the last ten years design practice and research have shown great interest in integrating design and emotion. This is evidenced by the 1999 establishment of the Design and Emotion Society in Delft and the holding of an annual research conference there.

*“Emotions are increasingly becoming a topic of much debate in society within business, education and particularly within the design process.”* Designers are now thinking a lot about *“creating and staging a new compelling story for people to experience”* (Crossley, 2003:35). Pleasure, enjoyment, positive emotions, hedonic value

are terms that have recently been associated with the process of improving the quality of user experience (Knight & Jefsioutine, 2003:1). These emotional experiences are considered valuable in providing positive interaction between users and Web designs. Forlizzi et al. (2003:29) illustrate this, saying, “*people [are becoming] more sensitive to dimensions of products that go beyond traditional aspects of usability,*” so the understanding of users’ emotional needs and experiences has increased. User-centred design has also become concerned with more than functional issues. Companies such as Sony, Apple Computer, and Philips are already applying “responsive design methods”<sup>9</sup> to meet “perceived customer needs” (McDonagh-Philp & Lebbon, 1999:31). Satisfying the emotional aspects of user experience has become crucial for creating new design values.

## 2) The increasing need for design awareness of emotional interactions

### with users

Design awareness of the emotional dimensions of user experience is still insufficient. The dominant paradigm for user experience research in Computer Mediated Communications (CMC) is *usability*, which has been driven by perspectives from the Human Computer Interaction (HCI) field. This tends towards a reductionist perspective typified by usability engineering in which user experience is understood purely in cognitive or behaviourist terms (Nielson, 1993). The lack of a shared understanding of *emotions within the context of*

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<sup>9</sup> Responsive design method is an approach which focuses on how to design taking into account the dynamic experiences of users and their different contexts. It turns designers’ attention to the users’ needs and wishes instead of an overemphasis on embracing industrialisation of design processes and technological changes. The central concern of responsive design is to respect human experience (Mitchell, 1993).

*design* leads to neglect of aesthetic experiences. Aesthetics and emotions sometimes share a similar quality when they are used to assess the world; for example, the experience of and feeling for beauty (Karvonen, 2000:85). In order to understand user requirements in usability and aesthetics, this research explores the relationship between user experience, Web interface design, and the visual impact of Web interfaces. Even though Rosenfeld and Morville (1998: 20) say that graphic design should “*define the graphic identity or look of the website*”, actually the functions of graphic design can be extended to combine aesthetic presentations and information displays with Web usability within Web interfaces.

In this literature review, we have discussed the function of the Web interface from various perspectives to explain how it is not only able to visualise content information but also to create an appealing look to catch users’ attention and make them enjoy the browsing experience. Few researchers, like Schmidt et al. (2003), have attempted to examine the impact of Web aesthetics, user preferences, and also interaction speeds with various font and graphic sizes in order to understand their visual influence. More research still needs to be done on usability and Web aesthetics in order to focus on this topic.

Following the contextual review, certain issues have emerged that indicate that the likelihood that the visual aesthetics of Web interfaces have a significant influence on users’ emotional interactions with websites, particularly on their first visit. Users’ first impressions seem to have an impact on their decision to continue browsing a website. In addition, the assistance of a visual interface can continue to influence users if they are able to obtain the information they are looking for with ease. Therefore, different users might

have different degrees of emotional involvement with the ongoing navigation of a particular website. This inference points to our insufficient understanding of user emotional changes and reactions when navigating the WWW. As a result, the present research seeks to increase design awareness and understanding of users' emotional interactions with the Web in order to improve the quality of user experience.

### **3) Developing alternative methods to investigate user experience**

As we have seen, a well-structured graphic design for a user interface can be functionalised by providing for navigability, readability, legibility, usability, interactivity, and accessibility. Through a user's cognitive and perceptual capabilities—cognition, sensation and perception, attention, memory, and personality—interacting with aesthetic design, visual appeal is able to trigger emotional interaction that may enrich positive user experience. In other words, if users are experiencing negative feelings, their emotional state might cause them to feel stress, fear, anxiety and anger, when they meet with errors during the navigation process. For this reason, user emotional responses to visual interfaces give us many messages about design quality, interface functionality, and experiential reactions design.

However, according to the preceding review, user research has recently placed less emphasis on the aesthetic design and visual impact of an interface in terms of conventional user-centred design. Irons (2003:2) states, "*User experience design is quickly incorporating the usability disciplines as one part of an emerging interdisciplinary approach to human-computer interaction.*" This reflects the demand to understand real

user experience in alternative perspectives to conventional usability disciplines. Additionally, most user research is heavily involved with expensive marketing surveys and laboratory evaluations. It may be impractical to employ such a process for most websites because of their short development cycle and limited lifespan. In gaining more awareness about end-users' emotional experiences, there is a growing need to develop new methods which enable us to observe and comprehend user experience. By developing such alternative methods, this thesis aims to discover more evidence of emerging demands and questions in the field of user research.

### 2.6.2 Proposed research questions

The preliminary contextual review has indicated there is little concern about the visual impact of user emotional experience during Web communication. This research aims therefore to develop an appropriate strategy to deal with the above-mentioned problems.

The overarching research theme —“*exploring emotional experience through Web interfaces*” has been considered in terms of three specific questions:

- 1) How can we comprehend user emotional experience?
- 2) How can we understand users' emotional responses to visual stimuli in Web designs to create an emotional engagement with users?
- 3) How can we embody the connection between users' emotional reactions and the visual impact of the interface?

With these three basic questions, we shall explore aspects of the confluence of user aesthetic experience and Web usability design. The potential benefit of this strategy is to allow users' thoughts to be involved in the early stages of the design process with inexpensive and productive approaches, in order to increase understanding of users' needs and feelings. The ultimate goal is to make design content more engaging with user experience. This strategy is also expected to be valid and productive enough to be applied to other design processes in the future. In the next chapter, we will discuss how to develop research methods to understand user experience.

## Chapter Three—Research Methodology

### 3.1 Introduction

The ultimate purpose of this study is to explore and define potential design strategies for integrating emotional values into interface usability, thereby balancing interface design with utility and aesthetics. As the literature review in Chapter Two has shown, current Web usability designs have, at best, a minimal concern for users' emotional and aesthetic experiences. This research aims to develop appropriate methods to investigate users' feelings and needs in order to provide Web developers with inspirational ideas and a design toolkit to enrich Web experiences for users.

Each method is in its own way suitable for dealing with certain questions concerning user research. There is no single method which can deal with all questions. Therefore, this research applies a hybrid contextual research strategy based on an ethnographic structure that allows dealing with the complexity inherent in the study of user research.

In exploring the emotional interaction between users and Web interfaces, the Cultural Probes (CPs) approach can be considered to be one of the techniques that most closely engages with users' real experience. In the beginning, CPs were designed to *provoke inspirational responses* in the lives and thoughts of elderly people in various local communities (Gaver et al., 2004:53). The purpose of CPs then was not to gain demographic information about individuals but significant clues about their living experiences.



The cultural probes approach uses observable techniques to identify differences in people's *emotional reactions* (Gaver et al., 2004:55). This thesis adapts the concept of cultural probes in conjunction with rapid ethnographic methods to develop a hybrid contextual strategy that we shall term "Emotional Probes" (EPs). This approach is applied to explore users' emotional experiences of Web-based interaction.

In consideration of time constraints and the short product cycle of Web design, "Rapid Ethnography" (Irons, 2003; Jones, 2005; Millen, 2000) has provided "Quick and Dirty" approaches to decrease the time needed in the commercial development of interactive system design (Hughes, King, Rodden, & Andersen, 1995).

Within an ethnographic framework, the incorporation of cultural probes and the rapid ethnographic approach assists us in the exploration of the ongoing phenomena of user experience with intimate techniques which allow users to express their thoughts, feelings, and preferences. Each technique is conducted in a more *natural* setting in lieu of a controlled laboratory environment.

Thus, this chapter discusses how to conduct rapid ethnographic surveys and examines the cultural probes approach in discovering users' emotional experiences with respect to the graphic design of Web interfaces. The objective in developing these research methods is not to define new design disciplines. Instead, it is to examine methods to be used for seeking an in-depth understanding of user feelings and needs, thus creating new inspiration for design in order to bridge the gap between user and designer expectations. The details of this method are discussed below.

## 3.2 Methodological development

The term “methodology” is “*usually employed to indicate the sets of conceptual and philosophical assumptions that justify the use of particular methods*” (Payne & Payne, 2004:148). Basically, it means to develop a study of the systems of methods and principles of a particular discipline in order to support researchers in building greater knowledge (Gray & Malins, 2004). Applied methods are related to specific techniques and tools for exploring, gathering, and analysing information in order to answer research questions (Gray & Malins, 2004:17).

Generally speaking, there are two main types of research methodology: quantitative and qualitative. Qualitative and quantitative inquiries involve different kinds of measurements. Whereas the former involve “*descriptions and anecdotes,*” the latter tend to have “*objective and impartial*” concerns about statistical data (Preece et al., 2002:345). Qualitative inquiries often focus their attention on users’ or specialists’ opinions and experiences rather than on outlining the characteristics that differentiate the user group from the population in general (Kuniavsky, 2003:303).

As the objectives of this research are to explore the phenomena involved in the influence of graphic design on users’ emotional experiences through Web interfaces, the research methods we shall use are based on an ethnographic strategy that relies on qualitative investigations rather than quantitative survey. Furthermore, this research has made use of rapid ethnography instead of traditional ethnography, as we shall see in the next section.

### 3.2.1 Ethnographic research strategy

Literally, the term “ethnography” means a description of people or cultures (Denscombe, 2003), and it is a discipline whose structures and principles are rooted in anthropology (Sarantakos, 1993). According to Bryman (2001:291), ethnographic research is beneficial in developing “*an understanding of the culture of the group and people’s behaviour within the context of that culture.*” Like anthropology, ethnography is centred on the concept of culture, which is conceived of as a system shared by groups of people who learn its main elements or composition through interacting and living in the context of the whole system (Sarantakos, 1993). Ethnographic research is essentially a naturalistic methodology (Punch, 1998; Tedlock, 2003). In naturalistic research, researchers tend to use methods that are sensitive to their subject in order to decrease interruptions to the natural setting (Punch, 1998:157).

The theoretical foundation of ethnographic research is a holistic approach used to explore human activities, such as stress processes, relationships, connections, and interdependency through in-depth, chronological studies (Denscombe, 2003; Sarantakos, 1993). Rather than explaining things from an outsider’s perspective, the ethnographic method intends to explicate the subject’s point of view and study small groups of people (Denscombe, 2003).

In 1994, Ron J. Johnston characterised ethnography as being “*an intensive contextual and holistic approach which aims for depth rather than coverage*” (Taylor, Bontoft, & Flyte, 2002:176). In aiming for depth, it is possible for the researcher to

generate rich, meaningful and descriptive raw data. In order to produce detailed pictures with an in-depth understanding of specific events or cultural phenomena, ethnographical results are based upon the researcher's interpretation, editing, and creative writing techniques, as well as a critical reflection of the reality of the situation studied (Denscombe, 2003).

Ethnographic research adopts many of the methods of other fields of interpretive research. The most common methods employed are: 1) Participant observation and direct observation, 2) In-depth and open-ended interviews, and 3) Personal documents, including personal accounts, life histories, diaries, personal letters, and reports related to the group in question (Patton, 2001; Sarantakos, 1993). The ethnographic approach is generally used to explore new, different, or unknown things (Punch, 1998:162). In fact, this research method has been also applied to a number of studies that are directly relevant to the present inquiry (Figure 3-1).

<b>Application of ethnographic research</b>	
<b>Research subject</b>	<b>Example</b>
Interaction design	Preece et al., 2002
Usability study	Taylor et al., 2002
Design practices within Information and Communication Technologies	Salvador & Mateas, 1997
Computing education	Cunningham & Jones, 2005
User-centred design	Taylor et al., 2002
Ergonomics or human factors	Jevnaker, 2002; Macdonald, 2005
User experience design	Jevnaker, 2002; Jones, 2005

Figure 3-1: The application of ethnographic research in a number of research subjects.

The above studies aim in various ways to develop methods to access different realms of experiences, which can lead to new insights in design, and inform designers more appropriately of users' needs. Furthermore, this research is concerned with obtaining in-depth data on users' emotional interactions with Web interfaces in order to obtain insight into user experience, which is increasingly hard to generate through conventional quantitative and statistical analyses. According to Nielsen (2004:1), qualitative study results are more credible and trustworthy because "*[n]umber fetishism leads usability studies astray by focusing on statistical analyses that are often false, biased, misleading, or overly narrow. Better to emphasize insights and qualitative research.*" Ethnographic research provides a broad understanding of real experience and has become increasingly popular in the HCI field.

### 3.2.2 Efficiency and intimacy in data collection

As Burns (2000:3) states, “[r]esearch is a systematic investigation to find answers to a problem.” The research method is an array of processes and techniques used to gather and analyse data to form a theory or model in order to facilitate better understanding of the acquired information.

The ethnographic method is one of the adaptive techniques for developing new knowledge which is best able to fit within the interactive software and system development cycle (Iron, 2003; Millen, 2000; Preece et al., 2002; Hughes et al., 1995). The use of ethnography has provided analytical methods for using diaries, notebooks or cameras, to record and observe various phenomena of user experience, in order to obtain different reflections on design interaction.

Conventionally, the ethnographic investigation is normally conducted over a long period of time, since it involves contacting the respondents or living in the specific community under investigation. Alternatively, rapid ethnography is able to provide a reasonable strategy for understanding users and their activities while staying within the time constraints experienced in the field (Millen, 2000). Basically, rapid ethnography uses less equivocal questions than conventional ethnography to gather data from natural settings more efficiently in order to provide decision makers/designers with useful information in a timely manner.

So in order to obtain in-depth understanding of user experience, rather than producing an *average* picture by taking a huge amount of quantitative survey and applying

statistical analyses, this thesis adopts the cultural probes approach in conjunction with the rapid ethnographical method. The intimate characteristics of mediated cultural probes encourage users to describe their thoughts, feelings, and preferences. Therefore, this form of research is more able to adequately observe users' experiences, including their emotional reactions. The findings can engage with real life issues and nourish the design process at every stage (Gaver et al., 2004).

With the characteristic efficiency and intimacy of the proposed data collection process, we shall be enabled to effectively seek in-depth data about user experience. The next section will discuss these two methods in more detail.

### 3.2.3 Rapid ethnographic strategy

In traditional ethnography, the researcher "*is immersed in a social setting for a long time—frequently years*" (Bryman, 2001: 279). Given the time constraints of Web interface development, it is too time-consuming for designers to spend periods of several months collecting data when they only have relatively short amount of time to spend on analysis and interpretation of the field. One approach which can ease these increasing time constraints is termed "rapid ethnography" or, as some researchers also describe it, "quick and dirty ethnography."

According to Hughes, King, Rodden, and Andersen (1994:5), quick and dirty ethnography is "*where brief ethnographic studies are undertaken to provide a general but informed sense of the setting for designers.*"

Preece et al. (2002:341) define “*quick and dirty*” evaluations as “*a common practice in which designers informally get feedback from users or consultants to confirm that their ideas are in line with users’ needs and are liked*” and add that “*quick and dirty evaluations can be done at any stage and emphasis is on fast input rather than carefully documented findings.*” As a result, this quick and dirty approach is meant to be “*done in a short space of time.*”

Techniques employed in rapid ethnography may include 1) “*narrow[ing] the focus*” of questions, that is zooming in on key informants, such as experienced designers or users; 2) applying “*multiple interactive observation*” approaches to collect exceptional or useful information about user behaviour; and 3) using “*collaborative and computerized iterative data [analysis] methods*” (Millen, 2000:281).

Therefore, in this study we shall adopt four aspects of Millen’s suggestions (2000):

1) Focusing on inside informants to efficiently gather first-hand information, for instance about the roles of Web users and Web designers in user research.

2) Advance discussions with potential users where interesting patterns, events, or behaviour can be revealed; in this way, it is possible to reduce observation time by aiding the researcher in learning what, where, and when to observe user experience.

3) Critiques provided by design specialists who have experience, knowledge, and insights about how to design user experience. This process can help identify and guide research direction. As for where to find these informants, it is likely that they can be located in relevant design areas or design communities, which can be processed by a



referral or a snowball sampling procedure.

4) “[C]ollaborative and computerized iterative data [analysis] methods”: this study utilises NVivo analysis, which can be useful in dealing with and systematically categorising complex data.

Referencing these demands and suggestions, the use of rapid ethnography can help garner useful information more quickly in order to understand the core questions of this research.

### 3.2.4 Cultural probes (CPs) approach

In 1999, Gaver, Dunne, and Pacenti published an article in *Interactions Journal*, introducing “*Cultural Probes*” (CPs), a design-led approach for understanding users’ real experiences with their tasks. The main characteristic of the CPs technique is that it is not an *analytic* device, but it *reflects* the local culture of participants and is drawn upon to inspire design (Crabtree et al., 2003:2). The CPs method is designed to reveal users’ authentic experience, including individual preferences, emotional responses, behaviour, and so on.

The adaptable techniques of CPs in data collection are analogous in character to ethnographic methods such as in-depth interviews, diary surveys, and participant observation. The difference is that these probes are packaged with particular designed materials, such as diaries, disposable cameras, jigsaws, postcards, collages, maps, and other personalised documents. The materials are designed to gather an understanding of

people's everyday lives in a playful context and to make it easy for volunteer participants to report their thoughts, ideas, and feelings.

Cultural probes express a concept that can allow design researchers to have a deep sense of familiarity, intimacy, and engagement with the people who might use their designs (Gaver et al., 2004). Currently, the results of CPs are becoming a way of provoking new perspectives in design for everyday life. Probes are varied and particular to the research subjects they serve, but the core similarity is that they offer researchers opportunities to observe, watch, read, or listen to subjects' real life stories. From the fragmentary clues of participants' responses, the researcher can better understand the participants' everyday circumstances, routines, rhythms, practical concerns, and so on (Crabtree et al., 2003).

Since they were pioneered by Bill Gaver in 1999, cultural probes, have been utilised to gain a better understanding of design issues. CPs have been adapted into different forms with specific questions for inspiring design solutions; some examples being "Domestic Probes" (Hemmings, 2002), "Empathy Probes" (Mattelmäki and Battarbee, 2002), and "Technology Probes" (Hutchinson et al., 2003). A more recent project to develop digital jewellery in a way that moves beyond the conventions of interaction design also made use of cultural probes as a central methodological tool (Wallace, Dearden & Fisher, 2005).

The application of CPs is also involved with other ethnographic techniques in order 1) to examine how probes are used for observing how people use technologies to create intimate relationships with the surroundings (Vetere et al., 2005); 2) to support designers in understanding how people use their designs (Gaver et al., 2004); 3) and to gain experience in building and sharing design empathy (Mattelmäki and Battarbee, 2002). As for the value

of applying the cultural probes technique, this researcher proposes the following four reasons:

1) Conventional ethnography can make direct observation intrusive, disruptive, and on occasion inappropriate (Crabtree et al., 2003). With the more appealing or motivating probes applied in this study, the process is able to enhance participants' willingness to engage intimately with the research.

2) Even though cultural probes provide a *non-scientific approach* (Hemmings et al., 2002:2), using diaries, notebooks, disposable cameras, and other playful approaches, they are capable of providing inspirational data for *opening up novel design spaces*. Instead of providing resolution to individual problems, this approach has the potential to provide rich information about participants' preferences, personalities, aesthetics, and emotions. These valuable cues could support researchers in forming an in-depth understanding of people's needs and views and providing an input for users to contribute their ideas to the design process. The probes application has similar effects to using a brainstorming session and focus group discussion to generate new design ideas. Although, the data may be subjective, informal, and imaginative, they at least provide some insight into users' needs and perceptions (Crabtree et al., 2003). In comparison with most research techniques, which tend to minimise or disguise subjectivity through controlled procedures or the appearance of impersonality (Gaver et al., 2004), cultural probes tend to embrace individual emotional engagement. Therefore, cultural probes can be viewed as a practical method for inviting the active involvement of users' participation in the whole design process.

3) The cultural probes approach is considered to be an information gathering package. Since Gaver, Dunne, and Pacenti developed their first application of the method in 1999, the probes have been used to collect information. The concept of cultural probes tends to benefit designers in providing them with a useful toolkit or a prototype for testing users' performance and for predicting user requirements. Using cultural probes, the researcher has a tool to probe and recode the *participant's feelings* and elicit certain kinds of *emotional responses* (Hemmings et al., 2002).

4) The usual objective of cultural probes is to collect inspirational responses about people's real experiences. It is not intended to elicit demographic information, as would a quantitative survey, but to reveal significant clues about people's real experiences, and to use inherently ethnographic methods to discover facts. Rapid ethnography acknowledges that it is possible to reduce the amount of time needed by more structured approaches and an interactive relationship with participants. Therefore, one concern of the cultural probes method is to offer intimate and alternative forms for organising research questions and making participants' responses visible through the interaction between participants and probes.

With these considerations in mind, the author has refined the research questions and combined the concept of cultural probes with rapid ethnographic methods to develop a hybrid contextual strategy named Emotional Probes (EPs) in order to explore users' emotional experiences. Chapter 5 presents further discussion of the application and outcomes of this research strategy.

### 3.3 Research methods used

We have reviewed current user experience research and come to understand the methodological problems arising from insufficient exploration of the emotional dimension of Web user experience. Rapid ethnography, which has emerged from conventional ethnography, allied with the Cultural Probes (CPs) approach will form the basis for this research. We have thus provided ourselves with a methodological approach for developing a new research strategy to observe users' emotional experiences with Web interfaces which will inform future design practice.

This project is mainly undertaken as "*exploratory research*." According to Sarantakos (1993:7), "*this research is usually undertaken when there is not enough information available about the research subject*" in order to provide a basis for future research, or to gain information on the issue itself. Exploration is treated as an important process throughout this research project in order to develop an accurate picture of the research objective.

The present research is not hypothesis-driven, but is rather focused on generating an understanding about how visual communicating technologies improve the quality of Web experience; so it is mainly grounded on strategic and applied research through three kinds of studies: 1) interviews with designers; 2) observations and interviews with users, concerning their interaction with Web interfaces; and 3) the application of Emotional Probes as a series of methods to approach user experience (see Figure 3-2). These research

activities are based on an exploratory research strategy to create an interactive environment in which to learn more about Web users' experiences that will ultimately lead to the development of an informative toolkit to support future design activities.

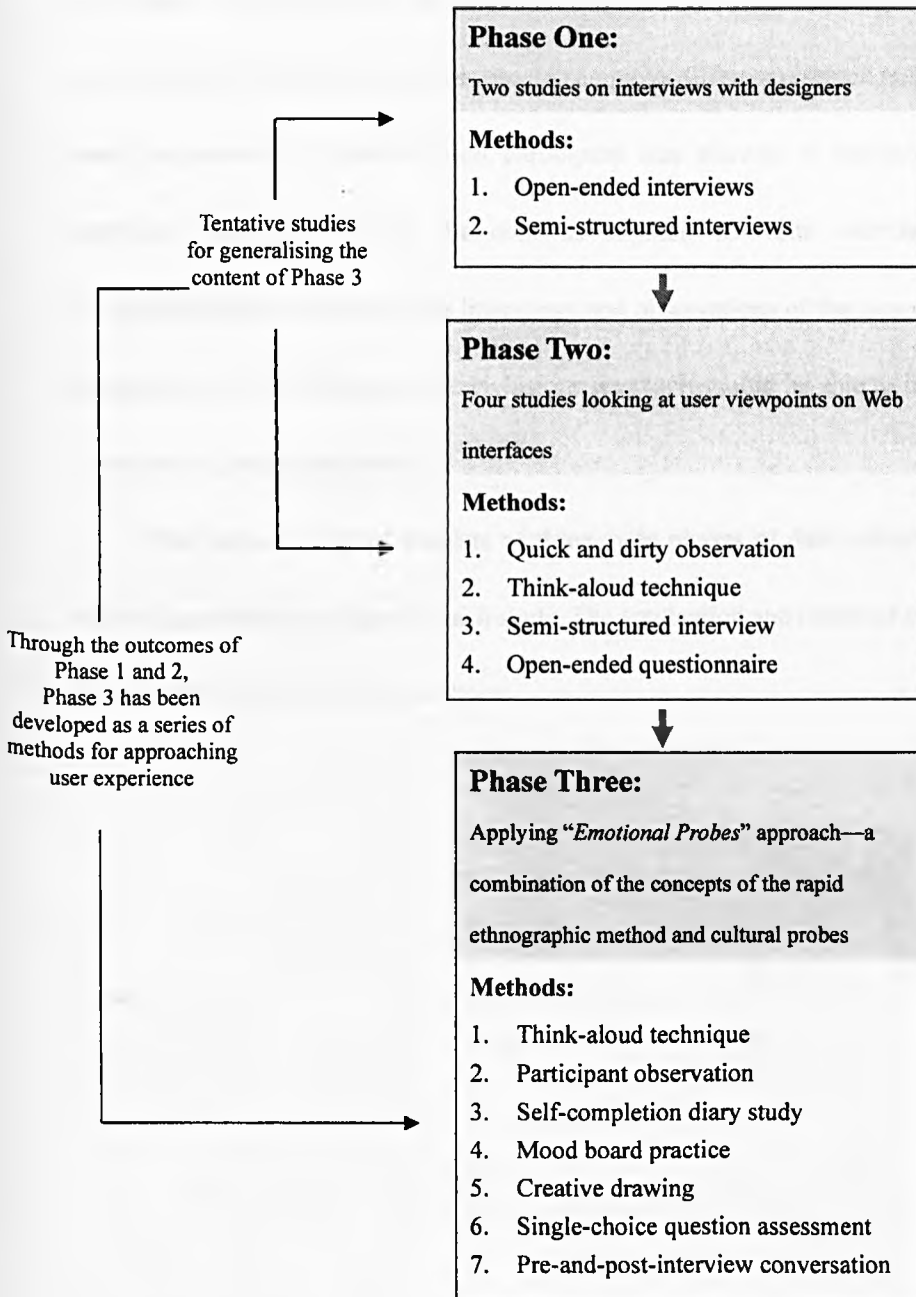


Figure 3-2: Qualitative methods employed in this thesis with three phases of studies.

This research project aims to collect empirical data through interviews, observations, and other techniques in context. Interviews with design experts are grounded in experiential sharing and personal perspectives on design knowledge. The surveys of user experience are grounded on an understanding of their emotional reactions while they navigate the WWW. Since this user research employs different research methods to explore users' emotional experiences, each participant was allowed to explain and show the particular sites they visited, the contents of their favourite websites, and so on. Synthesising the outcomes of the interviews and observations of the users' and designers' perspectives on Web design, the conclusions we reach should be able to inspire designers in enhancing user experience.

This research project consists of three main phases of data collection. Figure 3-3 shows the methods employed in each study. The application and nature of each method will be discussed in the following sections.

<b>Phase 1: Study designer experience</b>		
<b>Participant</b>	<b>Method</b>	<b>Main purpose</b>
1	Open-ended interview	To understand design specialists' experiences and to modify research questions.
9	Semi-structured interview	To gain different professional perspectives about what is important in a user interface.
<b>Phase 2: Study user experience</b>		
10	Quick and dirty interview	To gain an overview about user habits and actions.
5	Think-aloud technique	To encourage users to verbalise their thoughts and feelings in order to help the researcher understand their experiences.
5	Semi-structured interview	To observe user behaviour when interacting with websites.
10	Open-ended Questionnaire	To help generalise the research questions for the next research phase.
<b>Phase 3: Emotional probes application</b>		
10	Open-ended interview	To combine different methods in order to produce more valid and reliable results than using a single method, this is under the concept of triangulation.
	Diary survey	
	Think-aloud technique	
	Participant observation	
	Creative drawing	
	Question assessment	
	Mood board	

Figure 3-3: Research phases and their associated methods.

### 3.3.1 Phase one—Studying designer experience

The interview is the main approach in this phase of studying designer experience as it is one of the main data collection tools in qualitative research, offering an effective method



for studying people's perceptions, meanings, definitions of situations, and constructions of reality (Punch, 1998). The interview process is conducted in face-to-face settings using an oral question-and-answer format. One either employs the same questions in a systematic and structured way, or one allows respondents to talk about issues in a less directed, discursive manner (Payne & Payne, 2004). Fontana and Frey (1994) have categorised three forms of interviews: 1) open-ended (unstructured), 2) semi-structured, and 3) structured, all of which can be applied to individual and group interviews. Each type of interview, however, has its strengths and weaknesses and can be used for different purposes (Payne & Payne, 2004).

In order for this study to develop an appropriate approach to observing user experience, some designers and users were invited to share their perspectives, so that they could be incorporated into the field work and inform the development of the research. It was beneficial to involve these participants at an early stage because their practical experience would assist the researcher in focusing on certain issues in a way that was both effective and inexpensive.

The designers' experience would provide different viewpoints about how to simulate the reality and quality of user experiences. For the first study it was planned to conduct open-ended and semi-structured individual interviews with ten design professionals about their practical experiences, in order to collect data and generalise questions for the next study. The interview was aligned with in-depth and loosely structured interviews to encourage the designers to have intimate and informative conversations. This will be discussed in more detail in the following sections.

### 3.3.1.1 Open-ended interview with a design specialist

Open-ended interviews are normally employed in a qualitative study and have no strict procedural structure. Researchers and interviewees act freely and openly in the context of their conversation on the basis of research purposes. Burns (2000) has pointed out that according to the freedom characterising this method, its validity must be carefully considered, which is to say that the interviewer and interviewees' conversation may go beyond their research purposes and that the interviewer needs to be aware that sometimes the interviewee might not be willing to talk. However, Sarantakos (1993) has argued that the quality of this type of interview should be controlled by the researcher who has to direct the conversation in line with a specific research topic and purpose, without trying to influence the content of interviewees' contributions.

Since different types of interviews have their own strengths and weaknesses with respect to different research purposes, the selection of subjects for interview should be in line with the research strategy and question (Punch, 1998). At the beginning of the research project, we used the first interview with a designer in order to generate a question list that could be used in the interviews with the nine other designers. Using an open-ended interview structure, the results of the interview were grounded in the conversational interaction between interviewer and interviewee.

This first interview took place in London (See Appendix 3 for the transcription) and was conducted with a prominent graphic designer, Professor Malcolm Garrett, who has been working in the design industry since 1978 and has been appointed Royal

Designer for Industry on the basis of his pioneering work on interaction design. His abundant experience offers a good reference point and guideline, which is why it was utilised for designing and modifying the research questions for the next stage of research.

### 3.3.1.2 Semi-structured interviews with designers

The major difference between this type of interview and open-ended interviews is that semi-structured interviews allow for the preparation of a list of pre-set questions before the interview is conducted. The list of pre-set questions can act as an interview guide. Bryman (2001) suggests that an interview guide can be employed during the interview process in order to keep it focused on the research purpose. However, the questions are still relatively open to the interviewees' responses. This means that, according to the nature of the semi-structured interview, interviewers do not need to ask every question in the interview guide, and this allows the interviewer to explore the depth of interviewees' experience and the interviewee to answer questions freely.

A question can be tailored for interviewees with respect to their different personal experiences and job situations, which allows the interviewer to obtain information of a more specific nature from the interviewee (Flick, 1998). This flexibility increases the difficulty of analysing the data because not all interviewees' answer the same set of questions. However, Flick (1998) suggests that this problem can be reduced by the assistance of an interview guide through all the interviews.

Open-ended interviews were conducted to explore designers' experience. Based on

the responses of the first interview with Malcolm Garrett, the researcher wished to know how the other designers' perspectives related to the issues that Garrett had raised. The nine other designers, who have backgrounds in professional Web design, provided more examples of designing user experience. Furthermore, during the interviews, the researcher expected to enter into a rapport with interviewees in discussing such issues as what emotional design could be and how it could work with user experiences. The results would engage with designers' practical experiences to shape their future approach to designing users' emotional experiences. These interviews took place in Taiwan in October, 2003 (See Appendix 4 for transcriptions).

### **3.3.2 Phase two—Studying user experience**

Interview and observation are the most commonly utilised methods for conducting research in a rapid ethnographic strategy. Both methods have their advantages for exploring user experience. With the significant time constraints of the field, interviews and observations can be an efficient way to structure data collection. The use of interviews has already been discussed above.

The use of observation has a long tradition in social sciences such as psychology and education studies. Observation is the backbone of the ethnographic approach and its focus rests on how everyday life is constructed (Punch, 1998). Spradley (1980:5) states that the core of ethnography is seeking an understanding of the meaning of people's actions and daily events in the environment in which they live, in order to make sense of cultural,

behavioural, and other social contexts. A central concern of the role of observer in the data collection process is how deeply the researcher is involved in the behaviour (Figure 3-4). Further, the extent to which the researcher intrudes into the observation situation has different effects on the data collected (Punch, 1998).

Researcher	Typology of research roles
Gold, 1958	Mainly participant <ul style="list-style-type: none"> <li>• Complete participant</li> <li>• Participant-as-participant</li> </ul>
	Mainly observer <ul style="list-style-type: none"> <li>• Observer-as-participant</li> <li>• Complete observer</li> </ul>
Adler & Adler, 1994	<ul style="list-style-type: none"> <li>• The observer-researcher</li> <li>• The complete-member-researcher</li> <li>• The active-member-researcher</li> <li>• The peripheral-member-researcher</li> </ul>
Wolcott, 1988	<ul style="list-style-type: none"> <li>• A privileged observer</li> <li>• A limited observer</li> </ul>

Figure 3-4: Typology of research roles in the data collection process (Source: Punch, 1998).

The above classification presents a range of different involvements, from being a systematic observer to being a participant observer, with the difference depending on the subject of research and the ethical issues involved (Denscombe, 2003).

Systemic observation was originally used in social psychology, as in the study of interaction in school classroom settings, which is linked with the production of quantitative data and statistical analysis. Participant observation is associated with sociology and anthropology. This method is used to reach an understanding of the culture and group

behaviour; it mainly produces qualitative data (Denscombe, 2003), even though, under certain conditions, it could be developed in the context of quantitative methodology (Sarantakos, 1993). Participant observation is also a central technique of ethnographic data collection. It is characterised by observing communication and interaction in an unstructured and natural manner in a face-to-face relationship, where the design is developed and modified while observation is carried out (Sarantakos, 1993). Accordingly, participant observation is one of the most common techniques of usability evaluation and can be varied to fit the fast-pace of development in interaction design. An example of this is the “quick and dirty observation,” which can occur anywhere and anytime (Preece et al., 2002:363) and gives researchers a quick overview of what is happening.

On the other hand, there are limitations on observers. Various factors, such as *familiarity* (people tend to see what they are used to seeing), *past experience*, and the observers’ *current physical and emotional state*, can influence their interpretation about what they have seen, heard, and perceived (Denscombe, 2003:139-157). Sarantakos (1993:232) lists the different limits to observation as follows:

- *Observation cannot be employed when large groups or extensive events are studied.*
- *Observation cannot provide information about past, future, or unpredictable events.*
- *Observation cannot offer data related to frequency of behaviour.*
- *It cannot study opinions or attitudes directly.*
- *Observation is inadequate when studying certain phenomena, such as sexual behaviour, family violence, etc.*
- *It is a relatively laborious and time-consuming method.*
- *It is exposed to the observer's bias, selective perception and selective memory.*
- *In participant observation the observer is a part of the situation that is being observed.*

- *Observation offers no control measures regarding the bias, attitudes and opinions of the observer.*
- *Observation cannot offer quantitative generalisations of the results.*

In this section we shall discuss the observation method, which assists in gathering an in-depth understanding of users’ reactions and behaviour. The methods undertaken consist of four techniques: quick and dirty observation, think-aloud techniques, semi-structured interviews, and questionnaires, all of which are used to produce different data sources linked to identical themes for studying user experience (Figure 3-5). The next section will provide more detail about these four techniques.

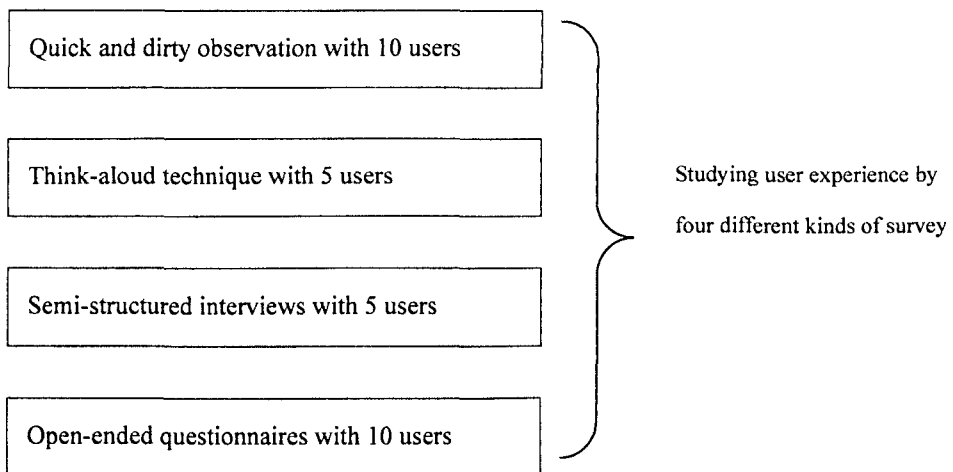


Figure 3-5: The four methods used to study users’ experience.

### 3.3.2.1 Quick and dirty observation

Quick and dirty observation can *occur anywhere and anytime* to find out what is happening quickly and with little formality (Preece et al., 2002:363). This approach has been used by

usability evaluators, where they go to a school, office, or home to watch and talk to users in a casual manner and gain immediate feedback about a prototype or product service. In order to reduce feelings of strangeness and intrusion that can influence participant performances, evaluators can attend a group activity or have a casual conversation with a person, which gives them a role more like that of an insider (Preece et al., 2002).

For the current research project, the researcher employed this casual method to observe users' experiences when browsing on the Web. After quick and dirty observation, an overview can be used to generalise each person's habits and preferences towards Web navigation.

### 3.3.2.2 Think-aloud technique

The think-aloud technique was originally described by Karl Ducker in 1945. In the area of HCI, it has been applied as part of the usability method and used in laboratory and workshop settings and has been field tested in controlled environments (Nielsen, Clemmensen, & Yssing, 2002:101). The think-aloud technique is one form of observation where the user is asked to think and report what they are observing; the process can reveal what they believe is happening, why they take a particular action and what they think of their performance (Dix, Finlay, Abowd, & Belle, 2004:343).

It is also a convenient and inexpensive way of gaining qualitative feedback while the participant is in action. For example, observing a Web user who has been asked to evaluate a search system interface on Amazon.com website, the researcher can design a



task for the user to perform, such as purchasing a book or searching for a musical CD. During the think-aloud phase, the user will talk out loud about everything they are thinking and trying to do, so their thought processes are externalised (Preece et al., 2002: 367). With this technique, users are free to talk about their thoughts. The results of the technique tend to provide user comments which give the researchers useful insight into problems affecting an interface—why there are difficulties, and how the system is actually used—so that the researchers can gain hints towards possible solutions (Dix et al., 2004; Hammond, Gardiner, Christie, & Marshall, 1987).

The think-aloud technique can be used for the evaluation of a complete design process, the testing of a paper mock-up, or other simulation mock-ups in the early stages (Dix et al., 2004:343). However, the data provided by users tends to be subjective and may be selective, emotional, and biased, depending on the task performed. For example, testing the same interface with a novice user and an expert user, they will obviously express different views and problems, depending on their skill level. Evidence from user testing must also be further interpreted (Hammond et al., 1987:34).

When using the think-aloud technique to test user experience, its effectiveness depends upon whether the observation takes place in a controlled environment or in the field (e.g. direct observation, taking notes, and collecting video) and the extent to which *the observers are outsiders or insiders* (Preece et al., 2002:364). Determining goals, exploring questions and choosing techniques are central to considering how to conduct a think-aloud phase. Dix et al. (2004:344) express concern about which recording method is used to record user actions—audio recordings, video recordings, computer logging, or paper and

pencil recording. With appropriate techniques, the analyst can evaluate and record effectively what is happening and may even find additional events as they occur.

The application of the think-aloud technique in the current research took place with volunteer participants, selected by convenience sampling, in order to observe and record how Web interface design assists users' navigations around a website. The aim was to discover how the graphic design of the interfaces impacts on user experience.

### 3.3.2.3 Semi-structured interviews with users

Interviews have the advantage of being effective for eliciting information about user preferences, impressions, and attitudes in an interactive system. As Dix et al. (2004:348) say, interviews, *“when used in conjunction with observation [...] are a useful means of clarifying an event.”*

The interview method is a well-established technique in a wide range of research fields, such as social science research, market research, and the field of research into human-computer interaction. In section 3.3.1, we discussed the interview techniques for gathering information on designers' professional perspectives on designing user experience. To the same end, namely to gather empirical data, a series of semi-structured interviews were also conducted to learn about users' thoughts and perspectives.

Interviewing users about their experience provides a direct and structured way of gathering information. The best method for finding out how a system meets a user's requirement, is to *ask the user* (Dix et al., 2004:348). The interview directly collects the

users' viewpoints and feedback and the process can reveal some issues that have not been considered by the designers (Dix et al., 2004).

The present research mainly employed a semi-structured interview with an interview guide to learn about user experience. Semi-structured interviews with users were undertaken in each phase in order to construct a conversational relationship with users. As Kahn and Cannel explain, interviews can be thought of as a *conversation with a purpose* (Preece et al., 2002:390). Through conversation with users, interviewers discover how users react to a new design idea and uncover what they like or dislike in a less intrusive setting, so that the users tend to speak more openly, which is highly beneficial for data collection.

In rapid ethnography, interviews are used as a *quick and dirty* evaluation to ask for facts and discover user behaviour, beliefs, and attitudes (Preece et al., 2002). Sometimes, an interview can be used with other methods as a way of supplementing the data collected, in order to add detail and depth (Denscombe, 2003). A questionnaire can be used as an interview guide for the researchers to ensure that they ask valid questions and produce interviews that are more structured and detailed, to gain a greater informational depth. Therefore, the semi-structured interview technique was widely used in Phases 1, 2 and 3 of this research.

Semi-structured interviews combine the features of structured and unstructured interviews and apply both closed and open questions. They are different in regard to preparation, construction, and execution. Additionally, they are related to a specific purpose and research question(s), therefore the content is controlled by the researcher to

avoid bias and distortion in field studies (Sarantakos, 1993).

In the present study, we continued the survey with the five participants after the think-aloud phase. The idea was to gather a more in-depth understanding of the users' interaction with graphic interfaces. So we used semi-structured interviews individually with each participant in environments that they were used to, such as their home and office. The previous five participants became the interviewees and they were allowed to express more ideas and speak more widely on those issues determined by the research objectives. The interview themes were organised into an interview guide, in order to ensure a base of consistency throughout the interviews. The results contributed to the next research phase.

#### **3.3.2.4 Open-ended questionnaires with users**

The rapid ethnographic strategy often uses questionnaires to quickly clarify users' responses. Compared to interviews, they are less flexible since the questions are fixed in advance and they will, as a consequence, be less probing (Dix et al., 2004). Questionnaires work on the basis of "*gathering information by asking people directly about the points concerned with the research*" (Denscombe, 2003:145) and normally consist of a written list of questions. The words used in the questionnaire need to be precise and descriptive so that the respondents can answer them easily. Questionnaires can be designed with both closed and open-ended questions. Basically, there are three types of questions: 1) general, 2) open-ended, and 3) scalar.

For this research, the researcher adopted the open-ended questionnaire in order 1)

to get a quick overview of users' experiences and 2) to allow respondents flexibility in answering, which it was hoped would encourage them to write more. Our expectations were threefold: 1) to provide the user's personal opinions in response to a direct question; 2) to contribute answers to specific questions for the evaluation; and 3) to identify errors or make suggestions that have not been considered by Web designers (Dix et al., 2004:348-351; Preece et al., 2002:398-407; Sarantakos, 1993:157-177).

The reason for using the questionnaire technique in this research was to develop appropriate questions for the later part of the study. Denscombe (2003:145) and Sarantakos (1993:159) explain the advantages and limitations of using questionnaires for research. We aimed to exploit these advantages, including 1) being less expensive than other methods, 2) providing fairly straightforward information, 3) yielding quick results, 4) being convenient to apply, and 5) being a stable and consistent measure for assessing questions, to pre-test users' experience and then get feedback to modify the questions for the next stage. Limitations, though, include 1) not offering opportunities for motivating respondents when they answer the questions and 2) not providing opportunities for collecting additional information. So the questionnaire technique was applied as a pilot study for techniques for testing user emotional reactions and it was used to examine whether those questions were appropriate and clear and tested users' thoughts within the specific focus of the study. After the questionnaire, the researcher collected the participants' opinions and collated their feedback to generate the questions for the next phase, which was to use multiple methods to understand users' emotional experiences.

### 3.3.3 Phase three—“*Emotional probes*”

By converging the analytical outcomes of Phase 1 and Phase 2 studies, the researcher generalised a framework for understanding users’ emotional experience when interacting with Web interfaces. Through the combination of rapid ethnography and the cultural probes approach, this research developed a new experimental method—*Emotional Probes*—for studying user emotional experience.

In Phase 3, the aim of this study was to collect information about users’ emotional experiences and in order to inspire designers by developing an appropriate research strategy. In addition, the evaluation process was designed in consideration for designers’ visual sensibility. Therefore, the emotional probes approach transformed particular techniques used to develop design ideas, such as mood boards, collages, and sketch practice.

In past examples of research using cultural probes, creative methods were used to garner images, notes, audio, and video about individuals. Even though those fragments of images were loosely structured, the point of these images was to institute non-verbal values, such as feelings, thoughts, interactive relationship, aesthetics, and different emotional engagements, within the fieldwork.

Therefore, from the previous studies, this phase developed a series of approaches combining rapid ethnography and the cultural probes approach, by designing a collection of emotional probes in a *diary booklet* format that contains inquiries, drawings, and collages (Figure 3-6). Along with these methods, interviews and observation were also

used for data collection. The content was structured by refining that of the previous studies.

The use of emotional probes implies a hybrid context of methods in order to use the particular strengths of each method to reinforce the whole.

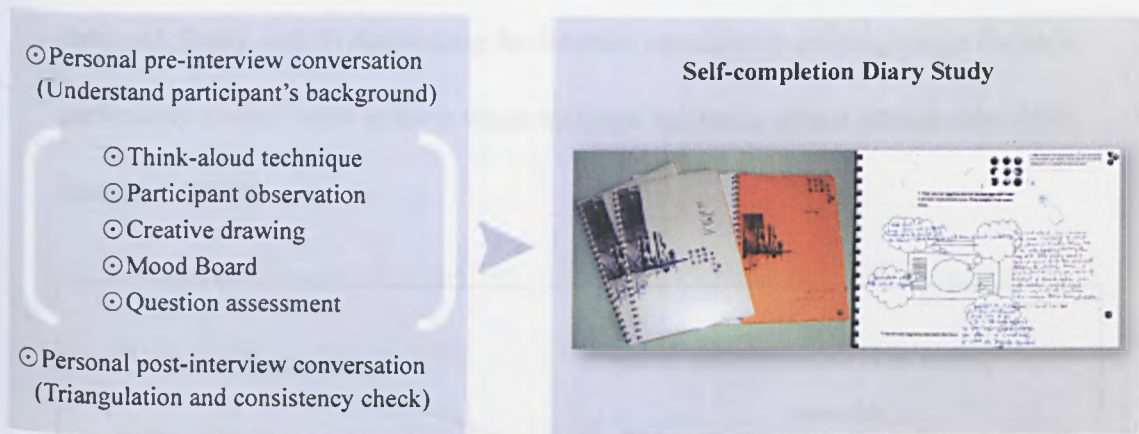


Figure 3-6: The diagram on the left shows the overall techniques applied in the EPs diary booklet; the picture on the right shows a view of the diary booklet and some of the entries from one participant's diary.

Each method has its own theoretical strengths and weaknesses because each method contains its own set of assumptions about the nature of the social world (Denscombe, 2003). So this study approached user emotional experience through interviews, observations, question-based inquiries, and documentary data (e.g. diaries, letters, essays, personal notes, biographies, and photos), to create an intersecting set of different methods and data types employed in a single subject (Punch, 1998:190). The idea that combining multiple methods within a research programme to increase the knowledge yielded by the study has been given the academic term: “methodological triangulation” (Denscombe, 2003; Hakim, 2000; Janesick, 2003; Silverman, 2005; see Figure 3-7).

Through the use of methodological triangulation, some advantages can be positively gained in relation to this research, such as 1) producing more valid and reliable data than the use of a single method, 2) understanding the phenomena from different perspectives and gaining an opportunity to corroborate findings in order to enhance the validity of the data, and finally, and 3) diminishing the inherent weakness of applying single methods, particularly in small-scale projects where no single method is perfect (Denscombe, 2003; Sarantakos, 1993).

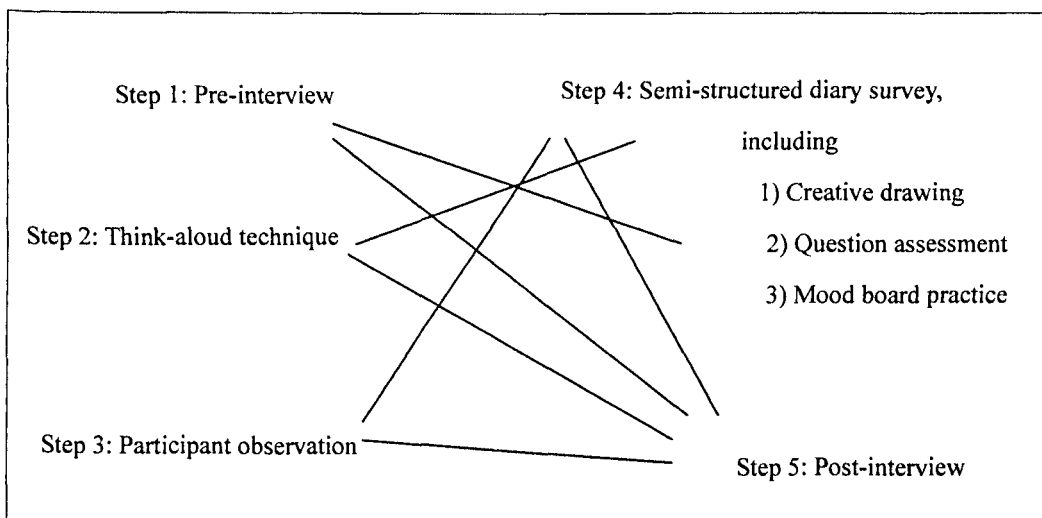


Figure 3-7: The conceptual map represents the concept of methodological triangulation as applied in this research (Source modified from Denscombe, 2003:133).

Emotional Probes were developed as an evaluation strategy. The probes were designed as a semi-structured diary booklet, which contained 10 open-ended questions, such as, *What is your favourite website today? Why do you like it? How do you feel about it?* and *How can this site be improved?* These questions were designed to be answered by the respondents filling out the space or answering each question, perhaps through creative



drawings, mood-board practices, written words, and some single-choice questions with a face scale ranging from 2 (a happy face showing strong agreement) to -2 (a sad face showing strong disagreement). The methods addressed above will each be given more discussion in the following sections.

### 3.3.3.1 Pre- and-post-interview conversation

As we have already mentioned, the interviews were often conducted by using quick and dirty ethnography in order to gain a quick insight. The pre-and post-interviews were conducted to assist the diary survey to continue collecting certain data which might not have been discovered in the participants' diaries.

**1) The pre-interview conversation:** Before starting the diary survey, the researcher conducted this conversation with each participant, which allowed her to explain how to proceed with this activity. The conversation would first serve as an instruction to each participant and ensure that they understood how to continue with the survey when they were on their own. Since each of them had a different level of experience using Web services, the researcher would have a conversation with each participant and make notes about how they talked about their experience. After a week, when the participant had finished their diary they would contact the researcher and when the researcher went to collect the diary they would take part in a final interview.

**2) The post-interview conversation:** As a final conversation, Corti (1993) states, this is basically aimed at identifying and resolving any problems that may have arisen in

the course of the research. However, in this case the researcher tended to turn discussion more towards how the participants undertook the activity and what their opinions were about the creative drawing and mood board practices. By doing this, it was possible to evaluate the practicability of these methods. Thus, through the final conversation, the researcher continued to collect data which had not been captured in the completed diary. This data was also precise and necessary for the research.

The final conversations were conducted to encourage participants to clarify, elaborate, and reflect on the materials they had recorded and composed over the research period (Kuniavsky, 2003). Therefore, those conversations made the diary study more complete, as they provided an in-depth understanding of the participants' various responses made in the diaries. The data collected in the conversation was then combined with the data collected from the diary survey (see Appendix 11).

### **3.3.3.2 Self-completion diary study**

With regard to the efficiency and intimacy of the methods of our research strategy, the diary survey is a way to investigate the inner thoughts, emotions and prejudices that characterise people's experiences (Tedlock, 2003:178). The diary survey has been employed by economists, market researchers, and sociologists to explore many kinds of fact, such as the quality of life, economic well-being and patterns of leisure at work, personal and household expenditure, journeys and methods of transport, health and illness, diet and nutrition, children's behaviour, criminal behaviour, alcohol consumption

and drug use, TV viewing, and sexual behaviour (Corti, 1993:2; Hakim, 2000:90). It tends not to be used in large-scale consumer spending surveys.

In user experience research, the diary survey has sometimes been adopted instead of direct observations and personal interviews, as the latter have certain flaws like being time-consuming and raising issues about the intrusive attendance of evaluators for the duration of the survey (Kuniavsky, 2003; Preece et al., 2002). In human-computer interaction studies, diaries offer a track of personal, sensitive, emotional and experiential records of *“what users did, when they did it, and what they thought about their interactions with the technology”* (Preece et al., 2002: 377).

According to the demands of this research strategy, the diary surveys have six advantages over other methods: 1) they are relatively low-cost 2) the process is straightforward and quick; 3) they are easy to use without special requirements; 4) they can record personal reflections and interpretations of happenings, personal feelings, and emotions surrounding the event described; 5) they have the potential to collect very rich data; and 6) the survey is one of the most flexible approaches to collecting information by completing diaries over a period, ranging from a day to two weeks (Denscombe, 2003; Hakim, 2000; Preece et al., 2002). These advantages seem to satisfy the demand for efficiency and intimacy according to the methodical thinking of the rapid ethnography and cultural probes approach. The diary method has also been used for usability evaluations (e.g. Kuniavsky, 2003).

Diaries can be made in an open-ended, highly structured or semi-structured format, according to different research purposes (Corti, 1993). This research project used a

semi-structured diary survey individually with each participant. The researcher designed a diary booklet as in Figure 3-7 which includes a set of questions of three types: 1) creative drawing (section 3.3.3.4); 2) mood board practice (section 3.3.3.5.); and 3) single-choice questions for assessing website usability (section 3.3.3.6). Most questions were of the open-ended format in order to encourage participants to explain their Web experience in depth. The procedure used is described in section 5.2.

The effectiveness of a diary survey depends on whether participants are patient, reliable, conscientious and whether they remember to complete the whole process without omissions (Preece et al., 2002). Also, this research is sensitive to whether the data collected might be prone to bias owing to the participants' selective memory, although even in this case the data could still provide direct insights about users' viewpoints during the well-structured analysis process (Kuniavsky, 2003).

In order to strengthen the participants' confidence in this process, the researcher recruited volunteer participants and gave each of them a diary booklet in person instead of posting them. In addition, the diary surveys were associated with pre-and-post interviews and think-aloud techniques in order to have more interaction with each participant and motivate them. By means of the diary survey process, the researcher was able to build a rapport with the users. There will be further discussion of the application of the diary survey in Chapter 5.

### 3.3.3.3 Think-aloud technique with participant observation

According to section 3.3.2.2, the advantages of the think-aloud technique is to provide a convenient and inexpensive way of obtaining immediate feedback from users during their performances of certain actions when doing a usability test. In this study, this technique is applied to make sure participants have understood how to perform their tasks and to observe how they proceed with them. Through conducting the think-aloud technique, the researcher was able to monitor the users' browsing habits and ascertain if they understood how to complete their diaries by recording their feelings and suggestions about interesting websites.

With participant observation, the think-aloud technique could be extended to gather more opinions about particular users' experience and online behaviour. Data on the relevant actions and reactions of the participants could be collected to contrast with their diary recordings. With this observation process, the researcher was able to have an interactive relationship with the participants. By means of conversations, the researcher had a better understanding of their thoughts and feelings in order to support this study with further evidence to interpret the participants' emotional reactions. This application of the think-aloud technique with participant observation should back up the validity of the study.

#### 3.3.3.4 Creative drawing

Drawing, put simply, is “*the manual skill of generating signs to represent what one sees*” (Massironi, 2002:1). It is also a visual metaphor that can “*show a person’s emotional state of mind much better than verbal definition or description*” (Diem-Wille, 2001:119).

For this research, drawing was employed as a tool for users to describe their feelings. It is not always easy to use written words or oral language to describe personal emotion. However, drawing provides people with a communicative method that works on both conscious and unconscious levels. Lines, positions, and structures give communicative meaning to drawing. From a graphic viewpoint, the communicative goals of drawing have two dimensions: 1) an illustrative function, which means a drawing that tries “*to strive toward the representation of objects, scenes, and landscapes by means of marks that cause perceptions comparable to those caused by actual objects, scenes, and landscapes*” (Figure 3-8); and 2) an operational function, which means that a drawing tries “*to provide information that can be used for manipulating, building, disassembling, renovating, or positioning an object that is represented by a drawing*” (Massironi, 2002: 86-88; Figure 3-9). For different purposes, drawing can be used for either illustration or operation, or both.



Figure 3-8: This image is a view of Titus' Arch by Piranesi, representing the illustrative function of drawing (source: Massironi, 2002: 87).

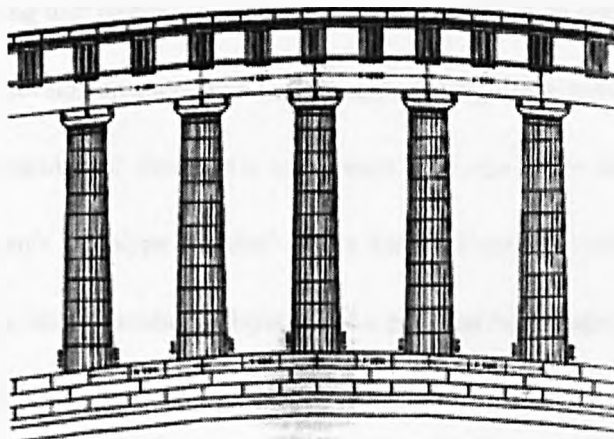


Figure 3-9: The image is the prospect of the east Facade of the Parthenon by Laterza, representing the operational function of drawing (source: Massironi, 2002: 88).

In the diary survey, the drawing practice was employed in two ways: 1) drawing to illustrate personality and 2) drawing to illustrate feelings.

First, in reference to Goatman's approach (2004), the idea was of drawing being a visible way to show personality and cognitive psychology. According to Goatman's classification (Figure 2-27), drawing a sketch of a landscape layout might release the

relationship between the graphic exercise, the recognised personality, and the preferred forms of interfaces. One suggestion of his study is that “*interfaces may potentially be allocated to individuals for their most comfortable and effective experience*” (Goatman, 2004:82). His idea was to look for evidence in a garden drawing practice, which in turn might provide connections between an individual’s personality and their drawn representations, including the way they most naturally organise information. The outcome of Goatman’s experiment was therefore to suggest an optimum interface scenario through the input of a simple drawing.

Connecting user interfaces and drawing practice, this study attempted to make use of the concept to develop an alternative tool for approaching users’ needs in interface design. Given the limitations of Goatman’s experiment, the researcher decided to extend and modify Goatman’s prototype “garden” into a series of creative exercises by drawing a garden layout, a library landscape layout, and a personal homepage (see Figure 5-6). Due to the different impressions of a garden (more emotive content), a library (more logical content), a personal home page (more personal content), participants could use their imagination to draw their own design. The procedure of this application was published in the Fourth International Conference on Design and Emotion in 2004.

Additionally, one of questions in the diary booklet asked each participant to draw a picture of their first impression of their favourite Web interfaces, instead of describing it in written words. After a week of data collection, significant patterns arising from users’ particular emotional reactions were likely to appear during those practices.

The results could support this study by proving the relationship between personality



and visual responses to graphic layouts. The three kinds of layout drawings were expected to 1) reveal more connections between interfaces and user experience; 2) examine the effectiveness of the drawing tool in mapping user experience; 3) support the participants' verbal statements; and 4) inspire designers with the users' creations.

The drawing practice is straightforward to conduct and easily generates rich data. Applying it in this research project was intended to open a flexible way to engage with the participants and broaden the scope of available data. The results of this application will be discussed in more detail in Chapter 5.

### 3.3.3.5 Mood board

The “mood board,” which is a collage exercise, is often used by designers as a method for translating their target market data into a visualised representation for product design, interior design, architecture, and other related design activities. In product design, collage exercises are habitually employed to visualise the “value” of design, such as being cold, gentle, joyful, peaceful, or in other ways emotionally descriptive (e.g. Boess & Durling, 2002).

A mood board is created by combining images, text and fonts, colour schemes and other graphic elements to structure an overall *look and feel* for a design. In order to develop affective techniques to map user experience, the mood board was used as a *fun tool* for participants to get involved in a playful activity. Through interactive practice, the completed image collage is supposed to indicate their thoughts, emotions, and creative

urges, through images (Figures 3-10 & 3-11).

As Mattelmäki and Battarbee (2002:4) state, the collage is an “*emotionally expressive and dynamic*” exercise for explaining one’s personal character or way of life or illustrating one’s feelings toward certain subjects and events. Such a form of playful interaction with people’s experience is as valuable as other research techniques in data collection. “*Collages are sometimes used in the beginning of design process to find the spirit for the design and in user research and participatory design exercises to reveal dreams and emotions*” (Mattelmäki and Battarbee, 2002:3). Therefore, the use of collage not only provides a tool for gathering design ideas and users’ perspectives in early stages of the design process but also generates practice for evaluating users’ experience by visual and emotional descriptions. Mood board practice thus became a part of the emotional probes approach to reflect users’ emotional association.

Mood board practice was adapted and refined to associate it with the diary survey and each participant was asked to create their own mood board collages to express their feelings after their daily Web browsing. The images and materials were taken from each participant’s personal selection—from their own magazines, newspapers, or other image sources—to represent their feelings. The sources they selected also provided some fragmentary clues about their lives and thoughts, as it involved juxtaposing a collage of images as a reflection of their daily search exercises. Therefore, by translating this exercise into the emotional probes approach, the result of mood board usage provided the researcher with another opportunity to visually interpret users’ emotional experiences. Through the participants’ mood board formations, the results were not just fun but also

were about broadening the scope of data on users' present experience, past memories and maybe expectations for the future. As a result, it was predictable that very rich data would be collected through such an engaging activity as this.



Figure 3-10: An example of a mood board visualises a user' life style with an emotional profile (source: [http://www.lifestylemaven.com/styleboard2\\_fruityraver.htm](http://www.lifestylemaven.com/styleboard2_fruityraver.htm)).



Figure 3-11: This example of a mood board has been used to describe design ideas (source: <http://www.northlan.gov.uk/education+and+learning/education+2010/mood+board+1.html>).

### 3.3.3.6 Single-choice question assessment for Web usability

In the diary booklet, most questions were in an open format to lead respondents to describe their feelings and thoughts liberally, but there were five single-choice questions which were related to how the users feel about the visual personality and usability/navigability of the selected website. Each question was to be answered by a 5-point “face” scale (see Figure 3-12). With these questions, the researcher obtained quantitative answers to compare with other types of answers about users’ emotional responses in order to strengthen the inner validity of the research.

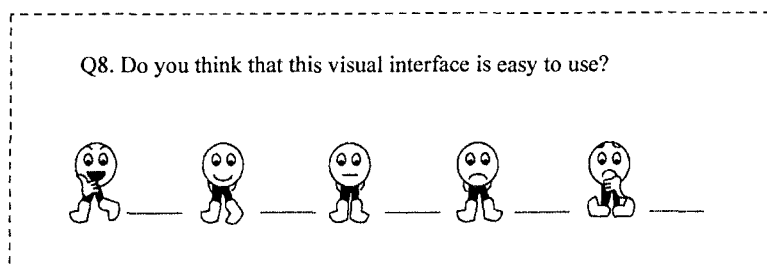


Figure 3-12: An example of using facial icons to asking about users’ points of view.

### 3.4 Sampling

The central concern of this study is to develop in-depth understanding of users' particular feelings and needs, rather than to gather comprehensive or demographic data on user experience. In qualitative research, it is rare to use probability sampling rather than non-probability sampling for three reasons, defined by Denscombe (2003:15)

- *The researcher feels it is not feasible to include a sufficiently large number of examples in the study.*
- *The researcher does not have sufficient information about the population to undertake probability sampling. The researcher may not know who, or how many people or events, make up the population.*
- *It may prove exceedingly difficult to contact a sample selected through conventional probability sampling techniques. For example, research on drug addicts or the homeless would not lend itself to normal forms of probability sampling.*

Under such circumstances, non-probability sampling can be used as the basis for selecting the sample. On the other hand, this study has been conducted in accordance with the concept of rapid ethnography in order to gain quick feedback from users or consultants to confirm ideas. Preece et al. (2002:431) says typically 5-12 users are involved in user testing, but the *quick and dirty* tests can involve one or two users as participants to get quick feedback about a design idea. Additionally, the cultural probes approach is generally used where participants and researchers work together to develop a shared understanding of the intended focus of the study. The size of the sampling tends to be small-scale.

As Punch (1998:193) has explained, “*sampling decisions are considered not only about which people to interview or which events to observe, but also about the setting and processes.*” As a result, the sampling plan and parameters (settings, actors, events, and processes) should be carefully coordinated with the research purpose and questions of the study. In tune with the overall validity of the research design, the sampling strategy is linked to an emphasis on internal consistency and a coherent logic to the study (Punch, 1998). With an eye towards gaining more confidence and enough evidence for future findings, Figure 3-13 states the specific methods used for each kind of sampling during each phase.

Phase of study	Participant	Method	Sampling
<b>Phase one-</b> Designers’ experience	1 designer	Open-ended interview	Purposive
	9 designers	Semi-structured interview	Purposive
<b>Phase two-</b> Users’ experience	10 Web users	Quick and dirty observation	Convenience
	5 Web users	Think-aloud technique	Convenience
		Semi-structured interview	
	10 Web users	Questionnaire inquiry	Convenience
<b>Phase three-</b> The application of emotional probes approach	10 Web users	Semi-structured interview	Convenience
		Think-aloud technique	
		Participant observation	
		Creative drawing	
		Question inquiry	
		Mood board	

Figure 3-13: It lists the types of sampling and the number of participants involved; there are two types of sampling strategies in this research project.

### 3.4.1 Purposive sampling

Purposive sampling means the sampling is conducted in a *deliberate* way with specific purposes or focuses in mind (Punch, 1998:193). This sampling is applied to “*those situations where the researcher already knows something about the specific people or events and deliberately selects particular ones because they are seen as instances that are likely to produce the most valuable data*” (Denscombe, 2003:15). So purposive sampling can provide the researcher with a suitable strategy for locating samples composed of *information-rich informants*, especially in ethnography and participant observation research (Punch, 1998:193). In the present research, it has been used to collect designers’ perceptions, perspectives, and ideas. The flexibility of the method means it is commonly used to obtain specialists’ viewpoints, and its application reduces the time-demands of data collection.

### 3.4.2 Convenience sampling

Convenience sampling is another non-probability sampling technique and “*involves choosing the nearest and most convenient persons to act as respondents*” (Robson, 2002:265). Convenience sampling is often driven by considerations of limited time and resources for conducting fieldwork. Under such circumstances, convenience sampling provides a reasonable way of selecting cases which are “*first to hand*” (Denscombe, 2003:16).

This study involved different techniques and practices, therefore it was very important for each respondent to participate with patience to help bring the whole process to completion. Convenience sampling also provides an adaptive and relatively low-cost way of sampling. It can “*provide a springboard for further research or allow links to be forged with existing findings in an area*” (Bryman, 2001:100).

In this research we take each participant’s individual perspectives and experience for what they are instead of generalising representative user behaviour. As a result, convenience sampling provides a suitable method for this research.



### 3.5 Data analysis

Analysis was conducted to assess the data yielded in the three studies: Phase one—interviews with designers; Phase two—interviews with and observation of users; Phase three—application of *Emotional Probes*. Underpinned by ethnographic research, data analysis involves an iterative process which is fundamental to the “grounded theorising” promoted by Glaser and Strauss in 1967.

The process of analysis is reflected in Miles and Huberman’s interactive model (1994:12; see Figure 3-14) which has been interpreted by Punch (1998:203-204). Each stage—data collection, data display, data reduction and conclusions—is integrated into the interactive cycle of an emerging set of explanations, interpretation, deductions, and discrimination, which are required to refine conclusive results. Therefore, prior results can effectively facilitate later studies to determine research direction and focus.

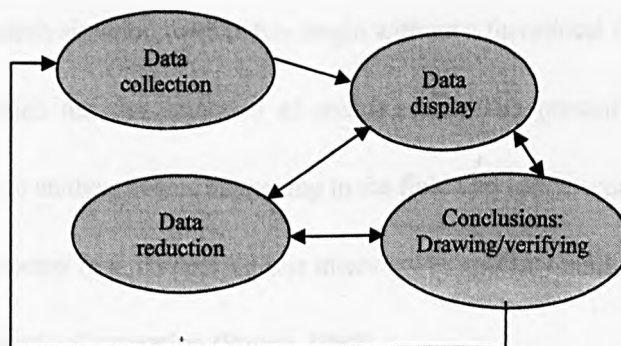


Figure 3-14: Components of data analysis process as interactive model source, developed by Miles and Huberman (1994) (figure source is from Punch, 1998:203).

Processing tentative findings from sequential phases in loops, in order to refine and compare the data iteratively, the results, apparently drive towards generating theoretical saturation. According to different research focuses and theoretical orientation, there are three analytic strategies integrated in this thesis: 1) grounded theories approach; 2) content analysis; and 3) computer-assisted data analysis. These strategies are discussed in the following sections.

### 3.5.1 Grounded theory

The grounded theory approach was originated by Barney Glaster and Anselm Strauss in 1967. Their book, *The Discovery of Grounded Theory*, contained the first description of this method. Grounded theory can be interpreted as a research strategy or an analytical method. Basically, the purpose of grounded theory is to generate theory through the collection and analysis of research data (Punch, 1998). In simple terms, grounded theory starts with a research situation, which may begin without a theoretical framework to guide research, but which has the objective of creating one. The present research employs grounded theory to analyse events happening in the field and applies constant comparisons in the iterative process (e.g. comparing one interview to another) until the theory emerges and achieves theoretical saturation (Punch, 1998).

Grounded theory has frequently been adopted by those engaged in small-scale projects that use qualitative data to study human interaction and exploratory research within the Social Sciences (Denscombe, 2003). As Sarantakos (1993:269) and Denscombe

(2003:111) explain, grounded theory is related to dealing with empirical data, which emerges from, is produced through, and is grounded upon what happens in practical situations in the real world. The basic difference from other kinds of ethnographic research is that it “*let[s] the data speak for themselves*” (Denscombe, 2003: 111). In this respect it motivates new concepts or theories to emerge on the basis of the collected evidence.

As Sarantakos says (1993:269), the central interest of grounded theory is not “*collecting volumes of data but organising the variety of thoughts and experiences the researcher gathers during the analysis of data.*” As Punch (1998) explains, there is a constant change in the development of concepts, with the relationship between data collection and data analysis as represented in Figure 3-14.

The process of data collection is guided by initial research questions: in the present case, when researchers collect the first set of data, the first data analysis also begins. After further collection, the second set of data will be processed under guidance from directions emerging from the previous analysis (Figure 3-15). This continuous cycle of data collection and analysis does not stop at two repetitions and will continue until theoretical saturation is achieved. The condition of theoretical saturation is described as being when “*new data are not showing new theoretical elements, but rather confirming what has already been found*” (Punch, 1998:167).

Applying Punch’s explanation and showing the application of the grounded theory in theoretical sampling, Figure 3-15 presents the process of analysis used in this research. It explains how the different studies continuously refined the concepts and knowledge in use through subsequent research phases.

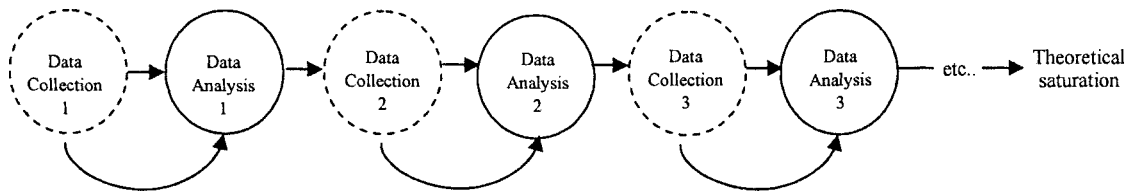


Figure 3-15: Theoretical sampling: data-collection/data-analysis relationship (source: Punch, 1998:167)

We used this iterative process in order to integrate the designers’ individual perspectives and user experiences to develop a new understanding of the relationship between interface design, visual communication, and user experience. The grounded theories approach has been used to analyse the data collected from the research of Phase 1, Phase 2, and Phase 3. Additionally, two new methods, content analysis and NVivo analysis, were used to assist in systemic treatment of the various data.

In this phase, data collection aims: 1) to sustain new knowledge of design practice, such as emotional design, interaction design, and interface design; 2) to develop new contexts for evaluating users’ emotional experiences; and 3) to seek tools to address the lack of well formatted methods for user experience research. In applying grounded theory to qualitative data, it has brought a *disciplined and organised approach* (Punch, 1998:168) to the development of new knowledge and analysis.

### 3.5.2 Content analysis

Content analysis is “*an everyday means of communication employed by all people who live and communicate in groups*” (Sarantakos, 1993:210). It is a systemic approach which is

used to identify *themes, concepts, and meanings* and classify the content of documents (Burns, 2000:432). It was originally a quantitative technique for analysing newspaper *stories* especially in evaluating written texts, primarily in the United States (Payne & Payne, 2004; Robson, 2002).

One of its distinctive features is that it reveals many of the hidden meanings in communication contexts, and its use has been widely extended to radio, television, and studies of advertising, pornography and violence in the media (Burns, 2000). It has also been applied to literature, autobiography, and visual contexts: film, video and still photography. A content analysis therefore includes a qualitative way of analysing the meaning of written words and visual sources by systemically allocating content to detailed categories (Payne & Payne, 2004). However, there is a distinctive difference between qualitative and quantitative research, as Figure 3-16 shows.

<b>Differences between applications of content analysis</b>		
Qualitative research	Focus	Addressed to more subjective information, such as motivations, attitudes, and values.
	Presentation	Outcome can be seen as detailed reports, verbatim quotation, and interpretative discussion.
Quantitative research	Focus	Employed in counting statistical information, such as the time, space, frequency of words or topics, and duration of an event.
	Presentation	Results are generally presented in tables, graphs, and summaries.

Figure 3-16: The different focuses and data presentations of content analysis in qualitative and quantitative research, from Payne & Payne (2004: 51-54) and Sarantakos (1993: 211).

Even though there are differences in focus between qualitative and quantitative research, content analysis in qualitative research likely inherits certain aspects of the quantitative approach insofar as it presents results in a detailed and systematic order. Basically, it is a method that can be used with “text” in any format, such as writing, sounds, and visual images. The data for content analysis includes different formats: diaries, interview transcripts, drawings, collages and memoranda. In the present research project, a content analysis was conducted as a supplementary method within a multi-method study. The process was used for triangulation purposes, to seek the significant meanings behind the data through the establishment of categories and the processes associated with coding. The process for employing a content analysis is based on five steps:

<b>The five steps of content analysis</b>	
<b>1) Selection</b>	Select an appropriate sample of <i>text—images, writing, and transcription</i> which refers to the research question.
<b>2) Category</b>	Develop relevant categories for analysis, which involve noting regularities and recurring ideas / concepts. This could be an emergent process because the process of categorising is generated by people in the setting or the interviewer/observer. What is important is that the process is not trying to prove or disprove a hypothesis supporting the research position (Burns, 2000).
<b>3) Coding</b>	Code “ <i>text</i> ” in units in line with the categories. A coded unit could be a word, symbol, or character, or easily identifiable element of text and image (Sarantakos, 1993). Codes should be concerned with replicability, e.g. through triangulating with data collected from other sources in order to ensure reliability (Burns, 2000; Rose, 2001).
<b>4) Analysis</b>	This is a process associated with constant comparisons and frequency counting in order to analyse and interpret the values of codes for the results (Rose, 2001:83). One must identify the themes in texts and images after coding.
<b>5) Evaluation</b>	After the coded units have been identified, the researcher will need to evaluate the items which are significant to the central questions of the study in order to reduce the occurrence of ambiguous results (Sarantakos, 1993:215).

Figure 3-17: A list presenting the process of content analysis in five steps, adapted from Burns, 2000; Robson, 2002; Rose, 2001; and Sarantakos, 1993.

We have applied this five step approach to content analysis to identify users’ emotional experience and emotional values in graphic interface design. This stage is concerned with identifying a thematic framework, including key issues, concepts, and themes which are derived from the research positions. It is also concerned with coding

from those issues addressed by the respondents themselves, such as their experiences and viewpoints that recur in the textual and graphic data.

In general, the qualitative research strategy does not seek to quantify data, but as the nature of content analysis can provide simple figures to express results systemically and statistically (Pope, Ziebland, & Mays, 2000:114), it is useful to summarise some aspects of the results of the participants' various diary recording in this study (see section 5.3). However, "*content analysis can be extremely laborious and time-consuming*" (Burns, 2000:357); and therefore, sometimes it is combined with analysis software to organise results. To deal with the complex and rich data of this study, we employed the qualitative analysis software, NVivo (QSR NUD\*IST Vivo), which is described in next section.

### 3.5.3 Computer-assisted data analysis: applying NVivo

Computer-assisted data analysis is used for breaking down data through categorising, indexing, and labelling textual resources or interpretations of findings into code units, and can display various relationships among and between units. When facing a large amount of raw data in text, images, and audio from records of observations, interviews, conversations, memoranda, and diary surveys, most analysis software relies on the code-and-retrieve system to assist researchers in accessing the data (Bryman, 2004). There are several common software packages that have been developed for the analysis of qualitative data, e.g. ATLAS.ti, Ethnograph, and QSR NVivo 2.0.

Following the initial evaluation already described, NVivo was selected to process



this research because of the richness of data that it accommodates and its user-friendly interface. NVivo is used to label key issues and to code significant characteristics through iterative data review; it also facilitates the visualisation of those key issues by building a tree diagram that illustrates the relationships between the various issues. NVivo analysis also provides a systemic way to filter out significant patterns or events from data.

The process starts by identifying the research questions and choosing a sample or samples. Once chosen, the text is coded into manageable content categories, which are reduced to a word, or a set of words or phrases. Specific words or patterns are indicative of the research question and determined levels of analysis and generalisation, which could systemically build the data into a category.

Through the detailed categorisation of data, this analysis is rooted in decoding significant meanings from participants' responses and reactions. The researcher was able to use conceptual analysis to classify the data inductively, according to the emerging evidence, with the sense of deriving perspectives from users' emotional responses and experiences. Therefore, by means of iterative coding and classification, the potential criteria for designing user emotional experience are outlined by the appropriate patterns and records. The whole process being assisted by computer programs does not mean that the manual labour involved takes less time, but it can assist researchers in repeatedly recording tentative outcomes until the emergent theory can achieve theoretical saturation.

## 3.6 Validity and reliability

It is important to make sure that qualitative research tackles two fundamental issues: “validity” and “reliability.” Since choosing the evaluation paradigm and techniques is crucial to answering the research questions, each step has to satisfy the evaluation goal and consider a few ethical considerations (Preece et al., 2002). Both validity and reliability appear together to ensure that the whole measurement process is conducted accurately and properly.

### 3.6.1 Validity

“Truth” is another word used to describe “validity.” “Truth” is interpreted as *“the extent to which an account accurately represents the social phenomena to which it refers”* (Hammersley, 1990:57). It is also a methodological element used in both quantitative and qualitative research. There are two criteria involved in establishing the veracity of qualitative research— 1) internal validity and 2) external validity.

Internal validity is achieved when procedures, observations and evaluations correspond with what actually transpires (Burns, 2000). Further, external validity is concerned with the extent or the degree to which results can be tested, generalised or transferred across other research settings and disciplines (Burns, 2000). Regarding Sarantakos’ explanation (1993:74), for instance, validity is the ability that *“produces*

*findings that are in agreement with theoretical or conceptual value” and it is “the capacity to measure what a method is intended to measure.”*

As this research is involved in ethnographic field studies, there is an issue of internal validity obtained from the data collection and the analytical techniques employed (Burns, 2000). As Silverman (2005) claims, the nature of ethnography provides rich descriptions of social setting, which can also be its weakness. Silverman (2005:211) concluded Mehan’s and Bryman’s statements, he discovered that 1) conventional field studies tend to have an anecdotal quality in relation to conclusions or explanations; 2) the evidence produced seldom relies on stringent methodological criteria and are faulted for the insufficient representative instances or typicality. As a result, it might place the veracity of a particular conclusion in contention. In response to these questions of the validity of much of this study’s qualitative research, there are three tactics to deal with these objections: 1) method triangulation; 2) data triangulation; and 3) respondent validation.

### **3.6.1.1 Method triangulation**

Figure 3-3 presents the methods employed in this research, and each method employed was selected by a rational comparison of those applied in the relevant research in the field. Through the literature review, most methods have been tested individually for usability evaluation, interaction design, and user experience research. The researcher also utilised their concepts in the preliminary process, in order to examine whether these proposed techniques were able to support the evaluation of user experience and satisfy research goals.

In addition, the whole research was conducted in an ordered sequence, with the outcomes of the previous phase benefiting the next phase. Each phase was linked together to produce a valid result. For instance, Figure 3-7, describes the concept of methodological triangulation applied to emotional probes.

### 3.6.1.2 Data triangulation

Since undertaking the literature review, designing the research strategy, and applying multiple methods, this research has discovered alternative perspectives from which to review each finding. Through comparison with other researchers' studies and previous results, this research intends to gain an intersecting set of different data in a single subject, in order to reduce the possibility of bias.

### 3.6.1.3 Respondent validation

In the sampling process, it was important to seek appropriate participants. This research preferred to provide designers with creative inspiration, rather than seek specific criteria for certain problems in the design process. According to the specific goal of each phase in the research, the number of men and women within an age range, personality difference, difference in their experience using the Internet and other criteria, might need to be taken into account in order to ensure that each participant could fall within the focus range of the research. Additionally, how the participant was involved with the evaluation process was

another issue to consider. As noted by Preece et al. (2002), the evaluator needs to set each participant at ease so that they feel normal and are able to perform as usual. Concerning this point, the researcher conducted the studies in less controlled environments rather than in a laboratory environment in order to minimise the effects of unfamiliarity with the research surroundings.

### 3.6.2 Reliability

“Reliability”- *“It is equivalent to consistency; the quality of an instrument to produce the same results when employed under the same conditions”* (Sarantakos, 1993:79). This basically refers to the ability of a method to produce consistent results. Thus, if a method is reliable, it makes it possible to “produce the same results on separate occasions under the same circumstances” (Preece et al., 2002:355). In other words, another evaluator or researcher should be able to follow the same procedure and gain similar results. Punch (1998) explained this notion as consistency over time (or “stability”) of the measurement or the evaluation process in quantitative research. In quantitative research, stability means that the measurement can be replicated and reviewed by other researchers with similar interests in a controllable setting, and therefore, the results accumulate and create an historical trail of experimental results for other researchers to follow.

However, in contrast with quantitative research, qualitative research tends to be conducted in less controlled environments than those associated with rigorous methods for data collection and analysis. Ethnographic research, especially, tends to reduce intrusive

factors in the natural setting in order to uncover more data.

Sarantakos (1993:80) concluded that Bogumi and Immerfall in 1985 addressed alternative ways of guaranteeing the quality of research instead of having to check reliability:

1) “Coherence,” means the extent to which methods meet research goals. In the process, different methods might be adopted to analyse data with each method being focused on the same goal.

2) “Openness,” means the degree to which a study can be replicated. In ethnographic research, it is difficult to replicate the same social setting and circumstances from one study to another. Alternatively, an ethnographic researcher needs to “*adopt a similar social role to that adopted by the original researcher,*” which is termed “internal reliability” (Bryman, 2004:273). This concern allows subsequent researchers to compare results with those of the original case.

3) “Discourse,” means the extent to which more than one researcher agrees with the findings after they have been discovered and interpreted. The consequences of such findings are based on *internal reliability* or *inter-observer consistency* (Bryman, 2004:273).

According to the above criteria, the reliability of this research had been considered in three aspects: 1) each method was adopted with the same goal of developing a better understanding of user experience; 2) the methods employed were likely to develop

design-led approaches to explore users' emotional experiences in other relevant design areas; and 3) the data were collected by multiple methods such as interviews, observations, and diary surveys, which generated intensive, interpretable, and indicative results, which were representative of the user's emotional experience. Through a continuous cycle of data collection and analysis, the processes were constantly confirming what already was discovered until theoretical saturation was achieved. With respect to the issue of reliability, more details of the analysis process have been described in Chapter 4 and 5.

### 3.7 Summary

This chapter introduced the framework of qualitative research and the methods adopted in this study. Underpinning the ethnographic strategy, each method was developed to achieve the research goal and guided by the research objectives in order to extend knowledge and explore specific issues.

The whole process concerned the uncertain and dynamic features of interpersonal interactions (e.g. the relationship between the researcher and the participants, between the designers and the users, and between the researcher herself and the designers, and between the researcher herself and the surroundings). The ongoing, experiential changes reflected analytical features, which means the data collection and analysis proceeded in tandem and repeatedly referred back to each other (Bryman, 2004:401). The repetitive interplay between the data collection and analyses cultivated researchers' sensitivities toward the discovery of unrelated facts. In the process of exploration, these interactions between events, people, and surroundings have provided a learning interrelationship.

The development of "Emotional Probes" (EPs) was based on the goal of embedding and understanding user emotional experience, and thus providing creative inspiration for designers. It is difficult to underpin the inherently subjective process of design creativity on a scientific basis. Therefore, rather than suggesting an assured resolution, this study attempted to develop tools for generating new knowledge on the reality of user experience.

Accordingly, the concept of cultural probes, particularly when guiding researchers,



involves “*a deep sense of familiarity and engagement*” with the people who might interact with the design subject (Gaver et al., 2004:56). Each method has a similar characteristic that can assist in the replication of an interactive relationship with potential users, especially when those participants are in an inspirational exercise. The users’ experiential responses afforded valuable information to clarify their emotional needs. The application of EPs was utilised in the hope of providing a practical and uncomplicated approach to probe the complex emotional dimensions of user experience.

In observing user experience, the researcher discovered that the involvement of interview and participant observation was frequently applied to support these studies in order to deepen the research results. It is inherently difficult to reproduce the research settings of the approach. Therefore, the conventional objectives of reliability and viability were difficult to obtain to the degree possible in qualitative research. In order to adapt reliability and validity for ethnographic research, methodical triangulation and data triangulation are put forth as possible solutions. Further, the consistency of the research questions and goals are strengthened to increase credibility (which parallels internal validity), transferability (which parallels external validity), dependability (which parallels reliability), and conformability (which parallels objectivity) (Bryman, 2004:273). Observed through these rigorous analytical methods, the discoveries stayed faithful to the facts produced in these studies, so that the researcher could complete the objectives that this research set out to achieve.

## Chapter Four – Tentative Study Analysis

### 4.1 Introduction

This chapter mainly describes the procedures used to conduct the studies in Phases one and two (see Figure 4-1). In analysing these two studies we aim to establish, through a series of analytic inductions, a general concept of how the visual impact of a user's experience encapsulates designer and user perspectives. A nascent theory is established by a continuing discourse on the collected data.

The tentative studies were: Phase one—interviews with ten designers; Phase two—interview and observation with users. It was intended that the findings of these sections would benefit the next study in developing appropriate methods, enabling a deeper exploration of ongoing phenomena. This is a coherent methodology for discovering the facts related to the subject. Each step is firmly connected to the next in order to gain an in-depth understanding of users' experiences when interacting with Web interfaces.

Phase of study		Participant	Method
Phase one	Designer interviews	1 designer	Open-ended interview
		9 designers	Semi-structured interview
Phase two	User interviews and observations	10 Web users	Quick and dirty interview
		5 Web users	Semi-structured interview
			Think-aloud technique
		10 Web users	Semi-structured questionnaire

Figure 4 -1: Each research phase with individual methods.

## 4.2 Phase one—Designer interviews

The study with interviews with designers was divided into two sections to gather designers' thoughts on the importance of graphic design in user-interface communication. The study was conducted before interviewing and observing users' emotional experiences. Through investigating various designers' perspectives, this research could find out, in terms of their practical experiences, about designers' concerns when designing user interfaces.

### 4.2.1 Procedure

The process was conducted with 10 designers and was separated into two stages. The first interview was with a leading designer, whereas subsequent interviews were with the other nine designers.

Time	No. of designers	Location	Method	Sampling
23, September, 2003	1	London, UK	Open-ended interview	Purposive sampling
October-November 2003	9	Taipei, Taiwan	Semi-structured interview	Purposive sampling

Figure 4 -2: Details of designer interviews, which were all conducted in 2003.

The first interview was conducted with one leading graphic design expert, Prof. Malcolm Garrett, in London. From 1978 until 1994, Garrett was the design director of the UK graphic design consultancy, *Assorted Images*, where his work included graphic identity,

exhibition design, television graphics, literature, and his current interest: interactive media design. His work is regarded as having a vital influence on the development of contemporary UK graphic design (source:<http://www.rgu.ac.uk/>).

During the interview, the interviewer took advantage of Garrett’s professional experience in order to learn what he thought about visual communication in the digital age. Following the interview, it was possible to generate an interview guideline for the ensuing interviews with other designers. Using the same method during the next round of interviews, the researcher extracted cogent information from prior interviews to guide subsequent discussions with other designers.

#### 4.2.2 Outcome of the first designer interview

<b>Time</b>	23, September, 2003
<b>Location</b>	59 Knighthead Point, The Quarterdeck, London, E14 8SS
<b>Approach</b>	Open-ended interview
<b>Objective</b>	Share the designer’s professional perspective

Figure 4 -3: Details of the first interview with leading designer, Malcolm Garrett.

The interview with Garrett lasted approximately two hours. The interview was conducted in an open-ended style, and all the answers focused on the core theme—the importance of graphic design. Four issues surfaced from this conference with Garrett, as Figure 4-4 shows.

Issues	Comments
Visual communication	<ul style="list-style-type: none"> <li>● Graphic design can represent ideas in a visual way.</li> <li>● Good graphic design can improve the quality of communication.</li> <li>● Visualisation of communication can create an engagement with people.</li> <li>● Graphic design can help to maintain authenticity for the subject, such as designing a CD cover, which should refer to the content and produce an intense impression that communicates with the audience.</li> </ul>
Interactive media	<ul style="list-style-type: none"> <li>● The principles of graphic design can be applied to a wide range of designs, such as interactive design, information design, and other design areas. As Garrett said, <i>“graphic design is still the bigger thing that embodies all other individual disciplines like advertising or information design or interactive media.”</i></li> </ul>
Graphic user Interface	<ul style="list-style-type: none"> <li>● <i>“Good interfaces are never noted” and “a successful interface would be invisible.”</i></li> <li>● Simplicity is essential when designing a graphic user interface.</li> </ul>
User experience	<ul style="list-style-type: none"> <li>● Observing life experience can rationally direct design ideas for people’s requirements. As Garrett said, <i>“People like what they know and like what they’ve grown up with. They understand it. It does come back to what you’ve grown up with, it’s so important.”</i></li> <li>● Design could be created to reduce the fear of contact with technology.</li> </ul>

Figure 4-4: Four issues addressed in the interview with Malcolm Garrett.

The four issues addressed by Garrett: 1) Visual communication, 2) Interactive media design, 3) Graphic user interface, and 4) User experience, were integrated to generate a

clearer view to reflect the three main objects of this research—“design,” “interface,” and “users”. Three more questions arose and led to a clearer point of view, helping move the study forward. They are as follows:

- 1) *What is important in graphic design?*
- 2) *What is appropriate interface design for users' needs?*
- 3) *What is important about user experience?*

In Garrett's interview, the answers to these three questions were holistic and generated further discussion about the importance of graphic design for Web interface design.

### **1) What is important in graphic design?**

According to Garrett, *“Since the development of interactive media as a discipline, it seems that ‘graphic design’ has taken on the meaning of the design of anything on paper, which I don't think is the case. For me, graphic design is still the bigger thing that embodies all other individual disciplines like advertising or information design or interactive media.”*

Garrett's statement highlights the importance of graphic design and recommends that Web usability analysts rethink the value of graphic design. Some usability principles of interface design can be traced back to the principles of graphic design. The connection of design principles in graphic design, interaction design, information design and other design areas already exists, even though the context has now changed from a two-dimensional to a three-dimensional space, or from still to dynamic, or from print to screen.

Garrett spoke about his professional experience designing iconic record covers for bands. From his perspective, graphic design, especially in the music industry, “*[is] there to capture and perpetuate what is happening [...] and so graphic design helps to maintain that authenticity, if you like. Graphic design can never create the Spice Girls, it can only extend; it will enhance the Spice Girls’ ability to communicate with their audience and to grow their audience, but it can’t create it from nothing.*”

Garrett’s remarks address one of the key functions of graphic design, which is to communicate. He gave the example of a cover design for a musical CD, which conveys particular information to the band’s fans. Graphic design is there to extend the communication with the band’s fans through their visual identity and the visual personality of the cover images. Through the visual representation of design, products can catch people’s attention, announce their content, and enhance people’s memory of it. Graphic design, as such, is a communication tool used as a means of addressing people’s selective attention (Morgan & Welton, 1992) and as informative packaging to give people immediate information about the contents.

Garrett also mentioned that the key abilities of graphic design are in communication and visual representation, not in creating content, but in enriching people’s visual experience. The product should have a physical content which permits designers to modify and thus enhance its look and feel so that a positive first impression can have as strong and memorable an impact as possible.

From the perspective of Web usability analysts, the graphic design of a website should catch users’ attention. The aesthetic issue has been discussed previously (see

section 2.3.4.6), yet it will be further explored how aesthetics can balance usability and user experience, which is about not only attraction but also about emotional needs.

## 2) What is appropriate interface design for users' needs?

The primary role of many Web interfaces is to provide users with access to the desired information. By using tools such as menus, links, and icons with hyperlinks, users are guided to the sought-after information. These browsing tools are constructed through the complex programming and coding of a website. In order to build a user-friendly website environment, designers have to consider how to design a workable interface.

Garrett mentioned a point in relation to user interface design when he stated that “*Simplicity is the word that I’m looking for, simplicity and obviousness.*” Reminiscent of Nielsen’s saying (2000a:97), *simplicity* is a key principle for creating a usable design. Garrett then continued his remarks by using the example of Nokia mobile phones to illustrate his concerns about designing user interfaces. In Garrett’s opinion, Nokia mobile phones are *easy to control, easy to learn, and easy to access*; with Nokia it is *easy to get feedback*, and customers feel it is “*easy [for them] to get what they want.*” These could be the qualities of Web interfaces which most people expect. In addition, Garret explained the ultimate objective of design is to “*make every thing easy.*”

What could a user interface be? Garrett emphasised that *good interfaces are never noted*. He clarified what a good interface is and provided further details:

“*For me the goal is always to take away the interface. The word interface is an explanation of a meeting point of two things. In computing, the point is between a person*



*and a computer. A successful interface would be invisible, you wouldn't notice the interface if the communication between the two people took place."*

Clearly, what Garret is concerned with is that an ideal interface should appear to be invisible. We have associated the term "invisible" with the ideal user experience, such as the feeling of a product's being *intuitive*, or having *fewer barriers* or being *accessible*, which captures the central quality of good user accessibility.

Garrett also used the example of television to illustrate how people treat this technology as a part of their lives, such as when people press a button and get what they want, making it easy to use. He added that, "*People like what they know and like what they've grown up with. They understand it. It does come back to what you've grown up with, it's so important.*" This statement addresses the design issue of how new interactive media make users' understand and become used to them. It also raises questions about the importance of understanding users' life experiences and how to communicate with them. Users, in fact, need something more instinctive. This also reflects our research focus—seeking design ideas for understanding users' needs by observing user experience in a natural setting, in order to gain design inspiration.

### **3) What is important about user experience?**

The Web interface is a mediator that conveys information by visual arrangement. It is an interpreter between designers and users that translates the complexities of various Web server implementations into the graphic environment of the Web. However, many people are still afraid of using technology, such as the computer, even though it is currently all

around us.

Garrett said: *“At the conference this morning, the keynote speaker was Tim Berners-Lee, who invented the World Wide Web and so it was a packed audience and most people came out and didn’t understand what he said, which is really stupid because he spoke in plain English, [about] things that you would expect to be on everybody’s mind. He was speaking about the Internet and communication networks. It was very straightforward and very easy to understand, so I still think that people don’t want to understand technology.”*

Technology is developed to improve people’s lives but sometimes it is not easy to handle, especially when users encounter difficulties. Many usability analysts and computing researchers, such as the Nielsen Norman Group (which was founded by Jakob Nielsen and Donald A. Norman), have invested their efforts in improving the usability of user interfaces. Issues relating to user interfaces are raised in most of this research group’s projects and reports. This is because the user interface is an essential element in technologies developed for people. According to Norman (2000:17-23), one of the design principles of technology is to *“make things visible”*, which is to let users know where to start and how to use them. This seems to define a user interface differently from Garrett’s *“invisible interface”*. However, what both of them are concerned with is the same desire to create understandable design for users in an intuitive way.

Talking about the experience of understanding his audience, Garrett said, *“Understanding an audience is sort of instinctive through observation and actually the way audiences work and respond doesn’t change very much.”* He pointed out that designers

often neglect to talk with their audience or users. Apart from marketing research, most designers seem to rely on their creativity to design user experience. There seems to be an unbalanced communication between users and designers. Some designers tend to base their estimation of users' needs on conjecture, ignoring communication with users. Client demands used to be the dominant thing that designers had to take into account. The researcher's personal experience working in design companies corroborates what Garrett said. In this way, it became interesting to interview other designers and obtaining their perspectives on this notion.

To sum up, Garrett talked about how interactive technology changes design thinking. The core of this conversation concerned how designers make use of technology to improve user experience. As Garrett said, techniques in design are "*a sort of double-edged sword*", so designers should have an understanding of how to use them but should know how to move back to look at the whole picture concerning the aim of the design—the content which people need. In this respect, Garrett emphasised what a graphic designer can do in order to promote positive user experience—communication is important. To create a communication relationship with users, there is a basic need to understand users, which is what motivated the current research project to develop tools to investigate users' thoughts. In the next section, we shall look at the other interviews conducted to ascertain more designers' opinions.

### 4.2.3 Outcomes of subsequent designer interviews

<b>Time</b>	October-November, 2003
<b>Location</b>	Taipei, Taiwan
<b>Approach</b>	Semi-structured interview
<b>Objective</b>	Share the designers' professional perspectives

Figure 4 -5: Details of the interviews with nine designers in Taiwan.

This round of data collection started with semi-structured interviews. Appendix 4 lists the background details of the designers interviewed in this section. The researcher conducted one-on-one interviews with nine designers, coded as DP/Cheng, DP/Liu, DP/Zeng, DP/Wang, DP/ Lee, DP/ Lin, DP/ Chiu, DP/ Wo, DP/ Chang.

The one-on-one interview is the most common form of semi-structured or unstructured interview, and makes it easier for the researcher to locate specific issues with specific people and control the process throughout by using a prewritten interview agenda (Denscombe, 2003:168).

The basis for the questions asked during these interviews was originally developed following the previous interview with Malcolm Garrett. The data collected was divided into the three topics already discussed:

- 1) *What is important in graphic design?*
- 2) *What is appropriate interface design for users' needs?*
- 3) *What is important about user experience?*

The above topics were used to structure the interviews, but the conversations varied widely, according to each interviewee's background and work experience. Most of the designers had worked in print-based graphic design for at least two years and then changed to work in website development, except for DP/Liu, DP/ Lee, and DP/ Chang, who were Web developers in their first jobs. Appendix 4 contains transcripts and lists the details of the content of interviews.

Analysing the interview transcripts interviews showed seven emergent issues relating to graphic design and Web usability (see Figure 4-6). Using these issues, another three themes emerged to move the discussion forward:

- 1) *How can we fulfil users' needs?*
- 2) *How can we design a Web interface involved with user perspectives?*
- 3) *How can we improve Web experience through graphic design?*

The following discussion will concentrate on those issues that were relevant to the visual impact of Web interfaces and user experience. The findings of this stage are fed into the next and generate a new interview guideline for further exploring user experience.

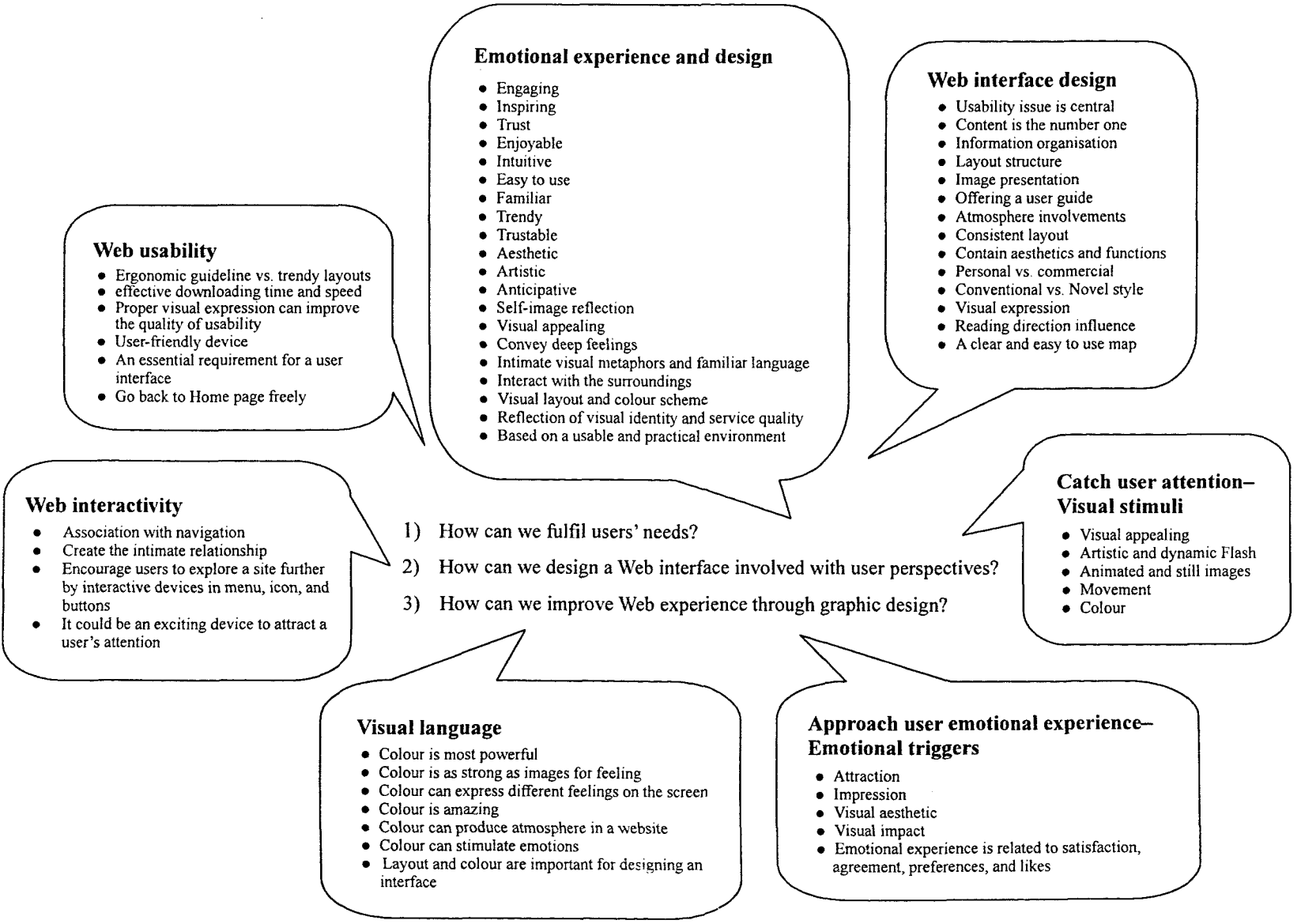


Figure 4-6: Lists the seven relevant issues that emerged from interviews with the designers.

### 1) How can we fulfil users' needs?

The researcher intended to understand how each designer has their individual way of fulfilling users' needs. One issue emerged from the previous conversation with Garrett: *designers' sensitivity to life*.

A designer's sensitivity to life is instinctive, and so they interpret the information collected from their observations and combine it creatively into the overall design. In the interviews with designers, most of them agreed with this. On the other hand, they felt that it was not easy to involve the perspectives of potential users in the early stages of developing a design project. Under time and budget constraints, the designers tended to rely on their own experience to consider users' needs instead of on expensive and time-consuming market research.

During the process of website design, most designers would collect websites with similar subjects or refer to competitor's websites. Once they had finished a prototype of a website, they would conduct a prototype test with a few potential users in order to evaluate the flow of the Web interface and navigation system. However, if the design process could begin to involve users' ideas in the early stages, it could render the end evaluation more effective and accurate, and this is one of our research goals—involve users' opinions in the early stages. In order to find more effective methods to improve the design process, the present research seeks to combine end-users' opinions and thoughts with the early stages of the design process, which will likely provide an alternative to conventional marketing research.

## **2) How can we design a Web interface involved with user perspectives?**

As is shown in Figure 4-6, the designers discussed what features should be part of good Web interface design, for example, usability, interactivity, navigational structure, and the assistance of visual expression. These features tend to combine aesthetic and engineering functions in order to improve user experience.

The designer DP/ Wang described her personal experience as a Website user and said how she used to engage with the whole atmosphere of a website and immerse herself in the virtual environment created by aesthetic stimuli. Most of the designers addressed the issue of what kind of emotional characteristics they would like to put in a website through interface communication with users, characteristics such as being trustworthy, enjoyable, and easy to browse. What they said is suggestive of a potential concept of emotional design for Web interfaces and how emotional engagement between users and visual design is immersed in Web experience. Even though most of the designers thought that usability was essential, they agreed that Web aesthetics were influential when they were users viewing other websites. In this respect, they would like to have sufficient empathy to design sites that make users feel good. In order to probe these designers' reactions, the researcher further explored how designers improved users' emotional experiences using the Web.

## **3) How can we improve Web experience through graphic design?**

In the opinion of most of these designers, content and Web usability are fundamental. However, during the interviews they often mentioned other qualities which could make a Web interface different, such as being engaging, inspiring, trendy, trustworthy, aesthetic,



reflective of a user's self-image, visually appealing, artistic, and anticipative of people's emotions. This emotional dimension is noticeably different from the functional issues: it indicates the importance of emotional influence in perceptual experience.

It is also related to attraction, impression, and visual aesthetics, as discussed in section 2.4 (on Web user experience). So we explore these issues in the next section. The viewpoint reflects some designers' thoughts about aesthetics and usability coexisting and not rivalling each other, in order to enrich user experience.

#### 4.2.4 Synopsis of designer concerns

In the open-ended interview with the first designer, the data presented three main themes: 1) What is important in graphic design? 2) What is appropriate interface design for users' needs? 3) What is important about user experience? In order to further discuss the designers' thoughts and perspectives about Web interface design, three more issues emerged to reflect the next interview guide with the other designers: 1) How can we fulfil users' needs? 2) How can we design a Web interface involved with user perspectives? 3) How can we improve Web experience through graphic design? The results of our analysis of these interviews highlight the importance of understanding of how users talk about their personal experience.

As Figure 4-6 shows, when questioning the designers about the three main issues, which were generated by the previous interview with Garrett, the conversational process yielded another seven topics reflecting the designers' viewpoints on the importance of

graphic design: 1) Emotional experience and design; 2) Web interface design; 3) Visual stimuli; 4) Emotional triggers; 5) Visual language; 6) Web interactivity; and 7) Web usability. In respect to the visual pleasure of Web interfaces, they addressed a wide range of issues relating to emotional experience, even though most of the designers were more concerned with usability issues than the visual representation of Web interfaces. Emotional value always exists in design, to stir people's imaginations and emotional reactions. Therefore, the value of design is not only about its physical functions but also about the emotional satisfaction it gives users.

Our analysis has led the way to theoretical saturation of emergent tentative findings. Another three themes have arisen to move the research process towards exploring the users' perspectives and their emotional experience. These are 1) The visual impact of Web interfaces; 2) Personal Web experience; and 3) User requirements. The whole process was once again iterative, refining the interview results step-by-step. Figure 4-7 shows how the analysis generated findings. In the next section, we further explore the details of user perspectives about these three themes.

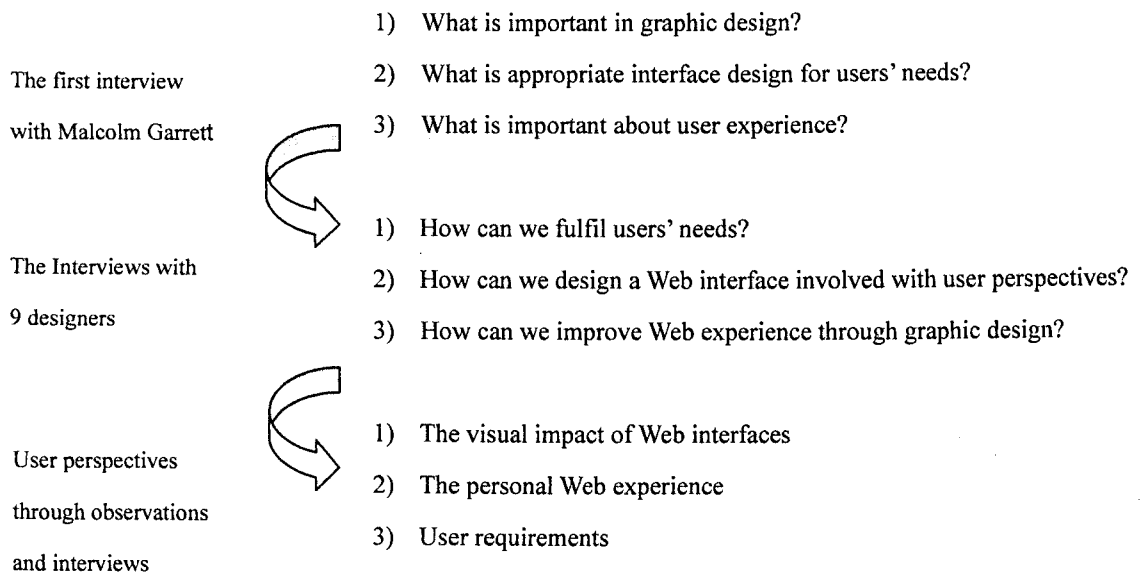


Figure 4-7: The analysis process is rooted in a grounded theory in order to reach theoretical saturation.

In brief, none of the results of the interviews were produced in a one-off or isolated fashion, as all the information was interconnected, enabling us to generalise the knowledge gained from the designers' personal experience and perspectives. The evolving theory is grounded in those sensitive interactions, which reflect the concept of ethnographic research. So, the results of prior interviews influence the question structure of subsequent ones in an iterative cycle. Through a one-by-one review, results emerged through the intersection of collected data.

## 4.3 Phase two—User experience of interacting with Web interfaces

### 4.3.1 Procedure

The interviews with designers provided an understanding of what the designers thought about the importance of graphic design on Web interfaces and suggested the concept of emotional design, which effectively already exists in the visual impact of Web interface design. Emotional design involved in Web design can be presented in various ways as discussed by the nine designers (see Appendix 4).

On these issues, the researcher strove to listen also to the users’ viewpoints in order to balance the results from the designers’ and users’ sides and also to examine different research methods, as highlighted in Figure 4-8. The results were analysed according to three themes: 1) The visual impact of Web interfaces; 2) Personal Web experience; and 3) User requirements, which are discussed in the following sections.

<b>User perspectives on and experiences relating to Web interfaces</b>		
10 Web users	Quick and dirty interview	● Convenience sampling
5 Web users	Semi-structured interview	● Convenience sampling
	Think-aloud technique	● Convenience sampling
10 Web users	Semi-structured Questionnaire	● Convenience sampling

Figure 4-8: Methods and sampling applied in exploring user perspectives and experiences.

### 4.3.2 Analysis of the quick and dirty observation

The quick and dirty observation was the first study in this research project to observe user experience. In order to have a quick understanding of users’ browsing behaviour, quick and dirty observation is a convenient way of conducting this portion of the research as it can be done at any time and anywhere. The process was employed with structural observation. After the observation, the researcher could quickly obtain users’ feedback on specific questions. This approach was convenient and effective for generating ideas for developing the next phase. Figure 4-9 lists the details of the process.

<b>Time</b>	10 <sup>th</sup> February , 2004
<b>Location</b>	The computer room, Psalter Lane Campus, Sheffield Hallam University, UK.
<b>Participant</b>	10 volunteers (Pa, Pb, Pc, Pd, Pe, Pf, Pg, Ph, Pi, and Pj)
<b>Sampling</b>	Convenience sampling
<b>Objective</b>	Observe how participants interact with Web interfaces
<b>Approach</b>	Quick and dirty observation

Figure 4-9: Details of the quick and dirty observation.

#### 4.3.2.1 Procedure

When conducting the quick and dirty observation, the researcher explored the users’ general experience in a casual way to gain immediate feedback. In the application process,

the researcher sat in front of the computer in the computer room to observe the selected user's emotional experiences while they were browsing websites. The researcher undertook the quick and dirty observations with 10 students separately, who all sat with the researcher at different times on the same day.

Most participants used the Internet to search for information or check their email. At the beginning of the observation, the researcher gained their agreement to start and tried to give them the feeling of being associated with the research, in order to reduce any sense of intrusion. Referring to Preece et al. (2002:363), a quick and dirty observation is just a way of *"finding out what is happening quickly and with little formality."* During the observations, the researcher made notes about users' actions and significant events, in order to see how their experience was going and to generate ideas for the next stage. After the observation, the researcher conversed with each participant, so that she could gain more data to support what she discovered so far.

#### 4.3.2.2 Outcomes

In this section, we shall use numbers to represent participant responses. These numbers do not have any demographic meaning because this study was a small scale survey and did not involve quantitative analysis. However, these numbers could indicate that those users might have similar reactions/actions under similar conditions (Kuniavsky, 2003). Analysing the data collected from the observation and the further conversation conducted after the user performance, there are seven findings, listed as follows:

1) Most participants tended to use a search engine to find the first websites they needed, 7 of the participants preferred to use the Google (<http://www.google.com/>) search engine, and 2 of them preferred to use the Yahoo search engine (<http://www.yahoo.com/>), with only one locating his first website: BBC News (<http://news.bbc.co.uk/>) by using the site address, even though he normally preferred to use Google for searching.

2) When typing in keywords or phrases to find information on the internet, they preferred to have a quick view of the popup list to locate areas of interest. They found helpful the descriptions of each website on the search engine lists to filter out irrelevant websites and quickly focus on sites of interest.

3) When they accessed a website, they tended to make a quick scan of the whole site. The researcher asked each of them what was the first thing that they noticed. The answers are shown in Figure 4-10.

	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	9 <sup>th</sup>	10 <sup>th</sup>	11 <sup>th</sup>
<b>P-a</b>	Colour	Colour	Picture	Number	Adv.	Picture					
<b>P-b</b>	Menu	Dense text	Title	Picture	Title	Picture	Banner	Menu			
<b>P-c</b>	Colour	Flash movie	Headline	Banner	Menu	Menu					
<b>P-d</b>	Logo	Menu	Icon	Picture	Animation	Icon	Frame	Menu	Colour		
<b>P-e</b>	Big picture	Big picture	Adv.	Menu	Icon	Menu	Image				
<b>P-f</b>	Picture	Menu	Video	Menu	Black colour	Image	Menu	Flash			
<b>P-g</b>	Bold text	Menu	Headline	Menu	Square	Animation	Menu				
<b>P-h</b>	menu	Colour	Colour	Icon	Colour	Colour	Colour	Menu	Menu	Picture	Colour
<b>P-i</b>	Picture	Picture	Background	Menu	Bold text	Background	Icon	Image	Image		
<b>P-j</b>	Animation	Logo	Picture	Menu	Colour text	Colour text					

Figure 4-10: The first thing each participant saw when they opened a website.



4) When they were browsing, the researcher found that if websites had images then most of the participants tended to click on them. This was especially the case if they moved the cursor closer to images and a hand icon appeared: they tended to click on the images because they wanted to know more about what was behind them.

5) During the observations, 3 of the participants looked for news first, 1 of them was going to buy tickets for transport, 1 of them wanted to buy books, 1 of them was just randomly browsing, and 4 of them were searching for information. Their searches were carried out by entering the relevant key words and phrases into the above search engines.

6) During the observations, 6 of the participants preferred to see a website with images, 2 of them did not care, and 2 of them said that it depended on the content.

7) When asking for participants' viewpoints about what a Web interface means to them, 6 of them asked what Web interface means, and needed a further explanation. They preferred the term "Web page" instead of "Web interface". After the explanation, each participant provided their own descriptions, see Figure 4-11.

<b>What do users think “Web interface” means?</b>	
<b>P-a</b>	I am not sure what “Web interface” means but I think it offers some ways to find information.
<b>P-b</b>	Hmm..., it often has text, images, and maybe some animation.
<b>P-c</b>	I think...I don't like a lot of text on a page. That makes me feel bored when I have spent a couple of hours in front of the screen. My eyes start to go funny... It is useful to use different colours to highlight the content...I like to see more pictures on a website.
<b>P-d</b>	Categories, yeah, I think it is like a category. The company uses it to sell products.
<b>P-e</b>	A website is like a product, the interface is like the package of the product, it can tell you what's inside.
<b>P-f</b>	I think it is like a control panel. I can move my mouse to go where I want to go.
<b>P-g</b>	It is better not to have a lot of images, otherwise it'll take ages to download, I don't like to wait until it has finished. I just skip it immediately.
<b>P-h</b>	It stores information. The information is very important whatever it looks like. I don't mind how a website looks; the important thing is that it has what I want.
<b>P-i</b>	It can show me the interesting things on a website, like news, funny stories, or something new.
<b>P-j</b>	It is to access a website. I like Google: it is clear and easy to use; it is so user-friendly.

Figure 4-11: Results of the participants’ descriptions of web interfaces.

### 4.3.3 Analysis of the think-aloud technique with semi-structured interviews

After the quick and dirty observations with the ten participants, the researcher understood more about how users interact with a Web interface. So, five of the volunteer participants were recruited to continue the study by convenience sampling. By using the think-aloud technique, these five participants could talk about how they experience various websites and describe their feelings and thoughts. After this investigation, the researcher also conducted a semi-structured interview with these participants in order to have a further opportunity to clarify their answers.

The size of the sample was selected with reference to human factors analysts such as Lewis (1994), Nielsen (2000c), and Virzi (1992), who suggest five participants are enough to provide rich data for user experience evaluations. The purpose of this study was to test if the questions were appropriate for getting the participants to describe their emotional experience. Emotions often cannot be understood literally, so it might require spacious forms for answers. Therefore, the researcher conducted two more studies in order to generate focused questions which could induce users to describe their emotional experiences and so develop a formalised method that designers could apply to their designs.

<b>Time</b>	12-15 February, 2004
<b>Location</b>	Participants' homes, offices and a library
<b>Participant</b>	5 volunteers (P-k, P-l, P-m, P-n, and P-o)
<b>Sampling</b>	Convenience sampling
<b>Objective</b>	To observe how participants interact with Web interfaces
<b>Approach</b>	Think-aloud technique and semi-structured interview

Figure 4-12: Details of the study using the think-aloud technique and semi-structured interview.

#### 4.3.3.1 Procedure

The researcher prepared an interview guide with five websites, which were the subject for the think-aloud practices with five participants. Each site relates to five distinctive home page design strategies (see section 2.3.2):

- 1) Menu home page—<http://global.acer.com/>
- 2) Path-based home page—<http://www.dhky.com/>
- 3) News-oriented home page—<http://news.bbc.co.uk/>
- 4) Splash Screen—<http://absolut.com/generations>
- 5) Object-oriented home page—<http://www.barbie.com/>

The procedure of this study was to start with the think-aloud technique for each participant. When the participant had finished talking about their thoughts, the researcher conducted a semi-structured interview in order to gain a deeper understanding of their opinions about each website and uncover important issues that had not come up during the think-aloud practice.

### 4.3.3.2 Outcomes

The purpose of this study was to observe users' Web behaviour while they interacted with websites and see how they presented their thoughts and feelings, to help understand user experiences. This testing was a preliminary stage in developing an appropriate research strategy to evaluate users' emotional experiences. Therefore, the analysis of this stage tends to focus on the assessment of the application of the techniques. There are four beneficial findings from this study and they are outlined below.

#### 1) Differences in personal interests

Each participant was interested in the websites in different ways. When selecting the five websites for testing, how the content of each website corresponded to their personal interests determined whether they wanted to explore it further. Some websites had strongly branded images, which were already associated with some stereotypes in some participant's minds, so those visual identities also influenced the participants' personal preferences regarding the websites.

During the next stage, the researcher preferred not to select any websites and allowed each person to find their favourite websites. By using this method, the interruptions by the researcher could be reduced and the participants' willingness to talk about their real experiences could be increased. This change might make future analysis more complex, so the researcher needs to develop a plan to solve the problem.

## **2) Differences in presentation ability**

By performing a think-aloud technique, the participant's personal verbal presentation has a direct influence on the data collection process. Some respondents spoke a lot, but others did not. The researcher noticed the differences in each respondent's presentation ability and tried to encourage each of them to speak more. So the researcher aims to develop alternative tools to approach user experience, such as drawing practice, which would give users more options to present their thoughts.

## **3) The users' suggestions for the think-aloud experiment**

Most participants showed interest in participating in the think-aloud experiment. However, one of the participants preferred to answer written questions because she felt more confident describing her feelings in this way. One of the other respondents suggested that it was better to associate the technique with a video recording for this study, in order to ensure that all the data could be collected. These suggestions show the personal differences between the subjects and their personal preferences. The suggestions were beneficial for this research and prompted further consideration of what were the appropriate tools to conduct effective research on individual subjects. The diary survey was concerned with increasing the intimate participation of each respondent, which encouraged participants to present their thoughts privately and in greater detail.

#### 4) Emotional stimuli

During the passive phase, the combination of these two techniques provided us with an opportunity to observe and listen to particular users' experiences. Concerning the five websites used, the graphic design of Web interfaces did make different visual impacts on the respondents' emotional experience. The discussions of their experience showed that their likes and dislikes were influenced not only by the useable functions but also the attractiveness of the interface design. It was hard to separate their Web experience from their personal aesthetic judgements of the websites. These findings supported the research project and provided positive feedback on the research question—whether users' emotional responses to Web interfaces could reflect their satisfaction with Web usability. It is significant to the understanding of the relationship between interface aesthetics, users' emotional experience, and interface usability. So, the initial results of these studies address the importance of developing appropriate methods for designers to understand user experience.

#### 4.3.4 Analysis of the open-ended questionnaire

The purpose of this study was to refine the questions for Phase three. 13 questions had been designed for the previous phases, including 5 basic questions and 8 further questions (see Appendix 5). Through these questions, the researcher intended to test users' reactions in order to develop methods for the next phase of study. All the questions were designed to focus on the theme: *How a user feels when they first see a home page or an entry page*. By

investigating their first impression of the websites, the research could develop an understanding of how those visual impacts can engage users' emotional experience and then exert influence on users' opinions about various websites.

<b>Time</b>	3 March, 2004
<b>Participant</b>	10 volunteers
<b>Sampling</b>	Convenience sampling
<b>Objective</b>	To refine questions for Phase three—the application of the emotional probes approach
<b>Approach</b>	Open-ended Questionnaire

Figure 4-13: Details of the study using the open-ended questionnaire.

#### 4.3.4.1 Procedure

Using the ten participants' responses, the researcher was able to examine the original questions and whether they could be clearly understood by the participants. Through their responses, the researcher could modify and refine the original questions for the next stage of the study. Furthermore, the findings from previous studies could also offer guidelines for modifying the questions. These efforts would help us investigate users' emotional experiences in greater depth.



#### 4.3.4.2 Outcomes

The purpose of this study was to observe users' Web behaviour when interacting with websites and understand their thoughts and feelings. The researcher used an open-ended questionnaire in order to produce a “*revised*” version of the questions to investigate users' real experiences. So, analysis at this stage focused on the assessment of the content of questions and techniques. There were some beneficial findings from this study and they are outlined below.

##### 1) Open questions can encourage users to present more emotional experience

Compared to the previous phase of studies, this phase allowed participants to choose websites that were based on their preferences instead of pre-chosen websites, so they were likely to be more enthusiastic in describing their feelings and thoughts than for the last study.

##### 2) Alternative approaches assist users to present emotional experience

It was found that sometimes participants could not verbally express their preferences or feelings in relation to a website. Out of the three kinds of response we collated—verbal, written, and drawn, the drawing exercise was likely to help participants visualise their thoughts and feelings. Drawing seems to be a useful tool for describing emotional interactions. However, it was more difficult to interpret drawings than verbal material for they can be interpreted more or less arbitrarily. It was still thought advantageous to seek alternative tools to support the participants' presentations in order to gather information

from various angles.

The concept of cultural probes responds to such situations and takes this concern into account, for example, postcards with questions, maps, disposable cameras, and diaries for recording participants' specific activities. Gaver et al. (1999:29) presents an application of cultural probes where the results contributed "user-centred inspiration" for design. One reason for this is that the cultural probes approach is based on a *rich and varied set of materials* that both *inspire designs* and give the researchers an opportunity to realise more detailed information about local cultures. In order to improve user experiences, it is necessary to develop sensitive tools for encouraging users to speak out about their inner experiences and help researchers to gather user information.

### **3) The think-aloud technique is beneficial and efficient for studying Web experience**

The think-aloud technique that originally came from the usability evaluation method was employed many times in previous studies. The think-aloud technique is different from conventional participant observation in that its participants have certain tasks to perform, under more controlled settings (Preece et al., 2002:365). In performing their tasks, participants say what they are thinking and doing.

Examining this technique, this research discovered that the think-aloud technique could develop an interactive relationship with the participants and extend conversation with them. It could increase the familiarity of the relationship between observer and participant, so the participant might feel more comfortable in performing their tasks and

the observer could gather more credible data, concerning their behavioural reactions and emotional responses.

However, the best venue for an observation is considered to be a *natural environment* which the participants are familiar with, e.g. their office or home, instead of an *artificial and more controlled environment* which they are not used to, i.e. a laboratory. This could help to avoid fake or unnatural responses/behaviour and observe their natural responses/behaviour more fully.

On the other hand, the length of the observation depends on the interaction between the researcher and participants. It is best to avoid a long observation as this could easily cause participants to become tired. However, if the observation process is too short, participants might not get totally involved in the observation. When the research is conducted with the think-aloud technique for observing user experience, researchers should consider their interactive relationship with users and the length of observation time.

#### **4) Interviews are beneficial and necessary**

The role of interviews in this research provided a casual manner for the researcher to acquire an understanding of the participants' background and reduce awkward interaction between the participants and the researcher when conducting the think-aloud exercise. It was a process for extending the conversational relationship between participants and researcher when they first met. It was good for both parties to have more time to get to know each other and increase trust in each other. This method set the participants at ease and encouraged them to talk more about their experiences.

This study also discovered that it was necessary to interview participants twice—before and after the investigation. The first interview would assist the researcher in understanding the participant's background and to avoid misinterpreting their behaviour, which could help participants act more naturally and not exaggerate their behaviour during the following activities. The second interview offered the researcher an opportunity to ask the participants questions or ask them to extemporise on their behaviour about things that the researcher had not been able to discern from the observation. In addition, the research could continue to collect data which might not have been included in the observation process.

#### **5) Simplifying questions**

Participants needed more interpretation for some of technical terms, such as *interface*, *interactivity* and *second-level pages*. With the popularization of the WWW, Web culture has come to involve a great deal of jargon which it is not easy for inexperienced users to understand. As participants had different levels of Web knowledge, it was necessary to explain these technical terms further and describe the research questions with simple pictorial illustrations which could minimise misinterpretation of the jargon and questions.

#### **6) The use of emotional icons**

Between ranking their emotions using facial-expression icons or by linguistic descriptions, people preferred the facial icons, as they appeared more interesting and friendly than linguistic descriptions. For this reason, the idea was re-employed when designing the questions for the future study on describing participants' feelings.

## 4.4 Summary

Through the tentative results of these studies, the researcher was able to refine the research questions and techniques that would help focus more narrowly on the core research issues. These results also helped in establishing the validity and reliability of the data collected for the next phase of study, in order to reach the research aims.

This study discovered that user emotional experience could be collected and interpreted through the implementation of appropriate research techniques. This finding strengthened our confidence in designing a complete research framework for exploring user emotional experience in the hybrid contextual strategy.

We employed six techniques: 1) Think-aloud technique with participant observation; 2) Self-completion diary study; 3) Mood board practice; 4) Creative drawing; 5) Personal interview; and 6) Question assessment in the next study. The combination of these six steps for the investigation of user emotional experience has been termed “Emotional Probes.”

As a single research technique was less able to reveal a complete picture of user experience, this research conducted a combination of multiple research techniques which were thought better for accurately tracking the meanings behind user behaviour and emotional reactions. As the outcomes provided rich information, the methods used have demonstrated their efficacy in collecting data and providing different points of view. The specific studies of this section were linked together as a continuous cycle of alternation

between data collection and analysis, which allowed us to continue exploration activities until the research aim was achieved. The results of these tentative studies will play an essential role in decreasing the production of vague interpretations in the next studies.

## Chapter Five—Analyses and Results

### 5.1 Introduction

The methodology described in Chapter 3 identifies the hybrid and contextual methods that were adapted to explore Web user experiences, particularly in terms of emotional engagement with user interfaces. Emotional engagement is a state belonging to perceptual and cognitive processes. When it is involved with user experience vis-à-vis Web interfaces, its content becomes highly complicated because of many relevant issues, such as usability evaluation, user behaviour, personal preferences, and cultural influences. Using the tentative results of the previous studies, this study employs multiple methods to collect further data in order to comprehend emotional influences from different angles.

The analysis of the data collected by the Emotional Probes is based on grounded theory, which is also associated with content analysis and qualitative data analysis software: NVivo (QSR NUD\*IST Vivo), which was used to label incidents and code significant characteristics through viewing and reviewing the data. Data analysis makes it possible to visualise the sophistication of the codes by modelling. The process of data analysis systemises the collected data by breaking the interview transcripts down into discrete incidents—events, concepts, thoughts, feelings, and others—all of which are scrutinised and compared for significant concepts.

The findings are grounded in the ongoing phenomenon, which combines the impacts

of people's past experiences, their instant emotional reactions, and their future expectations. Interpreting the findings of the multiple approaches will form the basis for an understanding of the designers' and users' real experiences and will offer new insights into problem-solving skills, as well as inspiring the design process as a whole. Using this perspective, the researcher put forth an analytical strategy and then broke it down into explorative, explanatory, and deductive processes to demonstrate how the visual and aesthetic impacts of a Web interface influence users' emotional experiences.



## 5.2 The procedure of applying “Emotional Probes” (EPs)

The application of the Emotional Probes approach started with visiting each participant individually and giving each of them a short introduction about how to start the diary booklet, as shown in Figure 5-1. After the introduction, the participant was asked to start their computer, log onto the Internet, and start to navigate. The task for each of them, which would last a week, was to separately search five keywords, one a day. The keyword for the first day was “Furniture,” followed by “Monkey,” “New Year,” “Travel,” and “Weather” in that order; the keywords were selected from the ranking of the most popular key words requested in 2004. By using the keywords, they could browse the Web and choose their favourite websites. Upon returning their diary booklets, each of them would provide the researcher with five websites that they had selected from their daily tasks.

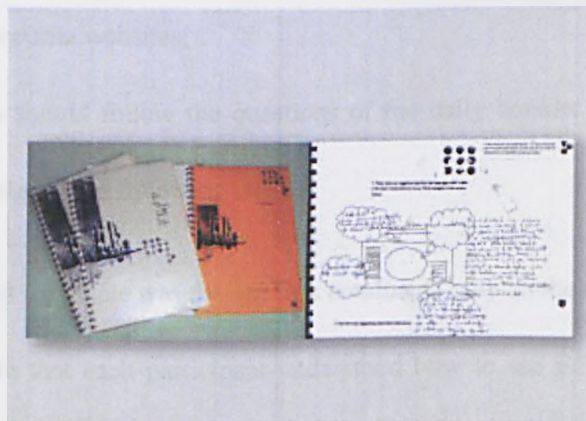


Figure 5-1: The diary booklet in this study is designed to record users' emotional experience when interacting with websites.

On the first day of the experiment, the process was conducted slightly differently from the other days. First, the researcher conducted a semi-structured interview with each participant. Meanwhile, the participant observation associated with the interview continued. The researcher used notes, a voice recorder, and video to record the process. When the researcher finished an interactive conversation with the participants, they would be asked to do a think-aloud practice for the first day's task. The think-aloud practice only ran on the first day of the survey. The process for this task was divided into six steps:

- 1) Go to *Google* search engine;
- 2) Type the "*Keyword*" into the search box and commence the exploration;
- 3) Start searching for favourite websites;
- 4) Each participant should talk out loud about what they are thinking and looking at when browsing online;
- 5) Each participant needs to spend at least fifteen minutes online every day until they find their favourite websites;
- 6) Participants should follow the questions of the daily booklet and record their responses during the following week.

The think-aloud technique was the one task conducted only on the first day practice; this is done to ensure that each participant understood how to use EPs to record their experiences in the diary. Additionally, the think-aloud practice was used to discover more information about the participants' reflex thoughts and feelings. In accordance with the outcome of the quick and dirty observation with users in the previous study, each

participant was required to spend at least fifteen minutes online every day to find their favourite websites. Over the next four days, the participants were to follow the same steps, except for the think-aloud practice, to complete their diary with semi-structured questions. The whole process was recorded with a digital video camcorder, which filmed the computer screen and recorded the participants' comments concerning what was on the screen in front of them. This was used to reduce any interruptions in their natural settings and to provide a less controlled environment, with the hope that it would make participants feel free to present their usual surfing behaviour.

The selection of the *Google* search engine was made according to the tentative results of the previous study (see section 4.3.3). Most Web users typically started with a search engine, such as *Google*, or other portal websites to search for their interests. According to Greenspan (2004), *Google* continues to be the dominant search engine in the global market, and has a global usage share of 56.4 percent. Therefore, at the beginning of the survey, it was assumed that each user-participant preferred to search for their Web information by using *Google* (actually, all of the participants were used to using *Google* for searching).

Additionally, while each case was running, the researcher would undertake an observation in order to understand three things:

- 1) How participants selected their favourite websites using the *Google* search engine;
- 2) After each of them typed the key words into the search engine, normally there appeared a long list containing different sources of links, with short descriptions of

- each link. We wanted to see how participants focused their attention on a link;
- 3) Once the participant clicked on a link their desired website would open. We wanted to see how the user-participants' first impression of the site could influence their selection of the websites that followed.

To answer these questions, the researcher sought to understand how users emotionally engaged with each website and how they thought about the visual impact of Web interfaces. After a week, when the participants had completed their tasks, the researcher went back to collect their diaries and conduct the final interviews with each participant, thus continuing to collect data which was not included in the diary.

## 5.3 Outcomes and analyses

For the data collected through the EPs approach, the researcher applied the concept of grounded theory to undertake the analysis process. The research purposes and questions focused on: 1) personal difference; 2) the connection between personality and interface preference; 3) visual communication of users' favourite websites; 4) the connection between the user's first impression, perception, and attention; and 5) emotional engagement with Web interfaces.

As we have previously shown, the sampling was not large enough to offer comprehensive data to highlight all the usage problems of Web users' experiences. On the whole, this analysis was looking for connections between the emotional impact and the user group's interests, needs, and aesthetics. Through the EPs survey, this research gathered in-depth information about user-participants' real experiences, such as their emotional reactions to Web interfaces; and also gathered their emotional self-statements (auto-descriptions of their psychological states). Furthermore, based on what the experimental data revealed, this allows for more definitive conclusions, guided by the EPs approach, regarding users' emotional experiences.

### 5.3.1 Personal differences in Web experience

Before identifying each participant's interests in the websites, it is essential to have

knowledge about the participants' backgrounds, so that we can understand why the respondents answered in the ways they did. There are two basic background differences among the participants: 1) difference in user experience and needs regarding the Web; and 2) gender difference, both of which will be addressed in this section. The sampling totalled 10 participants, with five female and five male. All of them are at a similar age, and their background details are listed in Appendix 7.

**5.3.1.1 Differences in user experience and needs**

Appendix 7 shows that on average almost all of the participants had basic knowledge of how to use the Internet and all had at least two years experience. Among the main reasons why they used the Internet, five principal uses are listed: 1) searching for information, 2) interpersonal communication, 3) entertainment, 4) as a work tool, and 5) for online-shopping (Figure 5-2).

<b>What are the main reason(s) why you use the Internet?</b>	<b>Participant</b>
Searching for information	P1,P2, P3, P5, P6, P9, P10
Interpersonal communication	P1,P2, P3, P4, P6, P7, P9
Entertainment	P5, P6, P9, P10
As a work tool	P6, P8
Online-shopping	P2, P3

Figure 5-2: The classification of the participants' five principal uses of the Internet.

According to the data given in Appendix 7, these user-participants are not novices at

the general user-level and are at least occasional users (see section 2.5.3). In fact, the number of novice and occasional users is continually shrinking because the Web has become a mainstream business tool (Lynch and Horton, 1999:2). Therefore, it is likely that the sample in this survey could be seen as representative of current mass behaviour. It also demonstrates how the Internet and the WWW have both become important tools that have changed our daily communication habits.

The reasons for Internet use among participants depended on how much they *trust* the Internet and Web service. For example, participant P3 preferred to do banking online, but participants P1, P4, and P9 preferred to handle banking services in person because the level of their trust concerning the security of Internet banking was low. Additionally, participants P2, P3, and P10 mentioned that *convenience* was another issue. If tasks were *easy to perform online*, they tended to rely on the Internet and Web service more. For example, participant P2 preferred to use it for gathering information, contacting friends, on-line bookings, reservations, and shopping. She said, “*I quite like shopping, chatting with friends, and searching for information online. It is handy and saves time and money.*”

Therefore, in light of the above basic information about each participant, we list their thoughts and opinions about the visual interface of websites in Figure 5-3 below. A classification of what respondents think of visual interfaces of websites has been produced, according to their responses. The participants gave eight emergent functional demands of Web interfaces (listed in Figure 5-4), which are grouped into five main issues: 1) Accessibility; 2) Visual aesthetics; 3) Ease of navigability; 4) Visual personality; and 5) Usability.

Participant	Main functions of Web interfaces, according to participants
P1	Browsing for information, receiving it quicker, more efficiently, and painlessly.
P2	Making the webpage easier on the eye and allowing users to surf the Internet more efficiently.
P3	Being clear for the users to do what they intend to do.
P4	Showing the image of the website or product/organisation.
P5	Laying out the page.
P6	Attracting and holding a user’s attention long enough for them to work out how to browse the website.
P7	Helping you understand the function of the webpage and navigate easily around the site. This should be done by appealing to the eye.
P8	Being clear for the users to do what they intend to do.
P9	Inspiring you, making you feel welcome.
P10	Capturing a user’s attention.

Figure 5-3: This list summarises each participant’s thoughts about what are the main functions of Web interfaces.

Functional value	Response	Participant
1) Accessibility	Access to a webpage	P1, P2, P3, P6, P7, P8
2) Visual Aesthetics	Visual expression	P2, P4, P6, P7,P9, P10
	Visual attractiveness	P2, P6, P7, P9, P10
3) Ease of Navigability	Ease of navigation	P1, P2, P3, P6, P7
	Organisation of information	P3, P4, P5
	Offering a user guide	P3, P6, P7
4) Visual Personality	Feeling of welcome	P9
5) Usability	Efficient browsing	P1, P2

Figure 5-4: The classification of visual interface functions, defined by the users’ requirements.

Figure 5-4 shows the five issues: “Accessibility”, “Visual Aesthetics”, “Ease of



Navigability”, “Visual Personality”, and “Usability”, all of which were of concern to the user-participants. The evidence suggests that visual aesthetics, expression, and visual personality likely engage users’ perception because they give functional value to a Web interface. In particular, the need for a “welcoming feeling” to the Web interface presents an intangible value of visual aesthetics.

“Aesthetics” has been described as being a part of the functional demands of a Web interface; as P6 said, *“to attract and hold a user’s attention long enough for them to work out how to browse the website.”* The aesthetic display of interfaces is not only required as a visually pleasing decoration but can also be an influential factor that makes an instant impact when visitors arrive at the website and decide if they want to stay or not. On the other hand, the participants’ responses indicate that improving navigation efficiency is another important function of graphic design. It is crucial for an interface design to enable users to enjoy browsing without encountering confusion over irritating or misleading links.

### 5.3.1.2 Gender difference

The analysis in this section locates the initial impressions from the collected data about how the user-participants think about the visual impact of Web interfaces, as well as the different requirements of the different genders. Even though the number of participants is not large enough to effectively elicit the differences between female and male groups, the data still show some concerns that designers need to consider.

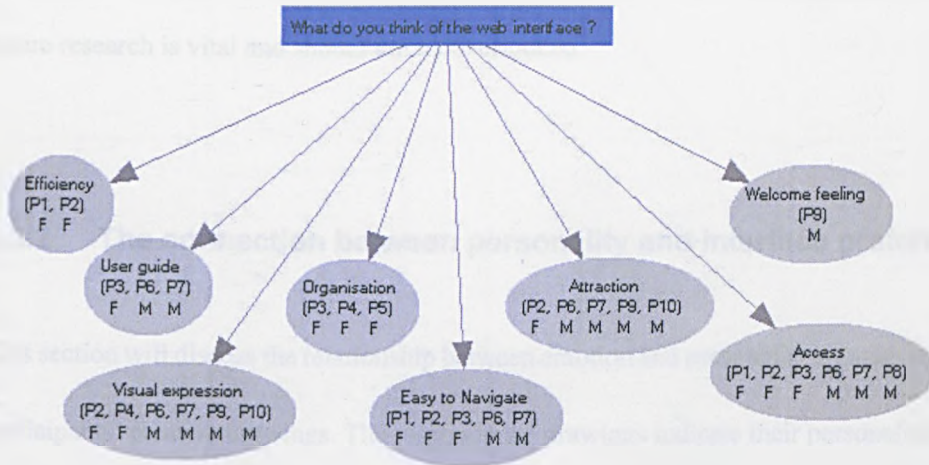


Figure 5-5: An illustration that shows what the participants think of the visual interface of a website.

As is shown by the comparison of Female (P1, P2, P3, P4, P5) and Male (P6, P7, P8, P9, P10) groups, an issue concerning gender differences highlights the fact that the male group is more concerned with a website’s visual presentation (Figure 5-5). The female group, on the other hand, shows more concern about getting sufficient technical assistance. It may be more accurate to characterise the females as being concerned with *how easy it is to use*, rather than thinking that they were concerned about the technical functions. Furthermore, visual aesthetics is directly related to emotional experience: it seems that the male group places more emphasis on the visual presentation of Web interfaces and less on the technical functionality.

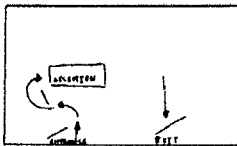
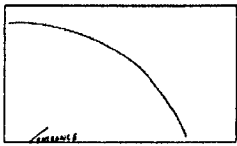
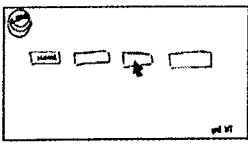
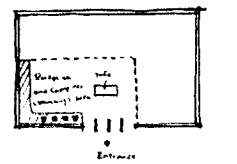
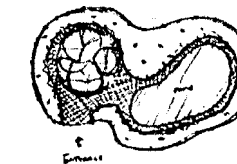
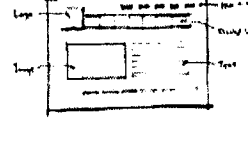
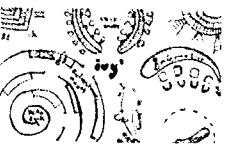
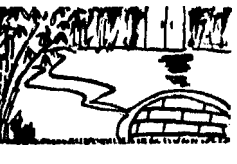

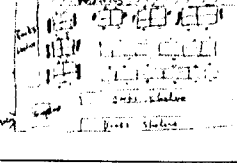
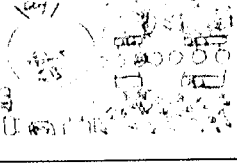
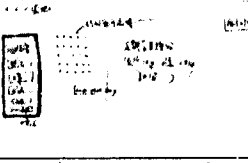
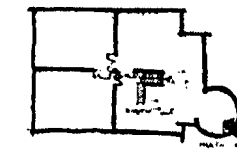


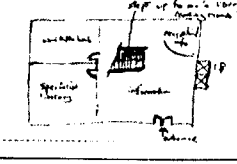


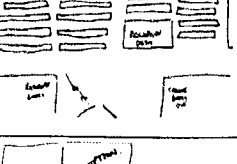

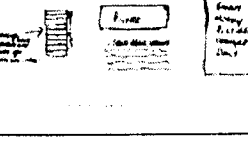
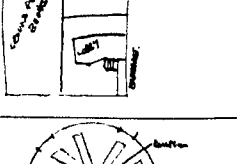
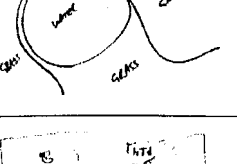
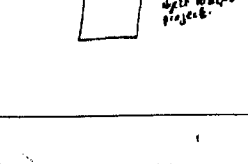


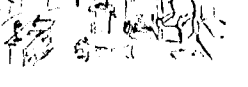
According to their experiences, the females felt tenser than the males when using something technical, which explains why the female group showed some reservations in the first place. Regarding this finding, and even though it is not sufficient evidence for claiming such a difference exists between the female and male group, it seems to

demonstrate that thinking about different interface design requirements for both genders in future research is vital and should not be overlooked.

### 5.3.2 The connection between personality and interface preference

This section will discuss the relationship between emotion and personality by analysing the participants' creative drawings. The respondents' drawings indicate their personalities and different personal preferences through a series of pictorial compositions.

Goatman addressed six categories of garden drawings that are related to the depiction of relative personalities, as shown in Figure 2-27. In this study, we attempt to gain a more comprehensive explanation of individual personalities from the creative drawings of the garden layouts. Therefore, the researcher designed a series of garden drawing practices that would elicit the respondents' imagination of a garden (more emotive content), a library (more rational content), and a personal home page (more personal content), all of which allowed the user-participants to draw their thoughts in their diary entries (Figure 5-6). Their drawings seem to demonstrate an experiential relationship that is linked to their personality, preferences for personal websites, and their individual characters. To understand these cause and effect issues in terms of their consequences, the researcher uses Goatman's classification to explain the results. (The users were classified into five groups, which derives from Goatman's (2004) theory.) Figure 5-7 presents the five groups, whose individual interface preferences are reflected in their creations in this study.

Creative drawing	Library layout	Garden layout	Personal website
P1			
P2			
P3			
P4			
P5			
P6			
P7			
P8			
P9			

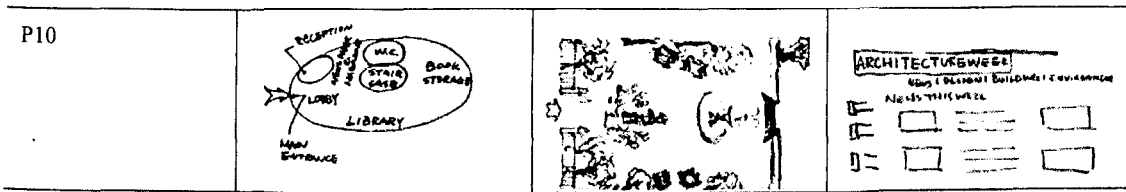


Figure 5-6: A list presenting each participant's creative drawings relating to three themes: a library layout, garden layout, and a personal website design.

Interface type for user preference	Garden layout	Relative interface style	Participant
Mystery Display/search method (A)			P3, P4, P9
Overview Laid out operation grid (B)			P8
Organised Compartment Sections (C)			N/A
Random Compartment Different bits approach (D)			P6
Single Form Amorphic Single creative platform (E)			P1, P2, P7
Classic Symmetry Symmetrical format (F)			P5, P10

Figure 5-7: The six type-groups of user preferences for Web interfaces, classified from the 10 participants' creations, except the type of garden drawing in organised compartment (C). The codes of each image refer to Figure 2-27.

As Figure 5-7 shows, the participants were divided into five groups. These interface types indicate that the user-participants might have their own preferences about the layouts of interface designs. Can these findings help designers and researchers to anticipate their target users' requirements and preferences? Using personality categorisation, the researcher further classified each user-participant's selection of their favourite homepage (see Figure 5-8). We address two findings according to the classification of the participants' selections of those Web interface styles.

### **1) Questioning Goatman's assumption and visualising user personalities**

According to the user-participant's selections of their favourite websites over a week, it seems that the results of the drawing practice have little in common with the user-participant's potential preferences (Figure 5-8). Therefore, Goatman's empirical test does not correspond with the results of this study. Goatman's investigation shows a classification of preferred interfaces involving 43 participants, which is insufficient to produce statistically significant comparisons for a definitive categorisation (Goatman, 2004).

Even though Goatman has pointed out the potential insufficiency of his sampling, our survey modified his idea and extended it with other two practices: drawing a library layout and a personal webpage. With this alternative test we found a significant result relating to Goatman's assumption, from the garden, library and personal webpage layouts linked to the pictures each participant drew. The data collected from the set of creative drawings display a consistency between these three layouts for each participant's drawing

and indirectly support Goatman’s classification. The participants, regardless of gender, age, nationality, education, and life experience, drew their ideas on paper, showing consistent results from picture to picture that present a reflection of each individual personality. Comparing the ten participants’ drawings with Goatman’s assumption, the classification shows that the drawings connected their interface preferences to their personalities. This finding could guide future related studies in moving forward and developing statistical analyses of the more detailed relationship between the visual representation of user interfaces and users’ personalities.

Type	Interface style of the user’ favourite website					
		1 <sup>st</sup> day	2 <sup>nd</sup> day	3 <sup>rd</sup> day	4 <sup>th</sup> day	5 <sup>th</sup> day
Single Form Amorphic Single creative platform (E)	P1	c	e	f	d	c
	P2	c	a	f	d	c
	P7	c	e	e	e	d
Mystery Display/search method (A)	P3	d	b	a	d	d
	P4	d	c	b	d	d
	P9	b	b	e	a	d
Classic Symmetry Symmetrical format (F)	P5	b	a	b	f	f
	P10	c	b	f	d	d
Overview- laid out operation grid (B)	P8	e	a	c	f	b
Random Compartment Different bits approach (D)	P6	b	b	c	d	c

Figure 5-8: The 10 user-participants’ selections of their favourite Web interfaces over a week-long period, contrasted with Goatman’s assumption about the classification of interface preferences. Each type of interface preference is distinguished by a different colour. Either the colour distribution or the codes (e.g. “A”

or “a”) indicate the inconsistent relationship between the participants’ potential preferences for user interfaces, which were derived from Goatman’s assumption, and their daily selections of favourite websites. For example, there are high inconsistencies in P2’s and P4’s selections of websites and their interface preferences derived from Goatman’s six related interface formats. In contrast with these two examples, only P7’s selections of websites indicate a high consistency with his interface preference assumed. As a result, Goatman’s assumption does not highly correspond with the participants’ selections of websites. However, due to the small number of participants, this analysis can only provide an indication of inconsistency.

## **2) Consideration of users’ unique preferences in design processes**

Figure 5-8 shows an inconsistency between user-participants’ personalities and their preferences in terms of Web interface design. The creative drawing exercise was able to help designers investigate each participant’s personality and preferences. However, when the participants returned their drawings, they did not show a strong coherence with the Web interfaces that they had selected, so it seems that Goatman’s classification must be called into question. The content of a Web interface is not only concerned with visual representation but needs to include information useful for the users’ specific purposes.

In this diary survey, participants spent their time browsing different websites until they had selected their favourites. The participants started their searches with the same search engine and the same key word, which clearly demonstrates that their individual interests affected their selections. The design styles of the websites they selected varied according to users’ specific purposes and the information required, as there were no strong connections between styles selected.

Goatman’s classification provides an idea about the coherent connection between a user’s personality and her/his sense of layout design. However, it presents a challenge to



quantify the relationship between visual aesthetics, viewers' preferences, and personality. So when Web usability analysts formulate a standard of user preference, it seems hard to locate a single solution to designing user preferences. In the next section we will, therefore, continue to discuss those issues relating to the participants' selection of their favourite websites.

### 5.3.3 Visual impact of the users' favourite websites

This study focuses on how the users interact with Web interfaces and their understanding of Web information guidance. According to those websites selected by the participants (Figure 5-9) and the experiential statements they gave during interviews and diary surveys, the data indicate that most participants are satisfied with a certain level of agreement with the visual representations of those Web interfaces, notwithstanding P1's selection for the second and fifth days of searching.

All the websites use individual aesthetics. This study will not classify the design styles of each website according to their content, but focus on how the participants responded to the visual impact of interfaces. This raises the two following issues: 1) connection between visual impact and users' first impressions; and 2) the main factors generating the first impression.

	1 <sup>st</sup> "Furniture"	2 <sup>nd</sup> "Monkey"	3 <sup>rd</sup> "New Year"	4 <sup>th</sup> "Travel"	5 <sup>th</sup> "Weather"
P1	 W1: <a href="http://www.furniturefind.com/">http://www.furniturefind.com/</a>	 W2: <a href="http://wilster.com/holidays/newyear.htm">http://wilster.com/holidays/newyear.htm</a>	 W3: <a href="http://www.new-year.co.uk/chinese/">http://www.new-year.co.uk/chinese/</a>	 W4: <a href="http://www.lonelyplanet.com/">http://www.lonelyplanet.com/</a>	 W5: <a href="http://www.theweathernetwork.com/">http://www.theweathernetwork.com/</a>
P2	 W6: <a href="http://www.centuryfurniture.com/default.htm">http://www.centuryfurniture.com/default.htm</a>	 W7: <a href="http://www.monkeyjungle.com/">http://www.monkeyjungle.com/</a>	 W8: <a href="http://www.new-year.co.uk/chinese/">http://www.new-year.co.uk/chinese/</a>	 W9: <a href="http://www.expedia.co.uk/default.aspx">http://www.expedia.co.uk/default.aspx</a>	 W10: <a href="http://www.intellicast.com/">http://www.intellicast.com/</a>
P3	 W11: <a href="http://www.ikea-usa.com/">http://www.ikea-usa.com/</a>	 W12: <a href="http://hotwired.lycos.com/webmonkey/kids">http://hotwired.lycos.com/webmonkey/kids</a>	 W13: <a href="http://www.panoramas.dk/Fullscreen3/fl.html">http://www.panoramas.dk/Fullscreen3/fl.html</a>	 W14: <a href="http://www.travel.yahoo.com">http://www.travel.yahoo.com</a>	 W15: <a href="http://www.theweathernetwork.com/">http://www.theweathernetwork.com/</a>
P4	 W16: <a href="http://www.stanleyfurniture.com/">http://www.stanleyfurniture.com/</a>	 W17: <a href="http://www.lucasarts.com/products/monkey4/">http://www.lucasarts.com/products/monkey4/</a>	 W18: <a href="http://www.new-year.co.uk/chinese/calendar.htm">http://www.new-year.co.uk/chinese/calendar.htm</a>	 W19: <a href="http://www.cnn.com/TRAVEL/">http://www.cnn.com/TRAVEL/</a>	 W20: <a href="http://www.bbc.co.uk/weather/">http://www.bbc.co.uk/weather/</a>
P5	 W21: <a href="http://www.woodschoool.com">http://www.woodschoool.com</a>	 W22: <a href="http://www.purplemonkey.com/">http://www.purplemonkey.com/</a>	 W23: <a href="http://www.holidaygraphics.com/newyear/">http://www.holidaygraphics.com/newyear/</a>	 W24: <a href="http://www.futuretr.com/">http://www.futuretr.com/</a>	 W25: <a href="http://www.pbs.org/wgbh/warming/">http://www.pbs.org/wgbh/warming/</a>
P6	 W26:	 W27:	 W28:	 W29:	 W30:

P7	<a href="http://www.franceshurnt.co.uk/index.asp">http://www.franceshurnt.co.uk/index.asp</a>  W31: <a href="http://www.furniture.com/">http://www.furniture.com/</a>	<a href="http://hotwired.lycos.com/webmonkey/">http://hotwired.lycos.com/webmonkey/</a>  W32: <a href="http://media.guardian.co.uk/diary/">http://media.guardian.co.uk/diary/</a>	<a href="http://www.new-year.co.uk/">http://www.new-year.co.uk/</a>  W33: <a href="http://chineseculture.about.com/library/weekly/aa_new_year2004a.htm">http://chineseculture.about.com/library/weekly/aa_new_year2004a.htm</a>	<a href="http://www.lonelyplanet.com/">http://www.lonelyplanet.com/</a>  W34: <a href="http://www.discovery.com/">http://www.discovery.com/</a>	<a href="http://www.theweathernetwork.com/">http://www.theweathernetwork.com/</a>  W35: <a href="http://www.spaceweather.com/">http://www.spaceweather.com/</a>
P8	 W36: <a href="http://www.bernhardt.com">http://www.bernhardt.com</a>	 W37: <a href="http://www.vectorlounge.com/04_amsterdam/jam/flamjam.html">http://www.vectorlounge.com/04_amsterdam/jam/flamjam.html</a>	 W38: <a href="http://www.new-year.co.uk/">http://www.new-year.co.uk/</a>	 W39: <a href="http://www.discovery.com/">http://www.discovery.com/</a>	 W40: <a href="http://www.wni.co.jp/cww/">http://www.wni.co.jp/cww/</a>
P9	 W41: <a href="http://www.rapidoffice.co.uk/">http://www.rapidoffice.co.uk/</a>	 W42: <a href="http://www.monkey.com/lobby_flash.htm">http://www.monkey.com/lobby_flash.htm</a>	 W43: <a href="http://www.infoplease.com/ce6/society/A0835506.html">http://www.infoplease.com/ce6/society/A0835506.html</a>	 W44: <a href="http://www.oratory.com/onebag/home.html">http://www.oratory.com/onebag/home.html</a>	 W45: <a href="http://www.w3.weather.com/">http://www.w3.weather.com/</a>
P10	 W46: <a href="http://www.furniture.com/">http://www.furniture.com/</a>	 W47: <a href="http://hotwired.lycos.com/webmonkey/kids">http://hotwired.lycos.com/webmonkey/kids</a>	 W48: <a href="http://www.new-year.co.uk/chinese/">http://www.new-year.co.uk/chinese/</a>	 W49: <a href="http://www.travel.yahoo.com">http://www.travel.yahoo.com</a>	 W50: <a href="http://www.theweathernetwork.com/">http://www.theweathernetwork.com/</a>

Figure 5-9: A list of the participants' favourite websites.

### 1) Connection between visual impact and users' first impressions

According to the data of the participants' creative drawings, most images present the

positive feelings associated with their first impression of the websites and quite a few images present negative feelings. These feelings are stimulated not only by information but also by the users' immediate visual impressions. The significance lies in that the interface aesthetics play a vital part in affecting the users' satisfaction level with Web services. Therefore, this highlights that the graphic design of a Web interface must be attractive and distinctive amongst the large number of competing websites.

Figure 13-1, 13-2, 13-3, 13-4, and 13-5 in Appendix 13 present the participants' associations, emotional responses through their drawings, collages, and interview practices (some participants preferred to use collages instead of drawings, and this was not restricted by the researcher). These figures also present the main factors generating first impressions of favourite websites. Due to the participants' associations with these interfaces, their emotional responses were stimulated by different contexts, except for P4 and P10's day-five website selections (their responses were influenced by their mood on that day).

Almost all the drawings indicate that the participants' main concern was for Web content. After the first impression made by their favourite websites, came a series of emotional reactions which influenced their level of satisfaction, as is shown in their drawing creations. Through the reflective drawings of their first impression, it can be seen that their experiences had positive or negative motivational impacts, which may have influenced their subsequent actions, e.g. exploring the site further or leaving.

## **2) The main factors generating first impressions**

Figure 5-10 lists the main factors motivating the participants' first impressions of those

websites. The participants' responses are concerned more with: 1) Attractive and pictorial items (e.g. pictures, icons, illustrations); 2) Informational content; 3) Colour arrangement; 4) Layout arrangement for Web navigation, 5) Branding and logo, 6) Design style; 7) Animation and movement; and 8) Cultural symbols and atmosphere. Among the interfaces, W3, W8, W18, and W48 were in the same website and selected by four participants due to its individual cultural symbols, colour association, and atmosphere. In addition, the Yahoo, IKEA, BBC, and CNN websites were selected by memory by two participants (P3's selection of Yahoo and IKEA and P4's selection of BBC and CNN) — this was not their first impression on visiting the website.

<b>The main factor that generated the first impression</b>	<b>Times</b>
Related to Web navigation and the layout arrangement	8
Related to the informational content	14
Related to the animation and movement	4
Related to the branding and logo	8
Related to pictorial items	18
Related to the design style	4
Related to the colour arrangement	10
Related to the cultural symbols, colour, and atmosphere	4 (marked for the same website)

Figure 5-10: The number of times that the main factors are marked in the participants' selections.

Except for the information content, other factors related to graphic design are the layout arrangement of the navigation, the image identity of brands, and cultural symbols. Compared to the outcome of the observation and Figure 5-9, most of these websites seem to have certain attractive visual expressions or pictorial items, which provide the

participants' favourable impression. For example, a colour-contrast arrangement can make a plain Web interface more visually appealing. P8 described W40, saying *"It's very cute and typically Japanese cute. Even though it is about the weather, I found it was kind of romantic, which was a little bit absurd. Especially, the colour was cute."*

As the data shows, the participants preferred to have something noticeable immediately upon opening a window. When the participants used the computers for longer periods, this requirement in fact became much stronger, which means users tend to focus on something that is eye-catching and is sharply contrasted to plain texts, such as big pictures, coloured titles, or boldface text. This finding indicates that if a website contains more information which in order to be read requires users to stay longer, its visual contrast is relatively important for information arrangement.

On the other hand, a dynamic image, although attractive, is likely to be misunderstood as being an advertisement, as was shown by P7's personal experience. P1, P3, P7, P8, and P9 saw animations as a friendly type of interaction with the websites. P5, P6, and P9 thought of dynamic images as being capable of enriching and enlivening Web content. Nonetheless, some researchers, such as Nielsen (2002), advise against the use of movement on a website; and Petersen and Nielsen (2002) both contend that the use of movement can have a negative influence on a user's visual attention and experience. This negative influence can be reviewed through the use of EPs so that the researcher can observe how the users feel, instead of testing their physical reactions, such as heartbeats or eye blinks in response to the *Flash prototype*. As Appendix 11 shows, the interview conversations, drawing, and collage practices can explain how the EPs approach














demonstrates the users' experiences from different angles.

In this study, the participants' task was to search for their favourite websites. Therefore, most of the participants' comments are relatively positive in response to the visual representations of the websites. Even though a few websites received negative comments, they were still selected because the usefulness of the information they offer outweighed other concerns about the visual aesthetics of the websites.





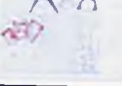


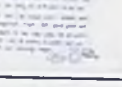

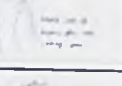


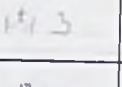


Generally, the graphics of those websites highlights their visual impact on the users' attention. P6 expressed his thoughts about this, stating that *"the pictures were quite attractive, and some graphics are even without a function, yet it fits the site well. It creates some feelings and emotions, and without such design, the website will be plain."* Even though a user interface has only a little colour, it exerts a different visual impact on the users. The fact is that users appreciate design features, which was evidenced by the participants' concerns in this study.




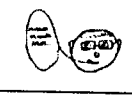
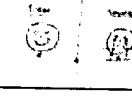


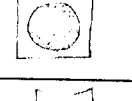

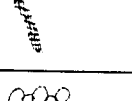

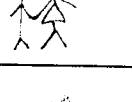
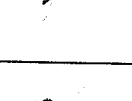
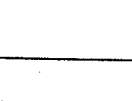
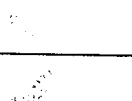
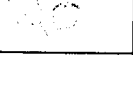
#### **5.3.4 Connections between users' first impressions, perception, and attention**

The participants draw a series of pictures representing their first impression of their favourite websites. As these drawings show, the visual expression of the Web interface positively conveys emotive messages to the users. Figure 5-11 shows the 10 participants' responses to the emotional reflections in their drawings, their first impressions, the most attractive visual element of a website, and the thing activating their first clicking action.

The connection between the first impressions, perception, and attention				
Participant	Emotional association	Main factor that generated the first impression for the whole page	Most attractive visual element	First click
P1		Navigation, Layout	The image status	The "getting started" icon
		Navigation, information	The dynamic graphic	The "Here" button
		Cultural and symbolic image	Typeface & colour of the headline	The "Calendar" icon
		Layout, Information	The logo image	The "Departing from" icon
		Information, Navigation	The logo	The animated text
P2		Design style – picture and colour, navigation	Picture, colour contrast	The menu bar
		Background music	Background music	The big picture
		Cultural colour, Layout	The headline-colour	The "Fortune cooking" button
		Image, Shape	Icon, shape	The button of the travel tool
		The menu design and colour	The black menu design and colour	The picture with the button
P3		Branding image- Image, Colour	Background images	The pull-down menu
		Colour, Image, Icon	Background colour	The button (content)
		360 degree panorama-Size and Colour	360 degree panorama	The 360 degree panorama



		Branding, Information, Colour	Icon (visual metaphor)	The map
		Information	Icon-Shape, Colour	The Pull-down menu
P4		Colour, Picture, Content	Colour, Picture	Animation
		Colour, Image, Icon	Picture-size, Colour	Picture
		Cultural colour, Image	Typeface of the headline	Icon-link
		Icon, Colour	Brand-Image identity	Picture-Size, Link
		Branding	Brand-Image identity	Icon as a link
P5		The background image, Content	The watermark graphic	Button
		Layout, Animation, Colour, Navigation	Animation	The animation with a hand icon
		Colour	Bright colour of the headline	Information and colour
		Images	The central Image	Information
		Graphic, Information	The central Image	Information
P6		Animation	Animation	Animation
		Logo, Information	Image	The picture with a link
		Information, Layout	The font, Stripy background	Link

		Information, Navigation, Icons	Image	Link-symbol
		Picture, Information	Map	The symbol on the map
P7		Pictures	The pull-down menu	The pull-down menu
		Animation, Graphics	Moving picture	Text-link
		Graphics, Text, Information	Logo	A "bolder" text
		Branding, Information	The moving headline	The "BBC America" button
		Branding, Picture, Information	Picture-colour	Picture
P8		Interface style	Picture	Picture
		Big image	Big graphics	Big graphics
		Picture, Layout, Design style	Picture	Picture
		Theme	The central graphics	The central graphics
		Colour	The colourful map	The colourful map
P9		Animation-Layout style, Interactivity, Colour	Animation	Animation
		Background music	Icons	The "Services" icon
		Information	The "hand" icon	Picture
		Picture	Picture	Picture







		Theme	The map with text-link	The text "UK"-link
P10		Colour, Image, Meaning	Big picture	The menu bar
		Colour, Image	The graphics	The button design (information-oriented)
		Colour, Image, Cultural atmosphere	Cultural totem	The button
		Picture, Colour, Information	Icon-information-oriented	The map
		Branding, Information	A weather satellite image	The search links

Figure 5-11: A list of the 10 participants' emotional reflections on their drawings, their first impressions, the most attractive visual element of a website, and the thing activating their first clicking action, all referring to their five favourite websites.

Figure 5-11 shows the participants' first impressions, their visual attention to the most attractive visual element of a website, and the stimulus of their clicking actions are all linked with their emotional associations, as presented by their drawings. The participants can be divided into two groups, according to their responses: P1, P2, P3, P5, P6, and P10 are grouped together and the rest form another group, as shown in Figure 5-12. Even though the creation of these two groups represents a different content embodying the users' experiences, the same feature extends the ability of mood board practices to visualise user-participant experience according to their emotional associations.

Participants	P1, P2, P3, P5, P6, P10	P4, P7, P8, P9
Drawing creation	<ol style="list-style-type: none"> <li>1. Reflects their visual focus related to the visual expression of Web interfaces</li> <li>2. Combines more visual metaphors or symbols</li> <li>3. Presents interactive meanings between themselves and the interfaces</li> <li>4. Shows personal colour preferences in some cases</li> </ol>	<ol style="list-style-type: none"> <li>1. Reflects their personal associations or direct emotions</li> <li>2. Combines with fewer visual metaphors or symbols</li> <li>3. Emphasises their personal feelings and associations</li> </ol>
Analysis of drawings	It is more complex to analyse those symbolic meanings, which makes it better to involve the participant's explanations in the process.	Generally, it is more straightforward and intuitive simply to look at the data. In some cases, it can be quite complex, so using the participants' explanations would be better.
Benefits	<ol style="list-style-type: none"> <li>1. Provides ideas about what they like in interfaces, for example colour, shape, and structure.</li> <li>2. Provides designers with examples of the individual visual language created by users.</li> <li>3. Inspires designers to imagine users' interfaces preferences.</li> <li>4. Provides designers with ideas about how to associate users interacting with interfaces.</li> </ol>	<ol style="list-style-type: none"> <li>1. Provides ideas about users' direct feelings and associations.</li> <li>2. Provides designers with examples of the individual visual language created by users.</li> <li>3. Designers enabled to communicate with users through their imaginative pictures.</li> <li>4. Provides designers with ideas about how to associate users interacting with interfaces.</li> </ol>

Figure 5-12: The 10 participants are divided into two groups according to their drawings. Analysis of the drawings suggests that there are two distinct groups, each one presenting thoughts and feelings in different ways.

On the other hand, the first “click” happened after the users quickly scanned the site and had experienced their first impression. This action seems to occur because the users found some information interesting, which is then clicked on for an

information-oriented reason, rather than because of visual impact. As Figure 5-13 demonstrates, one finding of this study indicates a hierarchical relationship between the users' emotional reactions through their first impressions, the visual focus of a Web interface, and the factors that influence their clicking action. This study also shows that when an emotional interaction is activated between user and interface, the user is able to generate a quick impression of the whole page, and this impression is followed by the attractive visual elements leading the user's attention to access the right pages and get the necessary information. The visual element, when compared to the plain text, is better at creating visual pleasure and affection.

P1 discussed her experience about facing a Web interface which had less visual effect: *"The visual side of this website was quite scarce— there was not enough to attract your attention or to create a feeling that you are really engaging or interested."*

P8 described his personal experience with the website (W36) differently: *"Purely, because it is the only object (image). I am more interested in objects (images), rather than text, basically. I always imagine that the object is the major element, which will lead me to the text. The main focus draws my attention immediately and it is also the first thing that I wanted to click on. Basically, I'm interested in objects (images) rather than text. The object (image) is the major element of the page [...] Behind the click, a good link is very important; a good link needs to lead me to the correct access for the right page."*

Regarding this hierarchical relationship, it is overly simplistic to locate the value of

graphic design solely in the visual decoration of a website. The impact of graphic design and visual communication stems from different demands and utilities and it reflects different considerations for designers. Depending on the purpose of a website, visual-emotional interaction, as shown in Figure 5-13, provides designers with a picture of how to convey Web information through the hierarchical relationship and how to catch users' attention as soon as they encounter it.

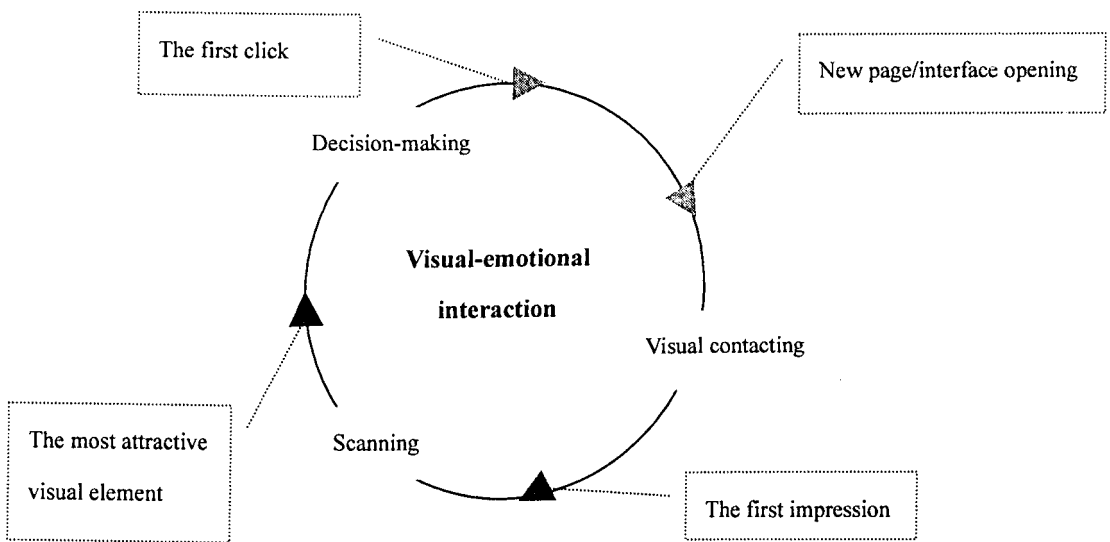


Figure 5-13: A visual-emotional relationship between the users' first impressions, their visual focus, and their clicking reactions. In this relationship, visual and emotional interaction between user and interface continues to work throughout the cycle.

### 5.3.5 Emotional responses to Web interfaces

According to the participants' drawings for their first impressions (Figure 5-11), almost all participants were engaged with emotional associations, albeit from different angles and influences. *Happy, boring, enjoyable, joyful, lost, comfortable*, and other literal emotional terms are used to describe their individual experiences. After analysing their drawings, the data can be used to indicate how and where their perceptions connect with their first impression upon viewing the websites. From the navigation system, design style, colour, images, typefaces, and cultural patterns, these visual combinations arouse various emotional responses to the websites' designs. The following sections will discuss how the users' visual judgement, emotions, and visual aesthetics have an influence on their further explorations in a website.

#### 5.3.5.1 Visual judgement

According to the participants' emotional responses, appealing visual expression easily caught their attention and then stimulated their interest in exploring the websites. The visual impression was temporary but critical for influencing their subsequent reactions and behaviour; so an attractive visual representation is obviously beneficial in terms of encouraging users to explore a website further.

User experiences are intuitively associated with Web content, such as the information, images, colour, and multimedia. Through graphic design aesthetic creation,

Web content becomes engaging and appealing; and not only that, it enhances the users' sensuous experiences. Therefore, as the usability evaluation is tied up with user experience in terms of website development, it is arguable whether the issue of aesthetic and visual impact should be left out of the usability evaluation. Many usability analysts have felt usability design tends to be hostile to aesthetic experience, e.g. Jakob Nielsen (2000a); but the participants' responses in this survey have reflected an opposing perspective with respect to aesthetic value. As Badre (2002:175) states, "*it is just important to remember that it is possible to provide a sophisticated aesthetic expression without violating usability constraints.*" It also considerably enhances user experience to combine aesthetics with usability

### 5.3.5.2 Emotion, visual aesthetics, and function

Figure 5-14 shows how the 10 participants engaged with the visual stimulation of their favourite websites during the first-impression stage. Lindgaard and Dudeck (2002a: 233) observe that the strength of the "first impression" is characterised by a "primary effect," which has long featured prominently in the psychological literature. "*Basically, judgements are overwhelmingly based on the first impression. Where a primacy effect occurs, the stimulus presented or detected first receives a disproportionate amount of attention*" (Lindgaard and Dudeck, 2002a:233). As far as catching users' attention is concerned, it is crucial to create a positive first impression; otherwise, it will be difficult to have a second opportunity to draw back user attention.



	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	Engagement with visual interfaces
P1			-		-	low
P2	+		+			high
P3		+	+	+	+	high
P4		+ -	+ -			high
P5			+	+	+	high
P6						high
P7	+					low
P8	+	+ -	+	+	+	high
P9	+		+ -	-		high
P10		+				high

Figure 5-14: This grid shows how Web users engage with the initial visual impact of their favourite websites. The colour scheme, ■ ■ ■, represents a low to high engagement with the visual interfaces. For the results shown in Figure 5-15~19, the researcher uses “+” or “-” to characterise participants’ selections of websites. The symbol “+” means that the selection is mainly concerned with the visual appeal and the visual expression of the interfaces and it is used to mark the reason for the respondents’ selection. The symbol “-” is used to mark the situation where a website is of poor usability but is selected.

In a traditional usability test, interface aesthetics seems to have less connection with Web usability and user satisfaction (Lindgaard and Dudeck, 2002b). However, the users’ emotional responses in this study have shown that a usable site needs to strike a balance between visual appeal and usability.

The findings of Figure 5-14 are as follows:

- 1) Apart from P1 and P7, the 10 participants’ choices of their favourite websites show that most of them engaged with the interface designs emotionally.

2) P3, P8, and P10 tended to select a website with a strong emotional engagement in its visual presentation, having richer colour, more graphics, and appealing icons.

3) P6's website selection presents a typical user who minds the visual balance between the graphic design, informational content, and the web usability.

4) P1 and P7 were more focused on information content, even though most of the first elements of the interfaces that caught their attention were animated pictures. Also, neither of them liked to use a scrolling bar and both preferred less text. Especially when they described their browsing experience, it appeared that their experiences were strongly influenced by the layout arrangement on the whole (see Appendix 11). A well-structured interface layout was likely to create a positive impression.

5) As Figure 5-15~19 shows, these five charts present the data of the participants' intuitive judgements, which can be utilized to evaluate what the 10 participants think of: 1) usability, 2) navigation ability, and 3) visual expression for the websites they selected for the four questions. According to these charts, marked with “-” in Figure 5-14, the researcher discovers that some websites chosen by P1, P4, P8 and P9 had less usability and a poor navigation design; however, the participants did not mind these problems because their information was interesting and their visual appearances were engaging. Further, P8 selected an unfinished website on her day-two search, describing the experience, saying:

*“The navigation is poor, and the actual interface is very unclear. The idea of the design is quite absorbing and absurd. It is really odd [...] The interface is*

*“Monkey”, so it is not distinctive because there is little interface. Even though it had no layout, and no information it was still a very engaging website. Especially from an emotional point of view.”*

The engaging visual expression seemed to extend its ability to hold the users’ attention. This point reminds Web developers to consider the importance of the instant attraction of visual design of a website.

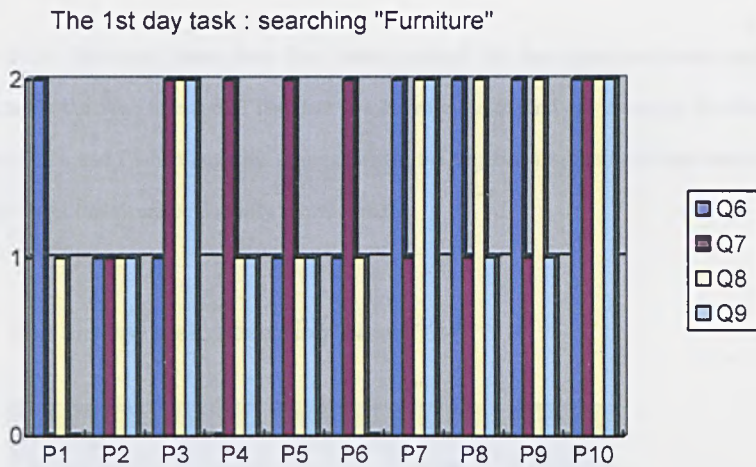


Figure 5-15: This chart shows how Web users assessed the four issues and what they think of the issues connected to the Web interfaces. The data comes from the first day’s search, for which the keyword was “Furniture.” No one had negative feelings about the functions of their selected websites.

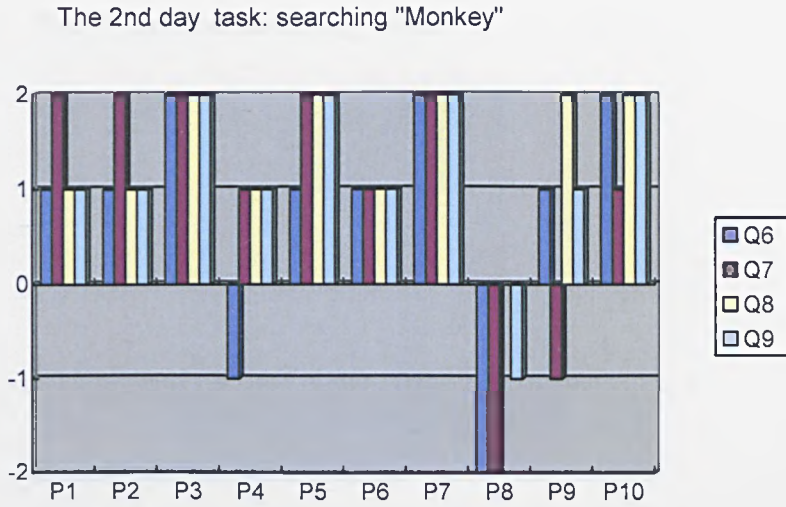


Figure 5-16: This chart shows how Web users assessed the four issues and what they think of the issues connected to the Web interfaces. The data comes from the second day’s search, for which the keyword was “Monkey.” P4 and P8 had negative feelings about the functions of their selected websites. P9 had negative feelings about the visual personality of the website.

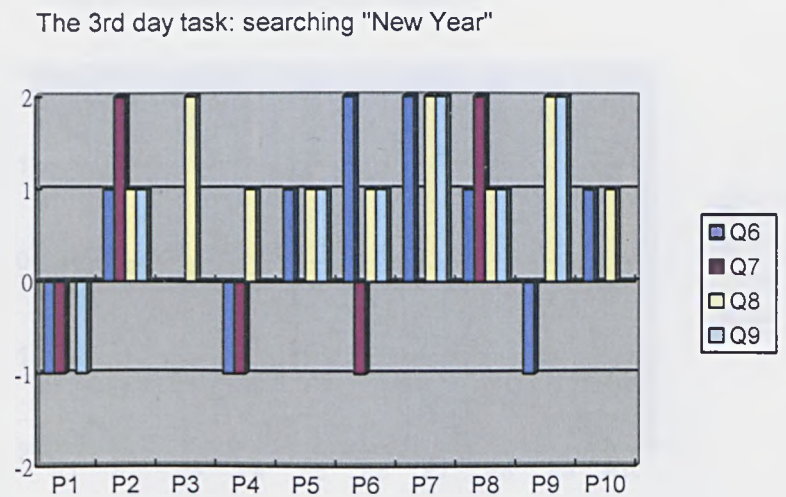


Figure 5-17: This chart shows how Web users assessed the four issues and what they think of the issues connected to the Web interfaces. The data comes from the third day’s search, for which the keyword was “New Year.” P1, P4, and P9 had negative feelings about the functions of their selected websites. P6 had negative feelings about the visual personality of the website.

The 4th day task: searching "Travel"

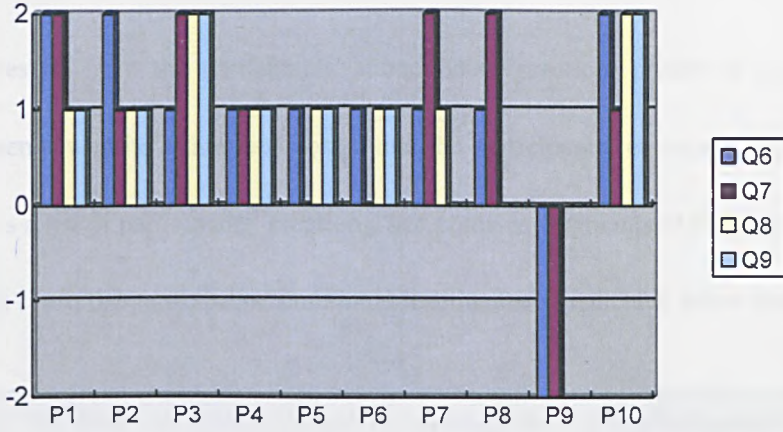


Figure 5-18: This chart shows how Web users assessed the four issues and what they think of the issues connected to the Web interfaces. The data comes from the fourth day's search, for which the keyword was "Travel." P9 had negative feelings about the functions of his selected website and the visual personality of the website.

The 5th day task: searching "Weather"

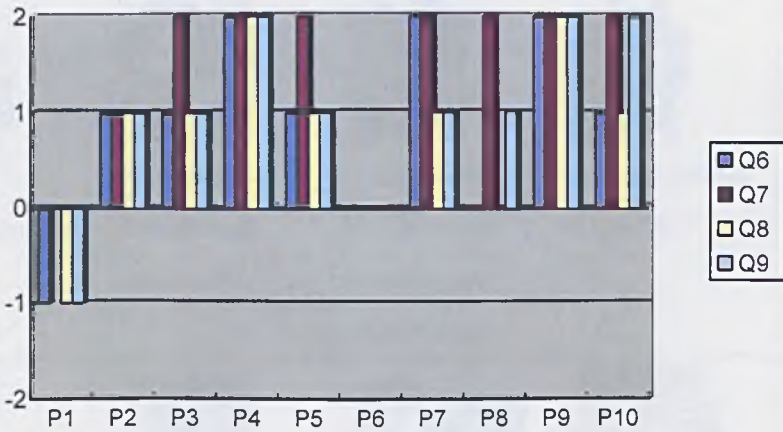

















Figure 5-19: This chart shows how Web users assessed the four issues and what they think of the issues connected to the Web interfaces. The data comes from the fifth day's search, for which the keyword was "Weather." P1 had negative feelings about the functions of her selected website.

**5.3.5.3 Emotional response revealed by the mood board**

The results from the participants’ mood board practices present a strong connection between a website’s interface design and the participants’ emotional experience. Figure 5-20 is a list of participants’ creations, and contains fragments of their verbal description.

In this chart, the participants’ emotional reactions are explicated below the images.

The mood board practice with the participants’ emotional responses					
P1	 <p>“Lets you control it.”</p>	 <p>“Bored, asleep, less interactive, annoying.”</p>	 <p>“Juicy colour, Ornament, traditional, impressive.”</p>	 <p>“Feeling good, happy.”</p>	 <p>“Lose the visual focus.”</p>
P2	 <p>“Elegant layout, but too much information.”</p>	 <p>“Association with environmental consciousness.”</p>	 <p>“A reflection of the design style which repeats the same design of icons.”</p>	 <p>“The scenic pictures are beautiful.”</p>	 <p>“Reasonable content.”</p>
P3	 <p>“Relaxing, feel like being free at home, comfortable.”</p>	 <p>“Child-like, joyful.”</p>	 <p>“Joyful, celebrate the festival.”</p>	 <p>“Feeling of having fun.”</p>	 <p>“Feel quite rational and calm, masculine”</p>

<p>P4</p>	 <p>“Elegant style, not too solemn, fresh colour.”</p>	 <p>“Funny, laughing.”</p>	 <p>“New-year atmosphere.”</p>	 <p>“The association with “holiday and travelling”, relaxing,”</p>	 <p>“The hope that a sunny day is coming,”</p>
<p>P5</p>	 <p>“Most websites are too commercial, so still looking for a good website.”</p>	 <p>“Comfortable colour, information is easy to read, not cluttered.”</p>	 <p>“The website is to give people beautiful hopes and dreams. Time is flying fast.”</p>	 <p>“Feel bored after surfing, stressful, need help.”</p>	 <p>“Feel dynamic, good, moving, ace, and the content provides new things.”</p>
<p>P6</p>	 <p>“The comparison between his likes and other sites.”</p>	 <p>“The comparison between his likes and other sites: frustrating.”</p>	 <p>“The comparison between his favourite site and others. All the sites he found were to celebrate New Year.”</p>	 <p>“Almost all the sites had an information overload. The comparison between his favourite site and others.”</p>	 <p>“It is difficult to get useful information you want, confusing, chaotic, too much text.”</p>
<p>P7</p>	 <p>“Association with an alien world.”</p>	 <p>“Masculine, male culture.”</p>	 <p>“A straight feeling—being happy.”</p>	 <p>“Mystery or magical, calm, but strange.”</p>	 <p>“Association with an alien world, curious.”</p>
















<p>P8</p>	 <p>“The site was interesting, stylish, delicate.”</p>	 <p>“Poor navigation but the design style was absorbing. The feeling was secure, crazy, happy, and funny because of the monkey image.”</p>	 <p>“Rational, exotic, new year is coming, the feeling was like talking about the future.”</p>	 <p>“Distant, luxury, rich colour, exciting images, and he felt physically moved and excited about travelling.”</p>	 <p>“Happy, cute.”</p>
<p>P9</p>	 <p>“Secure, friendly, not lost, having a quick interaction.”</p>	 <p>“Funny, commercial, cute, young, child-like.”</p>	 <p>“Very bored, not much colour, nothing interesting.”</p>	 <p>“Relaxed, happy.”</p>	 <p>“Association with himself and the weather. Happy because of a clear and trustable weather forecast.”</p>
<p>P10</p>	 <p>“Humorous, enjoyment, comfortable, relaxed, interesting.”</p>	 <p>“Child-like, interesting, funny, entertaining.”</p>	 <p>“Colourful, oriental culture, joyful, the New-year feeling and festival mood.”</p>	 <p>“Holidays, activities, and travelling in Africa, all related to his feelings and thoughts.”</p>	 <p>“Association with sunny weather, sun-proof lotion, sunglasses etc.”</p>

Figure 5-20: This chart presents the results of the participant’s mood board practices in combination with the emotional responses gathered from their interviews.



Figure 5-20 shows the main advantages for studying user experience with mood board exercises. The results of the exercises recall those of the drawing practice. The three advantages of the mood board practice include:

- 1) Reflecting users' visual focus, personal memories, and emotional responses, associations, interaction with Web content and colour preferences;
- 2) Reflecting users' criticisms of selected websites;
- 3) Reflecting users' special concerns about the cognitive aspects presented by the users' preferred visual language and images.

Associated with the final interviews, those creations had been interpreted by the participants' themselves in order to increase the understanding of the users' experiences. Initially, the researcher wanted the participants to record their feelings or experiences daily, and gave no limit as to the range of their responses. As a result, most of the participants recorded their responses directly; some of them even included associations about the key words used for searching and comparisons with other websites that they had visited that day, such as P5 and P9. The data show that the mood board practice is able to produce more comprehensive outcomes than the drawing practice, as it can reveal more emotional descriptions and personal opinions.

Figure 5-21 presents P1's participation result to explain how the user described her concerns about interface design, which relates to the question of which part of the interface can be improved, as well as to other cases referred to in Appendix 11. With respect to the three advantages just listed, the mood board has proven useful for collecting information not only about users' emotional experiences but also about their demands for Web

functions and interface design.

In Figure 5-21, P1's mood board indicates the participant's criticism of W1's interface design, e.g. the dense text means too much information appears on the Web page. With different user groups, designers can apply this method to collect various data through which to stimulate their ideas and generate more design features for their projects.



Example : P1's criticism of the interface: W1 and the related mood board exercise			
W1	Mood board	Advantage	Disadvantage
		<ol style="list-style-type: none"> <li>1) The amount of information in the text or graphics,</li> <li>2) Colour selection</li> <li>3) Engineering layout</li> </ol>	<ol style="list-style-type: none"> <li>1) Too bright background</li> <li>2) Provides too much information at once on a page</li> <li>3) Conservative layout</li> <li>4) Boring logo design</li> </ol>

Figure 5-21: An example of P1's concerns for the visual interfaces of her five favourite websites. For each interface, she further describes her criticism of the first website she selected: W1. Other participants' concerns are listed in Appendix 11.

Hence, for professional designers, mood board application can be used to collect images that suggest a link between the atmosphere, texture, and colour preference of a design, and the overall look of the object. More significantly, the mood board can be utilised by the users to visually present their emotional reactions, thoughts, ideas, preferences, and functional requirements for a Web design. Compared with the drawing method, the mood board relies on collage; its application is easier than the drawing method because users possess disparate levels of drawing skill, a factor which may compromise their ability to communicate their thoughts and feelings.

## 5.4 Discussion

The purpose of this discussion is to extend in-depth knowledge from the study of user experience in different directions from current studies. Applying a hybrid contextual strategy, EPs afford the researcher a set of perspectives from which to observe and compare users' experiential reactions. This study aims to reflect more thorough insights into users' emotional reactions and the visual and functional requirements of the different channels. This section will be divided into two parts to discuss the conclusion of studying user experience using EPs.

Section 5.4.1 will summarize the findings with respect to the five issues of 1) personal differences in Web experience; 2) the connection between personality and interface preference; 3) visual impact of the users' favourite websites; 4) the connection between the first impression, perception, and attention; and 5) emotional responses to Web interfaces, as mentioned in the previous sections.

Section 5.4.2 will discuss the possibility of applying the EP method. By means of our observations, interviews, and creative practices, like drawing and collages, the data appears sufficient to embody users' real experiences.

### 5.4.1 View of the connections between user, interface, and design

The data gathered with EPs show that when the users responded to Web interfaces, their first impressions had already influenced their choices regarding the graphic user interfaces. This shows that the participants could be interested to further explore a website after viewing just a twinkle of appealing visual expression on the interface. This indicates why designers should pay attention to the improvement of visual aesthetics of Web interface design in order to advance Web usability in user experience. In what follows, we may conclude the findings of this study according to these issues:

#### 1) Personal differences in Web experience

According to the responses of the user-participants, their emotional reactions to a website have an influence on their subsequent reactions and behaviour. The needs for trust, convenience, a welcome atmosphere, and easiness have been shown to be influential factors in increasing the participants' interest in a website. The participants agreed that these emotional needs could be fulfilled through visual design, as the different colour arrangements can trigger different emotional reactions. Additionally, for the different genders, visual aesthetics still plays an important role in turning their attention to Web information. In particular, males are relatively more interested in visual expression of interfaces and less concerned with technical functionality. Females are less likely than males to be confident operating interface functions. This assumption provides a potential future research direction which is related to gender difference in web aesthetics.

## 2) The connection between personality and interface preference

The determining factors for users' interface design preferences are complex. In the analysis of the data, the visual impact on user experiences is clearly direct and influential. Preference for interface style can be indicated by testing a user's personality. However, these findings seem not to reflect the same result as when a user is already interested in a website.

Even though the results from the drawing exercises indicated that each participant seemed to have their own preferred interface style, they found that it was difficult to come across interfaces that were of interest to them as well as of their preconceived preferences. A close relationship between users' preferences towards interfaces and their personalities can still be perceived through the emotional associations of their drawings.

The alternative idea of the layouts of the garden, library, and personal Web page developed by the researcher provide an adaptable approach for evaluating the drawing practice when studying user personality and visual preference. Therefore, even though the study of personality and individual taste is involved with cognitive psychology and the human sciences, the researcher has attempted to use a simplified method of creative drawing which will still allow designers without a psychology background to employ alternative approaches to better understand their target users. In addition, according to the findings of this research, the series of drawings used in lieu of Goatman's test also increased the reliability factor and provided an opportunity for multiple-comparisons, even though it was unable to provide a larger sample.

### **3) Visual impact of users' favourite websites**

As mentioned in the literature review, there are common issues relating to the quality of user experience: 1) navigation; 2) information arrangement; 3) usability; 4) interactivity; 5) accessibility; and 6) the look and feel, all of which are devised by graphic designers and functional mechanisms. However, mainstream Web design has focused on Web usability, which seems to incorporate the dominant issue of designing a website and other issues such as navigation, readability, legibility, interactivity, and accessibility, which have all been covered to help create better usability. The “look and feel” is related to the reaction of users' emotional experiences and appears not to hold a similar importance in interface design.

According to this study, the participants' responses indicate that their perceptions were tightly triggered by the visual impacts of interfaces. From the users' perspectives, the design of navigation, information architecture, interactivity, and accessibility can be guessed according to layout and graphic design. The application of EPs discovers the positive correlation between users' emotional experiences and visual impact, along with connections between Web usability and users' cognitive reactions. While usability engineers frequently ignore the potential ability of visual aesthetic communication, it is hoped that these results will awaken them to the importance of visual design and lead them to consider employing visual aesthetics to enhance usability.

### **4) The connection between the first impression, perception, and attention**

The participants' drawing creations represent a series of emotional reactions after their first impression of viewing a website. As is shown in the hierarchical relationship of Figure

5-13, here we see different considerations for how designers should arrange information according to different levels of importance and so attract users' attention.

According to the results of this study, the mood board is likely to indicate that if the users' experiences bear positive or negative motivational impacts, this can influence their subsequent actions, e.g. exploring further in the site or leaving. In association with the classification of the participants' creations, the outcomes indicate their visual interests in websites and their preferred visual language discovered from those mood boards. The outcome of this data analysis reflects the possibility of generating a user experience database that could be employed by designers if the sampling could be extended far enough.

### **5) Emotional responses to Web interfaces**

Apart from interviews, observations, drawings and collages, this research also seeks a communication channel between designers and users. The channel would offer a way for users to use their language, drawing, and collages to communicate their experiences. This research has discovered that the channel could be developed with an indispensable design toolkit to collect real user experience and incorporate designer creativity into the design process.

The data collected offers information about user experiences and concerns to designers from various perspectives. Through the drawings and collages, users seemed to have a tool to communicate their criticisms of the design content. For example, P1 used the mood board to describe her personal perspective about the website. She explained the idea

of her creation, “*design is to catch your attention, but here [there] was too much and it was too full and just put together roughly.... These images might be interesting [in] themselves, but they didn't hold together very well.*”

The users thought the use of the mood board gave them an opportunity to explain their thoughts via images, which were able to display something that might not be available through verbal means. Therefore, the diary survey combined with verbal and visual tools can make it easier to convey users' preference to the designers. The applications of these methods can provide an opportunity for users to communicate their thoughts with designers. By analysing and categorising, the data collected from various users' emotional experiences could structure a user experience database, as further research sampling would be on a large-scale. The potential development of a user experience database could further explicate users' likes and dislikes of designs, and could be exploited in the design industry.

#### **5.4.2 View of the research methods**

This section will further discuss problems and errors that occurred during the EPs process. Chapter 3 contains discussion of each method of the EPs, 1) the diary survey, 2) the think-aloud technique with the participant observation, 3) the interview exercise, 4) the question assessment, 5) the creative drawings, and 6) the mood board practices. The research has shown that these methods have different advantages in explicating users' thoughts, ideas, and feelings either concretely or abstractly.

Based on the diary structure, the user-participants recorded their experience by



writing, drawing, and making collages. Additionally, the think-aloud technique with participant observation created an opportunity for ensuring that each participant understood how to use the EPs and for observing the participants' behaviour. The think-aloud technique also was used to allow the participants to familiarise themselves with the diary recording. The data collected through participant observation can enhance the researcher's awareness when analysing the data. Through these observations, the researcher had extensive evidence for what the user was experiencing.

Throughout this study, the interview technique, as discussed in section 3.3.3.1, is used to build a conversational relationship with participants. In particular, the participants could explain their creations to the researcher in order to reduce confusion and misunderstanding during data analysis. Furthermore, this research included a post-interview conversation with each participant after the diary experiment, in order to understand their real experience when they were viewing the websites and to avoid misinterpreting the field data. There were three main reasons for us to consider that pre-and-post-interview conversation were necessary: 1) to encourage each participant to describe more personal experiences; 2) to create an intimate communication relationship between users and researcher; and 3) to continue collecting *undiscovered* information. Thus, the researcher believes that the field data could be reliably interpreted. The results of the post-interview could also be triangulated with the diary book that the participants completed on their own. This cross-checking helped us to understand more facts.

Compared with the other techniques, drawing and mood board exercises seemed to cause a certain level of difficulty during analysis of the participants' creations. In order to

develop a practicable research strategy for user research, in the following section we discuss how to reduce such problems by conducting drawing and mood board exercises during research, which also can help the researcher to better understand how to simplify the implementation process of the EPs.

#### **5.4.2.1 Creative drawings**

Drawing practices can be an intuitive and inspirational tool for assisting the researcher to collect users' emotional responses. As for how to evaluate user emotional experience properly, what follow are feasible suggestions for applying the drawing practice, in accordance with the findings of this study.

1) One of the significant findings is that it is inspirational to learn of users' emotional interactions with visual representations of Web interfaces through their drawings. What they create can be viewed as particular symbols and pictures that represent their personal experiences or feelings. Comparing their depictions of the websites and their graphic creations, the researcher can decode the information about user experience from different angles. In this research, the drawings were used to explain users' particular emotions; in future research, EPs can be employed to explore specific issues, such as cultural difference, gender difference, personality difference, and other cultural and personal issues. Thus, this method can provide rich data for developing understanding of various users' experiences.

2) Incorporating drawings, with or without the interview techniques, will provide different advantages for a study. The interview technique used in this research helps the

researcher a) collect data that was not discovered in the diary records; and b) give participants an opportunity to explain their creations non-verbally, for example through pictorial data. So if there are no final interviews with the participants, the drawings or collages might be analysed from the researcher's subjective perspective and might not match the participant's thoughts. However, this may provide the researcher with certain results that are not available otherwise. When the researcher interprets these results in this way, the process allows the researcher to have an open imagination that engages with those pictorial data, so the outcome seems to reflect the basic concept of the cultural probes approach. Such an approach encourages the researcher to have a "*subjective engagement, empathetic interpretation, and a pervasive sense of uncertainty as positive values for design*" (Gaver et al., 2004:56). The EPs drawing practice inherits this concern of providing open insights for studying user experience.

#### 5.4.2.2 Mood board practice

Five out of ten participants provided their opinions about using mood boards; this is shown in Figure 5-22. The perspectives of these five participants relate to their personal experiences of the mood board practice. These suggestions implicate the functions of mood board in terms of studying user experience.

<b>Five of the ten participants have some opinions about the functions of the Mood board practice</b>		
<b>P2</b>	Personal perspective	These pictures selected (in my mood board) match the style of this website.
	Implication	Through the mood board practices, the target users can present what they have viewed in a collage. What they create in the collage can provide designers with an opportunity to understand how users think about those visual materials and how they interpret what they have viewed. Those collages might inspire the designers with some different ideas.
<b>P3</b>	Personal perspective	The mood board shows my feeling about this website, like the feeling of being relaxed, and comfortable doing something I want to do or the feeling of being free at home.
	Implication	The mood board can be a presentable tool for the target users to describe the pictures in their mind which can provide the designers with more concrete ideas about what they like in order to support verbal descriptions.
<b>P5</b>	Personal perspective	The mood board shows my whole day's searching experience.
	Implication	The mood board collage can indicate the user's browsing experience and emotional responses.
<b>P8</b>	Personal perspective	The content of the mood board collage can be limited partly by the source of the materials. The images I selected are detached from that magazine, which is a potential mood board, even though the Mood board is under my control and choice [...] The mood board is mainly about shape, texture, and colour.
	Implication	For this point of view, the significant meaning of this statement is that user experience can be shown on the mood board, and their habits and interests can be indicated simultaneously by the image sources. The source might be magazines, newspapers, images taken from the Internet, or others, which might indicate their habits and general interests. In addition, the mood board can indicate a particular user's perceptions of colour, shape and other visual elements.
<b>P10</b>	Personal perspective	<ul style="list-style-type: none"> <li>• All the images are about feeling.</li> <li>• I would like to use my intuition and direct preferences to select these concrete images and patterns [...].</li> <li>• The mood board is made from my experience of searching several websites and my life experience, my memories of the New Year (theme).</li> <li>• I would like to express very direct and concrete feelings and thoughts on my mood board.</li> </ul>
	Implication	This directly points out the core of this research. In relation to this statement, mood board practice can be a useful tool for the designer to explore users' emotional experiences.

Figure 5-22: Five of the ten participants have some opinions on the functions of the mood board practice. In relation to their statements and their creative practices, there are some implications that emerge from this research technique.

From the implications drawn from their statements and each participant's creative practices, the researcher infers five findings to prove the value of mood board practice:

1) It can help users to embody their abstract emotional experience by composing images that can assist the respondents' verbal presentation.

2) It can reflect the particular user's imagination and association through the creation of a collage. Collages can present respondents' preferences about the design style of a website, which can inspire designers.

3) It can be used to summarise personal experiences through image compositions with a specific focus. In this study, some of the participants preferred to present their life experiences and memories through the mood board practice, including their emotional interactions with interfaces or their emotional responses to those interface designs.

4) The images of their selections could be symbolic or associated with their personal cultural backgrounds, social conventions, and their personal views, which link to certain significant meanings in their life experience and memory. Those symbolic images can impel designers to consider what is important, such as different cultures and conventions. In addition, the implications of the symbolic items can help designers think about certain issues, such as globalisation and cultural influences in the icons they design for Web interfaces.

5) As has already been noted, mood board practice and drawing practice seems to present a similar function for approaching user experiences. The mood board method is

easier to conduct because it involves only cutting and pasting, if the respondents cannot draw well enough to represent their feelings freely. Additionally, the mood board is a more comprehensive practice that presents colour preferences and other visual elements, once the respondents can find appropriate image sources. On the other hand, it might be too complex to analyse the data collected by the mood board because the images are selected, not created by the participants. Those images might make it relatively difficult to interpret their real ideas. But if the image sources come from the respondents' general habits, such as magazines and newspapers that they usually read, the data collected can indicate more personal information, such as habits, interests, and social interaction. Mood board practice tends to produce rich data and visualise the participants' thoughts; therefore, it is useful for providing researchers and designers with imaginative pictures for generalising user preferences.

To sum up, comparing the drawing and the mood board practice, the results indicate that the drawing skill can be used more effectively than searching for images through magazines or newspapers, when used for the presentation of the users' first impressions. Depending on the differences in the questions, the drawing practice can be used to describe instant feelings, such as first impressions, while mood board practice can be used to describe more comprehensive feedback, such as their feelings after browsing the website. Both of them have brought benefits: 1) allowing users to communicate their emotional experience; 2) encouraging users to describe their real experiences actively; and 3) providing alternative data for designing user emotional experiences.

### 5.4.3 Evaluation

One of the research aims was to seek a channel for designers to communicate with users' needs. According to the results of this research, the understanding of users' emotional experiences could inspire designers with creative ideas for design. This research intended to develop a set of research methods to explore users' feelings and needs when using Web interfaces. Through the application of EPs, the data has provided an in-depth understanding of how graphic design specialists can impact on users' emotions. The previous section has discussed some flaws and problems in the implementation. Therefore, the researcher intends to revise the original model in order to provide a "simplified version" for Web developers to employ in their design projects.

To this end, and to evaluate the original model, the researcher conducted separate interviews with three experienced designers, coded as D1, D2, and D3, whose background details are listed in Appendix 12. Figure 5-23 shows the advantages and disadvantages of applying the EPs, according to their suggestions.

Designers	Suggestions	
D1	Advantages	<ul style="list-style-type: none"> <li>● To communicate with users' emotional experiences.</li> <li>● To compensate for lack of quantitative data.</li> <li>● To provide a design "toolkit" for designers.</li> <li>● To inspire creativity in designers.</li> <li>● To build a users' experience database.</li> <li>● The application can collect user' perspectives to generate design ideas in the early stage of the design process and to gather users' emotional reactions to design outcomes in the final stage of the design evaluation.</li> </ul>
	Disadvantages	<ul style="list-style-type: none"> <li>● Takes too long to collect and analyse information.</li> <li>● Budget limitations influence the clients' willingness.</li> <li>● Time limitations.</li> </ul>
D2	Advantages	<ul style="list-style-type: none"> <li>● A creative way to crystallise users' experiences.</li> <li>● To enhance designers' understanding of users' needs and satisfaction.</li> <li>● To form a collaborative relation between users' experiences and designers' creativity.</li> <li>● The application is useful for supplying the design industry with a better understanding of user experience.</li> </ul>
	Disadvantages	<ul style="list-style-type: none"> <li>● Budget limitations.</li> <li>● Time limitations.</li> </ul>
D3	Advantages	<ul style="list-style-type: none"> <li>● To provide an in-depth account of users' feelings which can provide designers with an understanding of user experience and a useful tool for evaluating the emotional aspects of Web design.</li> <li>● The application can be used to support more in-depth aspects of using design to engender emotion.</li> <li>● The application can be applied to any Web design or something that individualises a particular site.</li> <li>● The application is useful for building a type of database which can be used by designers to educate their client in the emotional aspects of Web design.</li> <li>● The application can be used by selecting specific areas that would support the emotional needs for design.</li> </ul>
	Disadvantages	<ul style="list-style-type: none"> <li>● Users' willingness to participate.</li> <li>● Budget and time limitations.</li> </ul>

Figure 5-23: The advantages and disadvantages of applying the "Emotional Probes" approach, based on the suggestions of professional designers.



Figure 5-23 shows that interviewees had a positive attitude towards the model because it could actually offer a workable research method for designers to explore emotional aspects of user experience. To sum up, their suggestions pick up two limitations of the EPs application: 1) the designers' personal comprehension of the cultural context of visual communication and 2) the clients' funding support.

The funding support for the design process can have a significant influence. When interviewing the three experienced designers, they had different perspectives about the two limits. D1's concern was about whether the analysis process is manageable or not, but D3 had a different perspective: *"I think that it would be relatively easy for a designer, once they understood the cultural context of visual communication [...] Once the designer understands that and bears in mind the client's needs then the analysis of emotional values, I think, would be easy for a designer. The difficulty of this would be to be paid by the client to conduct this research."*

In addition, D3 said, *"I don't think that designers have a problem with conducting research. The problem lies in who covers the cost involved in carrying out the research."* Nevertheless, the EPs approach was viewed as a manageable method, and funding support seems to be the main barrier to implementing this program.

In fact, the researcher had considered the problem of funding barriers when designing EPs. The most economic and effective way of applying EPs is probably to use five participants for half a day to produce relatively rich data to inspire design ideas, depending on the designers' requirements. The goal is to introduce to designers the potential advantages of applying EPs in the hope that they will have enough confidence to

persuade their clients to support the use of EPs.

This research suggests that designers and their clients should consider developing a user experience database for their future design work. The database would not only be a source of design inspiration for creating new design values but also a reference for recognising diverse user behaviour. For example, the outcomes of the mood board practice were created by the users' emotional reactions; the images used seem to reveal the connection between the users' particular cultural backgrounds and personal memory. Those images could inspire designers' creativity; therefore, designers would give the images new interpretations that could be merged into their design projects.

#### **5.4.4 A design/research strategy for enhancing user experience**

According to the suggestions of the designers and the users' opinions, the researcher proposes a revised model of the Emotional Probes. The revised model enables the provision of creative practices for catching snapshots of user experience that can implicate different emotive messages, concerning feelings, thoughts, interactive relationships, and personal aesthetics. The EPs application can be extended into various designs in order to increase the understanding of different user emotional engagements and interactions with designs. The simplification of the original EPs model is introduced as Figure 5-24.

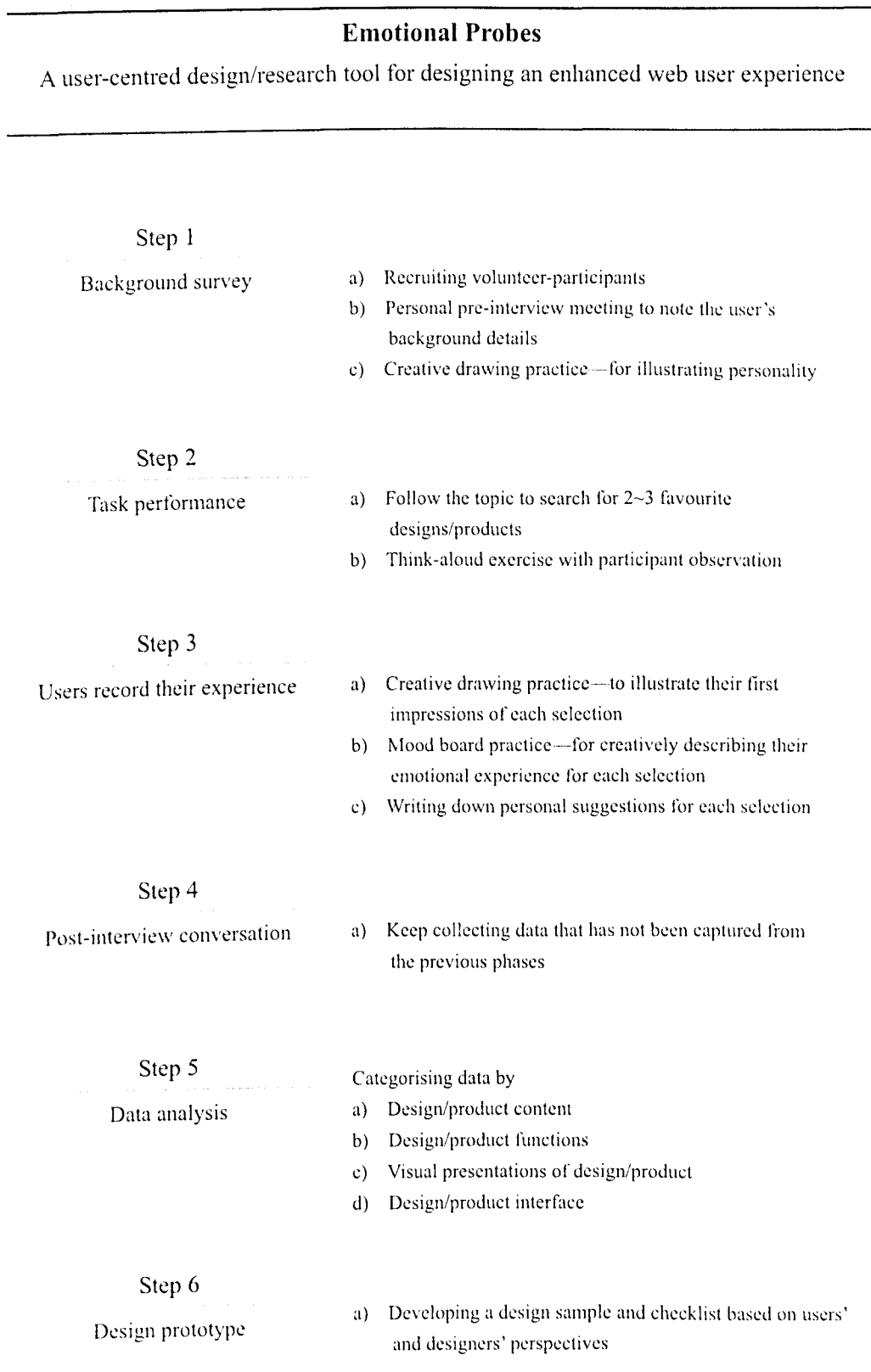


Figure 5-24: A revised model of the “Emotional Probes.”

### **1) Background survey**

In order to study user experience with the design/product, first it is essential to recruit enthusiastic volunteer-participants and then conduct pre-interviews with them in order to have a basic understanding with each participant. Additionally, the researcher/ designer can apply a series of drawing practices to test the participants' personality in order to understand their preferences for design/product interfaces.

### **2) Task performance**

At this stage, each participant needs to follow the topic to search for 2~3 favourite designs/products. The subsequent action is to perform the think-aloud exercise to ask each user-participant to speak out what they are thinking and feeling about their experience. Once each participant finds their favourite design/product, these examples can provide the researcher/ designer with concrete ideas about their likes.

### **3) Users record their experience**

After completing their task, each participant will be asked to make a drawing of their first impression of the design/product and then to make a mood board for each selection in order to reflect their feelings and thinking after using the Web. Lastly, they can write down their suggestions or feedback which can assist designers to improve the design/product as they wish.

### **4) Post-interview conversation**

After the participants complete the self-recording task, the researcher/designer has to conduct an individual interview with each participant in order to collect data that has not

been captured from the previous phases. Additionally, the participant can further explain their creations and interpret their meanings for the researcher/designer.

### **5) Data analysis**

The data collected can be categorised according to different design/research purposes, such as 1) design/product content; 2) design/product functions; 3) visual presentations of design/product; and 4) design/product interface. In this the researcher/designer can refine their findings to develop design concepts.

### **6) Design prototype**

By means of the data analysis, a potential design sample will emerge from the data categories to reflect the participants' likes and needs. The researcher/designer can apply these findings to develop a design checklist for generating a design idea and prototype in the early stages of the design process or for examining user reactions at any stage of usability testing.

In the beginning of this research project, the EPs were thought of as a research tool for academic purposes that might not be easily understood by designers. However, looking at the designers' evaluations of the application of EPs, the researcher discovered that revised EPs could also be developed as a design toolkit for designers needing to collect target users' information and preferences in order to inspire design ideas. The revised EPs could reduce time-consumption for efficient collection of user information. This alternative approach means that EPs can be used to develop a design-led tool for enhancing user experience.

## 5.5 Summary of data analysis

This study aims to bridge the communication gap between designers and users in order to improve user experience design. Through different phases of the study, the researcher has found that it is possible for users to address their thoughts and ideas intuitively and actively instead of using quantifiable surveys. In this research, a self-completion diary survey was developed from the concept of cultural probes with rapid ethnographic methods, while the process of applying it helped to develop a hybrid contextual strategy termed “*Emotional Probes*”, which are used specifically to explore users’ emotional experiences of Web-based interactions, instead of complex psychological tests.

The application of the EPs indicates that users’ interaction with Web interface design can be understood by the relationships between 1) personal needs and personality differences; 2) different visual impacts; 3) the connection between the first impression, perception, and attention; and 4) emotional responses to Web interfaces, as was mentioned in section 5.3.

Through the different methods employed in this study, the various contexts of the data potentially increased difficulties during the analysis process. The three potential difficulties come from 1) the complexity of analysing visual materials; 2) the arbitrariness of the meanings of the visual materials; and 3) the analyst’s subjective views and personal tastes. Even though there was uncertainty during the analysis process, the outcomes can still provide positive values for design and reflect the nature of design.

The specific concern of the concept of cultural probes is addressed by Gaver et al. (2004:56):

*“Probes embody an approach to design that go beyond the technique alone. The potential benefits and lessons from this approach are in danger of being lost if Probes are used in a purely ‘scientific’ fashion.”*

Instead of giving “accurate,” “comprehensive,” and “clear” guidelines for the design process, EPs, based on cultural probes, aim to provide designers with open insights for developing a deep understanding of users’ emotional experience.

As for the selection of websites or the images the participants created, these all involved the participants’ emotional preferences, which might also make it difficult for the analysts to get a complete interpretation. In qualitative research, field data normally results in various conclusions by different researchers (Bryman, 2004). Besides, visual images could be translated by researchers’ own interpretations, as the results usually have a certain level of uncertainty. However, the researcher emphasises that the concept of cultural probes was employed to explore more inspirational aspects of design experience from the field data, and that the idea was not to emphasise issues of proof or disproof. The researcher also discovered that the method of data collection and analysis had its own contributions to make to design inspiration and the creativity of designers. The value of “uncertainty” that arises in the process of data analysis can reflect another advantage of applying EPs: *inspiring design ideas*.

As for the process of employing EPs in a flexible and intimate way to elicit user-participants’ responses, one good idea is to develop a kind of *brainstorming*

*relationship* instead of a conversational user experience survey. From this significant finding, it should be clear that the value of applying the EPs approach goes beyond just a survey technique, as well as indicating the difference between applying an ethnographic and a quantitative strategy in user-centred research. In Chapter 6, there will be a more detailed discussion of the outcomes of this study.



## Chapter Six—Conclusions

### 6.1 Introduction

This chapter presents the conclusions of the whole research project and shows the contribution it makes to the field. The research methods were conducted to 1) Develop an understanding of how *graphic design* influences Web usability, 2) Obtain empirical perspectives from design practitioners and users in order to *embed emotional associations* within future Web interface design, 3) Evolve an appropriate research strategy to investigate users' experiences and their needs and feelings when using Web interfaces, and 4) Develop practical tools in order to integrate more emotionally-engaged web interactions into interface usability.

Integrating the outcomes of the previous chapters, this final chapter consists of three sections: 1) *Conclusions*: To discuss and review the research process and research techniques, 2) *Research contributions*: To present the contributions from the application of *Emotional Probes* to user experience research, and to provide methodological thinking for designers, 3) *Recommendations for further research*: To provide research directions drawn from this study for possible future research.

## 6.2 Conclusions

Through the different phases of data collection, data analysis, and discussion of existing publications, this research has developed a methodological framework for approaching *user emotional experience of Web design*. The whole process involves the designers' professional perspectives and the users' participation, in order to gain real experiential responses of user research. Through the literature review and the data analysis, we arrived at three issues that reflect the main research objectives: 1) Visualising user emotional experience; 2) Improving the Web usability evaluation; 3) Design inspiration—aesthetics, emotions, and probes. The following sections will further discuss these three issues.

### 6.2.1 Visualising user emotional experience

User experience not only concerns how users browse websites but also how they feel during the process. Web aesthetics is without physical substance (or texture) but conveys images through the screen to trigger users' physical and emotional pleasure. Emotional engagements between users and visual interfaces are not absent from Web communication, which has been considered to be less concerned with social interaction than *face-to-face* communication.

In this research, the Emotional Probes approach was applied to interpret users' emotional interactions with Web user interfaces through a set of hybrid contextual methods.

Significantly, the results indicate that emotional experience could be observed through creative practices, such as drawings, mood board practices, and diary records.

The data collected by means of the drawing and mood board exercises was used to describe what was not easy to identify during the participants' interviews and observations. On the other hand, the graphic data might increase the difficulty of analysing the respondent's thinking, for, to a certain extent, the analyst used her subjective judgement to explain the data. For this reason, combining them with participant interviews and observations could increase the accuracy of the analysis of non-verbal recordings and reduce the misunderstanding of those visual messages.

As a result of this research, it can be seen that the EPs strategy has the potential to translate, embody, and describe users' emotional responses, as well as the interactive relationship between their personality, personal preferences, first impressions, visual attention, and other behavioural reactions. The visual data were also able to provide a picture of what the participant was thinking and feeling. Therefore, the EPs method can be used to assist researchers in understanding users' emotional experience.

This study tries to keep a certain openness when interpreting those images, which encouraged the researcher to make more conversation with users in order to develop better understanding. *The visualisation of the users' emotional reactions shows which of their mental reflections to design, and this provides designers with a convenient way to read a user's thoughts with visual aids rather than through the use of complex psychological testing.* Additionally, using these creative materials, designers might be inspired with more design ideas associated with users' potential emotional responses. As a result, the EP

shows its efficacy in visualising the nature of user engagement and emotional experience, which can lead designers to understand users' needs in an easy to conduct, intuitively analytical, and less time-consuming process, hence the practicability of EPs in fast-paced design industries.

### 6.2.2 Improving the Web usability evaluation

Design and usability principles have been built into the current Web development process with the outcomes being called “rules”, for example *simplicity*, which is considered to be one of the primary principles by Web usability engineers. The downloading of graphics was a considerable factor that limited the freedom of Web interface design, with bandwidth limits being what they were during the early stages of Web development. With the advancement of Internet and Web technologies, the limits of visual expression have retreated. According to the participants' statements about their experience, Web information with attractive visual designs increases the viewer's interest. The visual aesthetics of the Web is likely to be one of the basic factors by which the quality of their experience could be judged. In this respect, the present study has provided much evidence about how users' emotions are affected by those visual representations of the Web interface.

As there is a lack of any emotional dimension in conventional usability surveys, the EPs approach suggests a more natural setting for the participant-observation process instead of an “artificial” usability laboratory. When it comes to improving user experience,

the aim is not only to make Web interfaces usable but also to improve Web aesthetics, which allows users to more fully enjoy the experience of conducting their activities. The EPs approach takes visual aesthetics and emotional interaction into account, which is why it has been used in this study to look into user's emotional responses to interface design, and even for Web usability, with more focus on the user's emotional feedback. Every aspect of EPs is actively designed to encourage users to speak about their experiences. If the EPs approach is applied by designers, it will help the relationship between users and designers become more communicative and interactive, so that designers can have a better understanding of what the users' responses and feelings are.

Even though Web usability is an essential consideration for designing user cognitive experiences, in this study Web aesthetics often figured in the participants' responses. The layout or graphic design was intrinsically related to the quality of the navigation. In the participants' experience, graphic design and navigation design converged together because they shared the same visual elements and functions for the visual representations of the Web interfaces. This makes it hard to separate them when discussing Web navigation and graphic design for users' browsing experiences, as both of them are influential in evaluating Web usability.

From the perspective of graphic designers, it is reasonable to suppose that usability analysts' expectations of Web graphic design are as simple as possible. On the other hand, it is also reasonable to suppose that the aesthetics of Web interfaces is important for creating satisfactory user experience. The main purpose of usability tests is to improve the quality of user experience. Gaining a balance between visual aesthetics and Web usability

is of paramount importance when considering how to improve user satisfaction. Preece et al. (2002:14) remind us that “*usability is generally regarded as ensuring that interactive products are easy to learn, effective to use, and enjoyable from the users’ perspectives.*” Therefore, enjoyment is also part of the objective when conducting a usability test.

EPs were used to gather multiple user perspectives on their emotional experiences (e.g. enjoyment) in addition to their cognitive experience. This suggests that one of the potential benefits of EPs is to give designers the ability to explore users’ emotional responses in order to improve Web usability. The application of EPs will help researchers gain more knowledge of the users’ emotional requirements and interactions with visual interfaces. The concerns of visual impact, emotional responses, and usability evaluations are all linked together in the application of the EPs, which provides an intensive understanding of how users’ emotional reactions may be influenced. In this way, the EPs approach suggests an alternative strategy for informing usability designers about how to investigate user emotional experience, which is likely to be a relatively low-cost and natural-setting research technique instead of expensive and controlled laboratory testing used to gather user preferences.

Considering the short product-realisation cycles in design, we have focused on seeking time-efficient and rapid methods for usability assessments. According to the results of this study, EPs could be conducted to gather information about user responses to design, which reflects the goal of usability testing and is more sensitive to users’ emotional reactions. Generally, the central issue of EPs and traditional usability evaluations are to emphasise user-centred design. Therefore, the EPs approach, which inherits the nature of

rapid ethnography, can be conceived of as a usability evaluation for processing user experience research at the fast pace of design development. In the future, the researcher will continuously examine the practicability of the EPs to approach user experience under various situations in order to contribute new knowledge to user research.

### 6.2.3 Design inspiration - aesthetics, emotions, and probes

The research concept was initially developed based on a cross-disciplinary approach to provide new methods for designers. This has involved three ways of establishing knowledge: 1) transferring knowledge from one field to another 2) bridging the communication gap between designers and users, and 3) providing a set of research tools for knowledge-gathering purposes.

The research concept combines the intimate approach of cultural probes and the efficiency of rapid ethnography; the application of an emotional and creative approach provides a more engaging method to explore design issues, as it also allows the uncertainty and arbitrariness of analysing those experiential responses to inspire design thinking. The reason for this is not to get a demographic or comprehensive picture of the general phenomena, but for particular events to inspire designers. The idea of EPs also engages with aesthetic stimuli to probe users' emotional experiences and take account of the variations in individual aesthetic tastes across personalities.

This study attempted to map different connections between the research questions, while EPs were utilised to gather users' emotional responses and their aesthetic reactions to

each visual attribute. The outcome of the EPs approach has opened up a new way of thinking for designers, in relation to three concerns: 1) to embody users' emotional experiences; 2) to decode users' emotional responses after aesthetic stimulation, and 3) to incorporate the users' viewpoints on design into design processes. Therefore, EPs could be extended to incite designers to discover significant perspectives about users' emotional needs, rather than to establish a single solution for designing user preferences. One of the implications of this research is that design research should be concerned with the users' emotional reactions and the designers' own creativity in order to create a better quality of design. As a probe for assessing users' emotions and aesthetic reactions, EPs have the same value when investigating Web usability. In this respect, the application of EPs has developed into a design-led tool for knowledge-gathering purposes in the field of user experience research. As a result of gathering various user experiences, the use of EPs will inspire designers to rethink users' needs in order to satisfy user expectations and create new design values.



## 6.3 Contribution to the field

In order to design an enhanced web user experience, this research project has developed the EPs approach to study user experience. This research has contributed to the field in four respects: 1) Proposing a framework for researching user emotional experience; 2) Providing new methodological thinking for designers; 3) “Emotional Probes” as a design/research toolkit for studying user experience; and 4) EPs being able to provide more emotionally-engaged communication for designers and users.

### 6.3.1 Proposing a framework for researching user emotional experience

This research aims to raise the concern that user perspectives need to be accounted for in the design process. The research has suggested applying alternative methods in order to contribute new knowledge concerning the relationship of visual impact and emotional experience. The outcome of the research has presented the process of examining different methods within user experience research.

The dominant paradigm for user experience research in Computer Mediated Communications (CMC) is usability, which has been driven by perspectives from the Human Computer Interaction (HCI) field. This tends towards a reductionist perspective, typified by usability engineering in which user experience is understood purely in

cognitive or behaviourist terms (Nielsen, 1993). However, the use of ethnographic methods provides a way of exploring user needs, experiential preferences, and other emotional interactions with design in order to seek better understanding of user experience.

Chapter 3 details a rapid ethnographic methodology for exploring and defining emotional dimensions through the concept of the cultural probes approach. The whole process tends to emphasise the importance of involving user experience in the early stages of design processes, instead of merely during the final usability tests.

The central premise of user-centred design is that *“the best-designed products and services result from understanding the needs of the people who will use them. User-centred designers engage actively with end-users to gather insights that drive design from the earliest stages of product and service development, right through the design process”*. (Black, 2006:1)

Regarding the design concern for the user-centred approach, the revised EPs can facilitate designers in seeking end-user perspectives as early as possible in the design process, which means that the EPs strategy could also be applied at other stages, even in conjunction with the final usability evaluations. EPs show efficiency in data collection and an intimate way of approaching user experience, which can assist designers to gather new insights in all design projects that are involved with the user-centred concept. It is particularly useful when a new product or service is introduced with emotional engagement, as it is becoming important to evaluate new products and services. In addition, a heightened awareness of the users' requirements can lead designers to question existing

design assumptions in order to satisfy user needs and create new design values for the design industry.

### 6.3.2 Providing new methodological thinking for designers

This research has centred on examining how methodologies that are based on cultural probes can be developed and applied as tools in user research. It adapts the concept of cultural probes with rapid ethnographic methods to develop a hybrid contextual strategy termed “Emotional Probes” (EPs), used to explore users’ emotional experiences with Web-based interactions. Using the concept of EPs, the researcher applied creative practices which can engage with users’ emotive messages about feelings, thoughts, interactive relationships, and personal aesthetics. The results of the study showed the likelihood of increasing various user emotional engagements with CMC, in order to allow human-computer interaction to progress further with different situations and senses.

EPs have been developed to reflect end-users’ browsing experiences when interacting with Web interfaces. This method records fragments of users’ thoughts and feelings that might be related to their personalities, preferences, behaviour, and habits by using a diary and interview skills. The data collected by the EPs was processed to explore the emotional dimension of user experience in ethnographic structure. The process generated a workable structure to discuss the individual’s experience instead of a quantitative exploration of the average picture of users’ needs. Throughout the exploration, each method—mood board, creative drawings, diary survey, and think-aloud techniques—was based on the respect of user experience and allowing each respondent to

speak about their thoughts, feelings, and preferences. Applying EPs was likely to be a more straightforward way of building a communication channel between researchers and users. Additionally, emotional experience is complex and uncertain, and the ethnographic nature of EPs renders them capable of revealing the on-going phenomena of Web interactions through interactive interviews and participant observations.

The flexibility and openness of the EPs allowed each respondent to select their favourite websites and present their individual feelings and thinking in verbal or image form, such as drawings and mood board practices. The revised EPs approach keeps this same concern of providing designers with an alternative method for exploring potential design problems and investigating users' needs from multiple angles. Even though the EPs have been simplified owing to the need for efficiency and the limited budget, the central concern is always rooted in emphasising the importance of understanding user experience in order to complete user-centred design.

### **6.3.3 “Emotional Probes” as a design/research toolkit for studying user experience**

The ultimate goal of this study is to respect user experience in design processes. The initial intention of this research was to develop a relatively low-cost and effective research technique to gather information about user preferences. In order to reflect users' ongoing experience, the methods employed in the data collection were developed in as natural a

setting as possible, instead of the heavily controlled environment of laboratory-like conditions (refer to footnote on p.3).

In order to understand how to improve the quality of user experience in the Web environment, we were careful not to limit the questions to any particular types of websites or prototypes. Instead of the researcher making the selection of websites, this study allowed users to search for their favourite websites, on condition that they followed a key theme. The data collection process was not limited to setting up prototypes, as the website samples were open to user-participants selection. After the diary survey, we obtained a variety of website samples which indicated user preferences. The use of EPs should be viewed as a brainstorming process for gathering users' perspectives for designing user experience. As section 5.4.4 highlights, applying the revised EPs approach is expected to assist designers to gain an enhanced understanding of the target users' needs with respect to Web interfaces.

When this approach is used to explore Web user experience, designers can start by recruiting about ten participants to take part in their study. If each of them can offer five examples of their favourite websites using existing websites that have a similar theme to the one that is going to be developed, the designers can gain  $10 \times 5 = 50$  websites that reflect their users' preferences. Through these samples, the designers can gather at least 50 ideas, which might engage with the users' preferences, habits, interests, feelings, criticism, and user experiences.

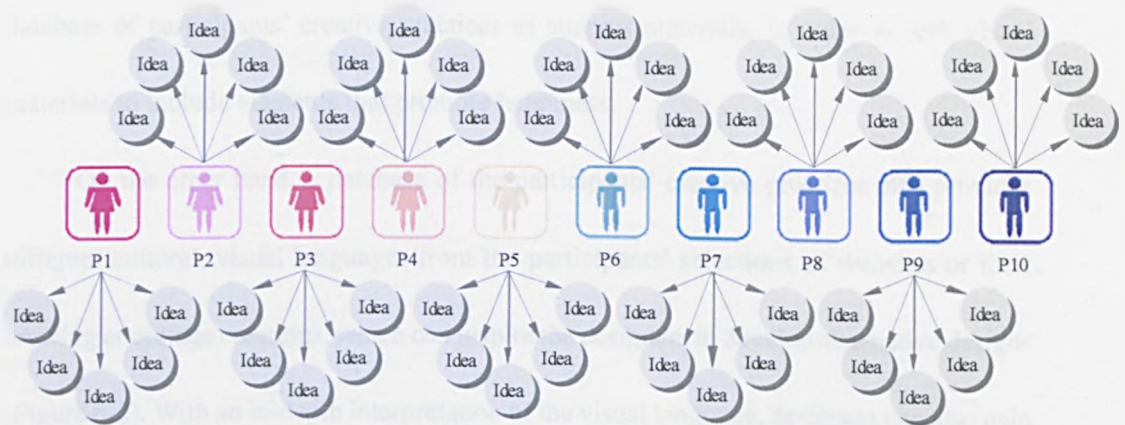


Figure 6-1: The EPs application is a brainstorming process for collecting design ideas.

As Figure 6-1 shows, the process resembles a brainstorming session. The designers can use this tool as needed, whether in a focus group discussion or through individual interviews with their participants. For the subsequent steps in this study, one can refer to Figure 5-24.

Significantly, the users' selected website samples can provide the designers with concrete examples about their preferences. Looking at the samples, the designers might discover other, competing websites. In addition, the results of the creative practices (e.g. the mood board section and the drawing practice) are likely to indicate the users' familiar visual languages, which are created by their associations and imagination. So the data collection process function is used as a brainstorming process to gather different ideas from users' suggestions. The information collected could help the designers to consider users' comprehension of visual metaphors. If the sampling could be extended on a larger scale then, potentially, a user-experience database could be developed. For example, if a website should promote a feeling of *happiness*, the designer can find some examples from the

database of participants' creative practices as support materials, in order to seek visual materials to include elements that promote happiness.

On the other hand, a database of the participants' creative practices also provides different cultural, visual languages from the participants' selections of websites or their drawing or collage creations, which can inspire the designers to develop alternative designs (Figure 6-2). With an in-depth interpretation of the visual language, designers can also gain a greater understanding of users' communication cultures. As such, design activity can be connected with user perspectives to incorporate their cultural differences. The researcher believes that these elements of potential could be further explored in future research in user experience studies.

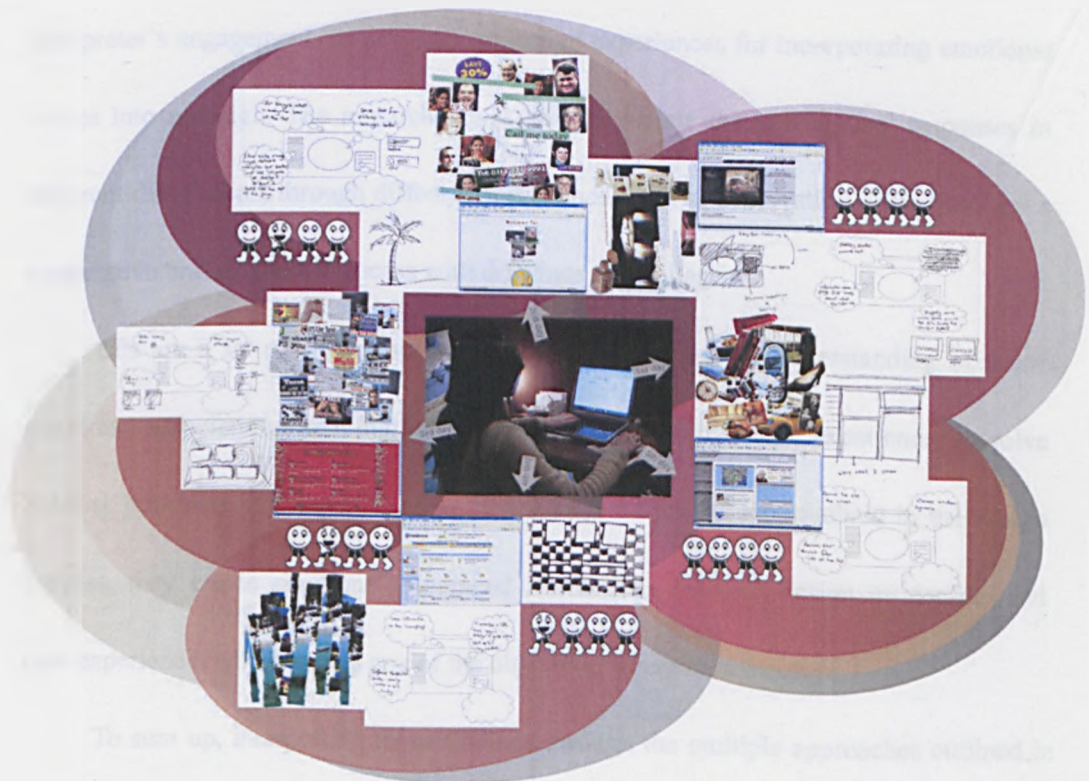


Figure 6-2: The EPs approach is like a data mechanism that can explicate different visual materials to present users' emotional responses (the above pictures are taken from one user-participant's diary for five different searching tasks).

### 6.3.4 EPs can provide more emotionally-engaged communication for designers and users

This research focuses on the complexity of the Web phenomenon involving users' emotional experiences and visual interactions. It is not easy to use one single way to deal with the complexity and ambiguity of the social phenomenon and gain an understanding of happenings in real life. As Yvonne rightly observes in Darlington and Scott (2002:132), "*life is always more messy than tick boxes.*" This is why we developed Emotional Probes for collecting qualitative data and conducting analysis, instead of using quantitative methods.

The implementation of the probes had many specific objectives, involving the interpreter's engagement, senses, and subjective experiences for incorporating emotional values into a design. The researcher was able to review the participants' responses in different dimensions, through different approaches, such as observation, interview, and a cooperative brainstorming process with drawings and collages.

EPs are a set of alternative methods to provide in-depth understanding of users' emotional associations, enabling designers to be inspired by users' experiences to solve existing problems in design. As users' thoughts and feelings are involved in the design process, they create emotionally-engaged interactions between design production and user experience, which is also one of the objectives of emotional design.

To sum up, interpreting these findings through the multiple approaches outlined in Chapter 5, this research process is meant neither to discuss a certain kind of website, nor to argue about specific Web design styles. The result seems to reflect the relationship



between Web aesthetics, user preferences and usability design under review. The effect of applying EPs allows the continuous development of a mutual communicative relationship between design and users in order to develop better understanding for enhancing user experience.

## 6.4 Recommendations for further research

The results of this research have suggested a framework for the data collection and analysis process, which is used to understand users' emotional experiences, drive design inspiration, and furthermore, to apply the results to generate new design ideas. The outcome of the study made explicit the evaluation criteria via different contextual methods. The results indicate the value of considering the characteristics of digital visual culture in the newly emerging field of *Emotional Design*.

The process of data collection has given the researcher an opportunity to compare various methods for exploring user experience. It was found that a single method hardly revealed the true meanings of an event. A combination of various methods was better for obtaining a fuller perspective on the event, especially when it came to the issue of emotional experience. The research process involved diverse methods to explore user individual experience and to collect designers' perspectives. The outcome was shaped to contribute an appropriate methodology to 1) better approach user preferences, 2) understand users' emotional needs regarding the design of user interfaces, and 3) investigate user browsing experiences. Through these studies, we discovered that complex user emotions could be revealed and be interpreted by alternative and creative methods instead of laboratory testing. The results balance the pure functionalism of usability and visual aesthetics in terms of user interface design.

This research experience can contribute to the next stage of study, which would have

a more completed concept and strategies for further approaching user emotional experience.

In future research, three aspects must be considered:

**1) Factoring in cultural or gender difference in researching user experience:**

Although this research discussed users' emotional responses to visual interfaces, some considerations emerged from the data to indicate other related issues about user differences, especially in terms of cultural background and gender. In order to enhance understanding of different user groups, emotional probes could be altered with specific circumstance to measure user reactions in order to develop knowledge of user preference.

**2) Developing alternative probes for evaluating other types of sensory experience:**

Apart from the visual sense that the researcher explored in this research project, there are other senses, such as sound and touch, both of which have been considered to increase sensory engagement and interaction between users and Web interfaces in designing new online services where the Web technologies can be appreciated by these senses have been developed to enrich user experience. This is because the participants in this study also mentioned that sensory stimuli such as background music affected their first impression of a website. Therefore, developing alternative probes to extend our understanding of other sensory aspects of user experience may improve Web technologies to bridge the divide between physical and virtual worlds.

### **3) Extending the application of Emotional Probes into other designs:**

Emotional Probes were found to be effective in evaluating user experience. The research also discovered that EPs offered the possibility of evaluating the usability of other design projects, such as for products, multimedia, and packaging, which could offer designers more design inspirations and a better understanding of user interactions, in order to enhance the quality and satisfaction of their design projects. As a long-term plan, this research intends to suggest that the EPs could be applied in design research to develop a database of user experience, which is a collection of users' emotional associations and visual languages by creative practices, such as drawings and collages. The establishment of the database would likely assist designers to further approach users' demands for visual aesthetics, usability, and their own cultural backgrounds.

In conclusion, this section has discussed some of the important and original contributions of the present research. This includes: 1) developing appropriate methods for approaching users' emotional experiences 2) providing methodological thinking for designers, and 3) cultivating design awareness for future applications.

To begin with, this research makes a communicative bridge between graphic designers' and usability analysts' perspectives in order to extend the limited understanding between the two. Secondly, this research offers designers a framework of research methods for approaching users' emotional experiences and also a possible solution to methodological problems—particularly the lack of concern regarding emotional evaluations. Therefore, this research develops a practical methodology for designers to explore intangible emotional values and visualise users' emotional responses.

Finally, this research offers insight into the theoretical and practical knowledge concerning the source of inspiration in future emotional design. In this way, this study recommends an increased awareness of emotional design development in the hope of enriching user experience and making the Web more pleasing and enjoyable to use.

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**DESIGNING AN ENHANCED WEB USER EXPERIENCE:  
THE USE OF “EMOTIONAL PROBES” AS A USER-CENTRED  
METHODOLOGY FOR DESIGNING EMOTIONALLY-ENGAGED WEB  
INTERACTION**

**APPENDICES**

**TSEN-YAO CHANG**

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# **Designing an enhanced Web user experience:**

The use of “emotional probes” as a user-centred methodology for designing emotionally-engaged Web interaction

## **APPENDICES**

**TSEN-YAO CHANG**

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## Appendix 1— Published papers

- Chang, T.Y., and Press, M. (2005), Designing emotional probes for usability evaluation, 2005 International Design Conference, 01-04 Nov., National Yunlin University of Science and Technology, Taiwan.
- Chang, T.Y., Press, M., and Polovina, S. (2004). Discovering enhanced cultural probes through a rapid ethnographic evaluation of emotional design, the Fourth international Conference on Design and Emotion, 12-14 July, Ankara, Turkey, 2004.
- Chang, T.Y., (2003). Beyond the Interface: the Role of Emotional Design in Computer Mediated Visual Communication, '2003 e-Century Design Creativity Conference, 08/Nov., Ming Chuang University, Taiwan.
- Chang, T.Y., Press, M., (2003). E-Motion; Exploring the emotional design of computer mediated design, 6<sup>th</sup> Asia Design Conference, 14-17 Oct., Tsukuba International Congress Centre, Japan.

# Designing emotional probes for usability evaluation

\* \*\*  
Tsen-Yao Chang and Mike Press

\* *Gray's School of Art, The Robert Gordon University, UK.*  
*prs.chang@rgu.ac.uk*

\*\* *Gray's School of Art, The Robert Gordon University, UK.*  
*m.press@rgu.ac.uk@rgu.ac.uk*

**Abstract:** On the Web, the graphic design of a webpage is critical for the immediate capturing of the users' attention and interest. Assessing the quality of Web User Experience is not only an issue of usability evaluation, but also an assessment of the user's emotional experience. Emotional aspects of webpage design are becoming more important when encouraging viewers to further explore a specific web site. This study reports on a hybrid contextual strategy – Emotional Probes (EPs), which is an application of a rapid ethnographic study that incorporates the use of Cultural Probes (CPs) to seek an effective way to understand the emotional dimensions of Web User Experience. The research indicates how emotional concerns can be embedded within usability evaluations.

With the exception of the content of information and service of the World Wide Web (WWW), computer graphics are responsible for catching the user's first impressions and cause them to explore the site further. However, until recently the case for usability had determined that web design should be kept as simple as possible, so as not to compromise downloading time.

As the recent development of the Broadband Internet has removed many of the visual presentation limitations that the web has experienced to date, a website needs an engaging appearance to not only provide a more user-friendly format but also to add an element of visual pleasure to their viewers. The evidence suggests that positive and appropriate aesthetic qualities can enhance the effectiveness of a website in usability terms, and furthermore, by providing a distinctive visual identity and quality, the site can stand out in an increasingly crowded competitive market.

Furthermore, when discussing the web users' experience, it is necessary to take the user's emotional experience into account. This necessity is essential for user experience research but it is often ignored by usability evaluation specialists because of the perceived highly specialised nature of analysing emotion, which is considered to be within the domains of cognitive psychology, physiology and related human sciences.

Therefore, this research has explored the approach of the EPs to provide insights that reflect on the background culture/experience of participants, rather than producing comprehensive information about them. The results of this study: (i) present new perspectives on web interface design that can inform other areas of research; (ii) address the methodological problems of usability evaluations that are driven by a functionally oriented approach; and (iii) propose an alternative method that is best conceived as creating a conversation between user and designer.

**Key words:** *Emotional Probes, usability evaluation, web interface, rapid ethnography and cultural probes.*

## 1. Introduction

### 1.1 Web Interface

Rapid advances in computer graphics have increased the importance of the aesthetic demands of user interfaces, which provides users with emotional experiences [1]. When the WWW was being used for multimedia - such as video, audio, and animation - to diversify the webpage, the web user experience moved forward into a more intensive aesthetic experience. Applied visual aesthetics are related to effective communication in web design [2]. The content of aesthetics is connected to the satisfaction of user emotional experience, and also empowers the quality of efficient usability [3].

The influences of visual aesthetics and emotions play a vital role in efficient usability, according to some in the HCI community. In much the same vein, Donald Norman [4] addressed his new interest in aesthetics and emotion through his newest book “Emotional design”. Beauty, pleasure, and fun appear to these authors to be truly important when designing the quality of “Usability”. Therefore, being affective and effective usability is the way to fulfill the needs of the users.

In relation to the web interfaces, the visual part of the interface is not only offering usability and beauty to the user. In order to improve the quality of usability, investigative techniques are becoming increasingly important for observing user experiences of web interfaces. The interests of this study are threefold: 1) from the perspective of cultural exploration, the nature of the results is to create new techniques and software to reveal users’ real experiences of the Web; 2) from the perspective of technology, the results present a deep understanding of the users’ needs and desires; and 3) from the perspective of design, the results offer the inspiration to stimulate designers to rethink their use of the new technologies for improving the quality of user experience. In practice, this grounded approach has resulted in a series of practical evaluations that directly involve the user’s participation through interactions with certain websites.

### 1.2 Methodological problem

According to this research, ethnography is one of the adaptive research techniques currently used to assist designs for user experience. Ethnographic studies of user experience have focused on trying to understand users’ internal reactions, in terms of HCI, such as the usability evaluation of a design product or service [5, 6]. Due to increasingly short product realisation cycles in design processes, interest is developing in seeking more time efficient methods, including rapid prototyping and various usability assessment techniques [6]. One approach to meeting this increasing time pressure has been called “quick and dirty” ethnography [7], David Millen [6] conducted it into in the field of HCI research and introduced it as a rapid ethnography because it was necessary to prioritise the initial returns of respondents above those in-depth interviews and more extensive observations over a long period of time.

In particular, the prototype for usability evaluations has been shaped into the time-saving process of design. Through the advantage of the alternative content of a rapid ethnography, this research presents the methodological process of improving the quality of the user interface design, especially in relation to the concerns of users' emotional engagement.

### **1.3 Design inspiration**

In 1999, Gaver, Dunne, and Pacenti [8] published an article in *Interactions Journal*, introducing "Cultural Probes" (CPs), a design-led approach for understanding users' real experiences with their tasks. The characteristic of the CPs' technique is not an analytic device but is a reflective experience of the participant's cultural background [9]. The CPs method was designed to reveal the users' real experience, including individual preferences, emotions, behaviour and so on. The adaptable techniques of the CPs method in data collection have an analogous character to ethnographic methods, such as in-deep interviews, diary surveys, and participant observation. However, the CPs method is a provocative resource that encourages the respondents to talk to the researchers about themselves. Just like pleasure, aesthetics can be an integral part of functionality, a criterion for design as relevant as efficiency or usability [10]. It is also a central issue when talking about how to improve the quality of usability. Therefore, this research adapted the concept of CPs to modify ethnographic methods with appealing or motivating materials, to stimulate participants' willing to engage actively in return processes. Moreover, the efficiency of rapid ethnography is also combined into this process.

Therefore, this research adapted the concept of CPs into rapid ethnographic methods with appealing or motivating materials that are intended to stimulate the participants' involvement in a playful way. The technique of the probes used a hybrid contextual strategy as a derivative of an adjunct to the rapid ethnographic study. The authors intend to contribute an innovative evaluation of those probe results and explore the ways in which the hybrid of the probes present alternative named strategies: Emotional Probes (EPs) for exploring user emotional experiences.

## **2. Background**

### **2.1 Rapid ethnography**

This study involved obtaining the data for user's emotional interactions with the visual aesthetics of web interfaces, with a purpose of giving designers inspiration, rather than gathering quantitative data. Ethnographic research is good at developing "*an understanding of the culture of the group and people's behaviour within the context of that culture*" [11]. According to Muller et al. [12], ethnographic methods are one of the earliest techniques that are able to be applied into the software development cycle. The use of ethnography has provided analytic methods by using diaries, notebook or cameras, to record and observe phenomena in user experience research, in order to receive different reflections through design interaction. Furthermore, ethnographic studies



have become increasingly popular in the HCI field (i.e. [6, 12, and 13]).

According to the purposes of user research in design, although a quantitative approach may be appropriate at the final stages of testing usability, the designers need more immersion in observational skills, so that they can observe the users' experience in parts of their day to day lives, which is based in ethnographic methods, to conduct design thinking towards User-Centred Design [13]. The skills are usually located by asking open-ended questions about the practical experiences of the users' tasks and the social and emotional significance they hold.

The ethnographic data is to help researchers obtain real insights into user experience, rather than producing an "average" picture, which is increasingly hard to come by through quantitative and statistical analyses. As Nielsen [14] said, qualitative study results are more credible and trustworthy in design research with the "*User interface and usability being highly contextual and their effectiveness depending on a broad understanding of human behaviour*" [14].

However, traditional ethnography "*is immersed in a social setting for a long time-frequently years* [11] ". Contrary to the fast-pace of changes in WI 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 to help ethnographic researchers, it has been called "quick and dirty" ethnography.

"Rapid Ethnography" is born with a convenient collection of field methods "*intended to provide a reasonable understanding of users and their activities given significant time pressures and limited time in the field*" [6]. The rapid ethnographic strategy may include a number of different methods, such as participant observations, in-depth interviews, diary surveys and document analyses. According to the needs of this research, a cross-contextual research tool has been adapted in order to explore users' emotional experiences, based on efficiency, credibility and the validity of evaluation.

## 2.2 Cultural probes

This is an information gathering package - the Cultural Probes approach is contained in the study of Gaver, Dune, and Pacenti [8]. Initially, Cultural Probes were used as an inspiration for design, rather than for information collection but in 2002 the probes were currently being used for information collection, such as "Technology Probes" [15] and "Domestic Probes" [16]. The probes could be postcards, a camera, questionnaires, a diary book, maps to be handed out to the participants/users - as an open way of getting involved in the participants' ongoing activities and ideas, as well as gain a greater understanding, instead of using direct observations and interviews.

The concept of Cultural Probes is to collect those inspirational responses from people's real experiences. They do not elicit comprehensive information about them but fragmentary clues about people's lives and thoughts reflected from their surroundings [10]. The researchers leave them behind with the participants and wait for the returns of fragmentary data that show the participants' lives and thoughts over time [10]. Through these probe returns, the design researchers are able to

collage the participant's reactions as a montage record.

Initially, the aim of CPs is to provide inspirational insights that reflect the local culture of the participants, rather than producing an analytical tool [17]. The CPs offer a technique for the design researchers to have a deep sense of familiarity, intimacy, and engagement with the people who might use their designs, with the influences nourishing the design process at each phase [10]. Finally, the outcome of CPs is a way of provoking new perspectives on designs for everyday life. They need to be more sensitive than normal, to be able to look at the happenings of everyday life because they need more inspiration to create designs with more novelty value. Through the CPs, they have an opportunity to observe, watch, read, or listen to the others' real life stories, so that they can generalise a design concept with new ideas and reflect their understanding of their designs. Furthermore, the cultural probes which were productive provoked inspirational responses from the participants' fragmentary clues about their lives and thoughts by juxtaposing the images in their collages.

### 3. Adapting a hybrid contextual strategy as emotional probes

#### 3.1 Emotional Probes- a diary booklet

Through the convergence of rapid ethnography and the CPs, this research developed an experimental method-Emotional Probes (EPs) for researching user emotional interaction, via the graphic user interface and in terms of website Design. It offers techniques that allow for the collection of information about users' emotional experiences and inspires a new perspective for user interface designers working within the graphic design field. We assembled a collection of Emotional Probes into a "Probe Booklet". The format of the booklet was a diary, which allowed the participants to individually describe their emotions and opinions throughout the period of study (Figure1).

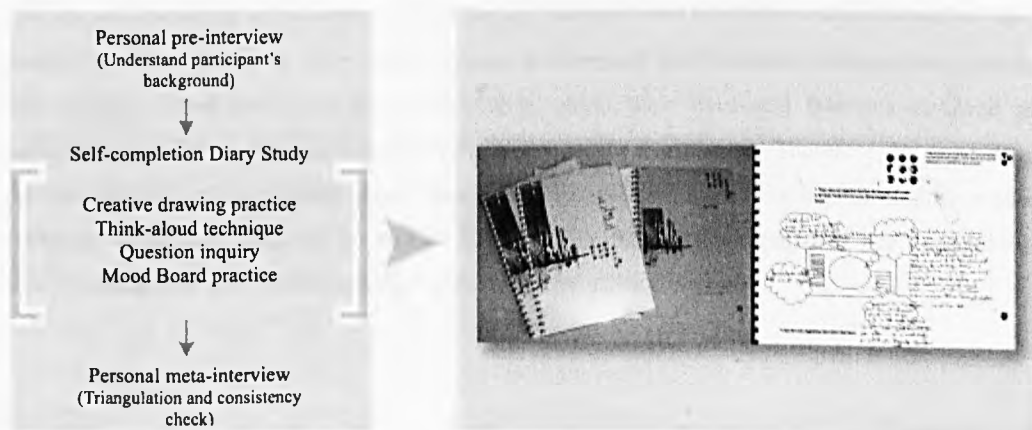


Figure1: The picture on the left shows the overall techniques applied in the EPs diary booklet; the right picture shows the view of the diary booklet and some of the entries from one participant's diary.

### 3.2 In the 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* [18]”. In addition, this tool has been used for usability evaluations of the internet and web design. The content of the diaries was structured by 10 open-end questions, such as, What is your favourite website today? Why do you like it? How do you feel about it? How would you improve it? and so on. The methods of answering were according to the purpose of each question, such as through creative drawings, mood-board practices, written words and some single-choice questions. Mainly, it included four techniques that assisted the diary study as probe design activities. The techniques applied are defined in the following:

#### 3.2.1 Think-aloud interviewing technique

The “Think-aloud technique” is a convenient and cheap way of gaining qualitative feedback during the participants' entries. Through this technique, the respondents could freely talk about their thoughts and feelings about the visual interface. Through 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 criticisms of web interfaces. The video and audio record was conducted when the participants were browsing different websites to select their favourite website.

#### 3.2.2 Mood board Practice

A “Mood board” was used as a collage exercise that used the static representation of images, text and fonts, colour scheme and other graphic elements to structure an overall “look and feel” for design.

We suggested that each participant constructed their mood board after they had finished their “today- web-browsing”. The context was made up from their own selection, such as from their own magazines, newspapers, or other image sources to represent their feelings. Through the sources they selected, there are some fragmentary clues about their lives and thoughts involved in juxtaposing a collage of images as their reflection of their days search. Therefore, by translating this exercise into an emotional probe, it allows participants to complete a collage through their own emotional responses, with the content of the collage reflecting their personal life experiences, which include their past memory, preferences, and personality (Figure 2).



Figure 2: Three different participants completed Mood Boards taken from the week long experiment.

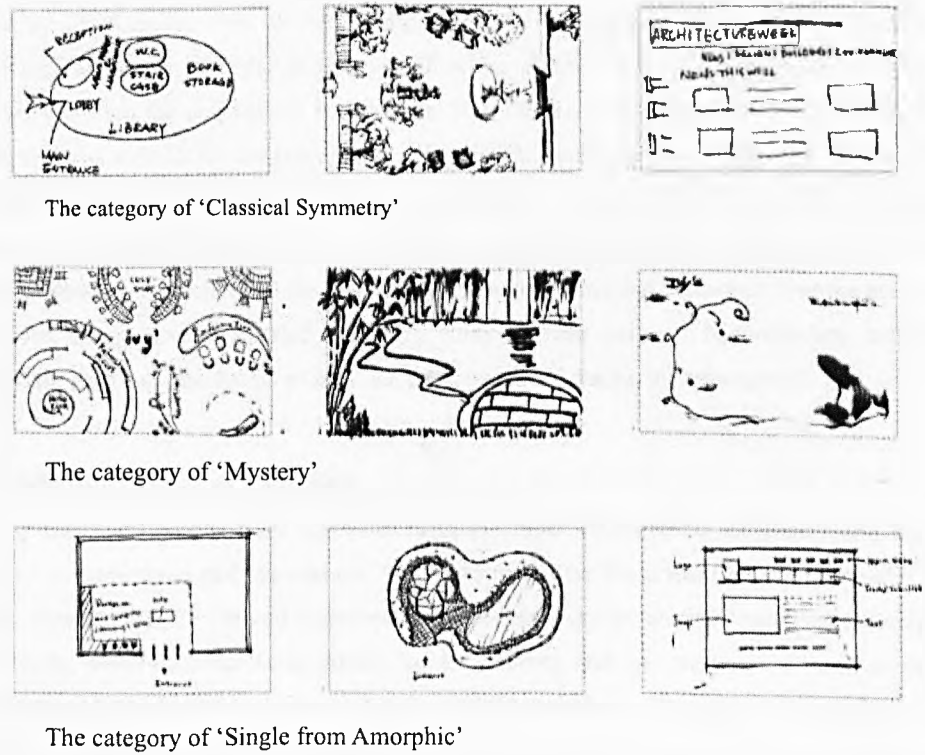


Figure 3: A series of Creative drawings of the garden, the library, and the personal home page from three user-participants (The categories referred to Coatman [19]).

### **3.2.3 Creative drawing**

Basically, with different personal backgrounds, people always respond in distinct ways to their web interface preferences. For distinct responses, drawing is a visible way to show personality and cognitive psychology. According to Michael Goatman's classification [19], sketched landscape layouts may release the relationship between the graphic exercise, the recognised personality, and preferred forms of interface. Referring to his study, there was a link between personality types and interface methods, indicating that a generic relationship may be transferable to situations where interface methods can be applied and are involved in revealing the human personality. Therefore, with these results, we have tried to organise a revised exercise for the participants, so that they can draw their thoughts with regard to their imagination of a garden layout, a library landscape layout, and a personal homepage. Due to the different impressions of a garden (more emotive content), a library (more logical content), a personal home page (more personal content), participants can draw them from their life experiences and memory. Therefore, the drawings would show a connection between their personality and their visual responses to graphic layouts. Through their sketches and a classification of personality (Figure 3), we have an opportunity to view these drawings that imply their personality.

### **3.2.4 Personal Interview (before and after the experiments)**

Before starting the diary survey, it was necessary to conduct an interview with the participants, so that we could explain how we were going to proceed with the experiments. It would serve as an instruction to ensure that the participants understood how to work through the experiments. Afterwards, when the participants had finished their diaries, there would be a final interview that would serve as a check for the researchers to inspect the completeness of the recorded entries. The final interview would be associated with the collection of more sensitive data that has not been captured by the diary. Besides, the final interviews were offered to encourage the participants to clarify, elaborate, and reflect on the materials they had recorded and composed over the period [20]. Therefore, the interview assisted the diary study to help gain an understanding behind the respondent's various statements of what the participants did during the experiment.

## **4. Developing probes as a method**

The emotional probes were combined with the rapid ethnographic efficiency and the CPs' intimacy to understand real experiences. This is to reflect the Participants' real experiences in the design process. The EPs record fragmentary life experiences to uncover their inside personality, preferences, behaviour, and habits during the diary survey and the interviews. Therefore, the EPs developed an intension of the macro-views behind the technique. Through the drawings, collages, video and written records, the techniques of the EPs are not focusing on the exploration of the average picture of the users needs, as they are more straightforward for exploring the existing and

ongoing phenomena of users' real experiences, by letting users actively explain their thoughts, feelings, and preferences explicitly, in order to collect intimate data for design conceptualisation (Figure4). The encouragement by the EPs is to offer inspiring thinking for their adaptation in the art and design research area.

The outcome of the implemented probes was rich with specific concerns, instead of pure 'specific views' and involved the engagement of the interpreters' sense, subjective experiences, and empathy for incorporating emotional value into the design.

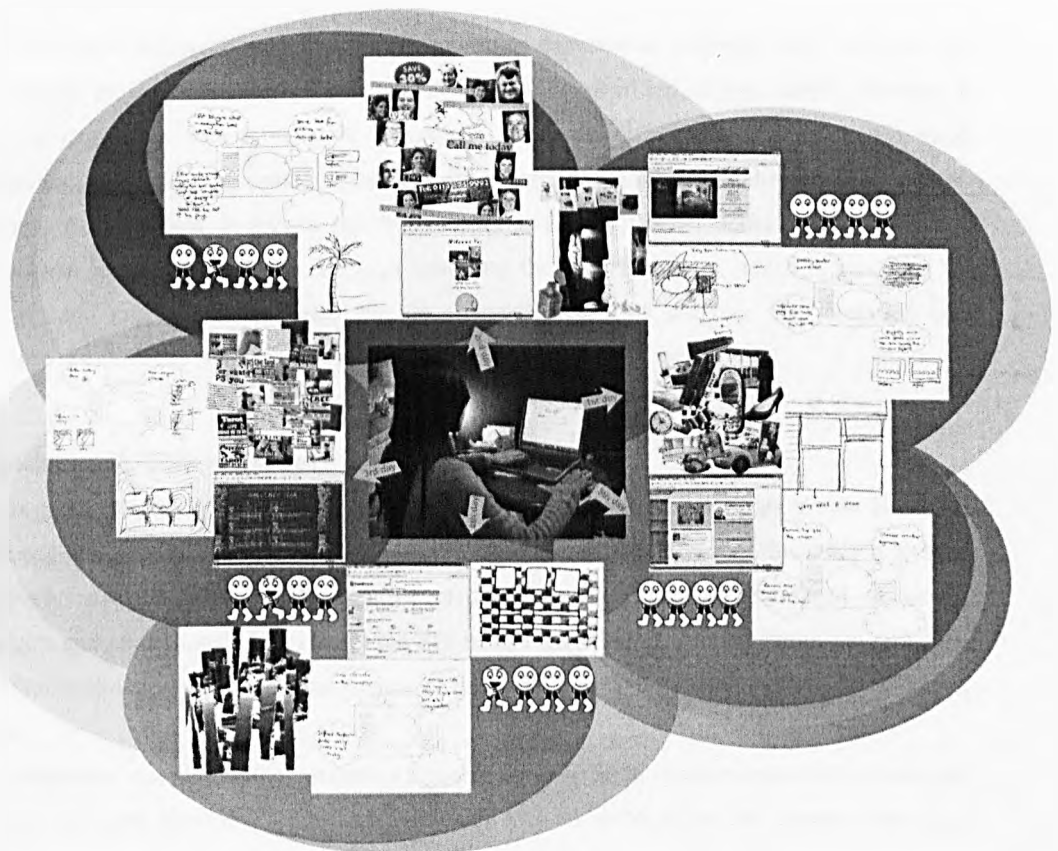


Figure 4: The approach of the EPs is like a data mechanism which can explicate different visual materials to present the users' emotional responses (the above pictures are taken from one user-participant's diary for the whole week).

## 5. Conclusion

### 5.1 Improving the usability evaluation

Design and usability principles have been operationalised into an ongoing examination process with its outcomes being called "rules", which are guidelines that need to be followed. However, due to the limits in the bandwidth and speed of the internet in its earlier stages, the use of visual

aesthetics have not been emphasised when generalising an interface design. Through technological advancements, visual aesthetics of the web interface not only make the interface pleasing but also satisfy the users' emotional experiences, which help the usability to be more efficient. The techniques of the EPs take visual aesthetics and emotional engagement into account; therefore, it would be used to assist the usability evaluation with more focus on the user's emotional feedback to help the relationship between users and designers more communicative.

## **5.2 Visualise user emotional experience**

The EPs were used to approach the issue: emotional experiences with web user interfaces, as the emotional aspect of the design has not yet been fully identified. It has mainly adopting a mixture of exploration and explanation research to assess the different phases of the empirical investigation. Therefore, the results of the EPs are an array of processes and techniques used to gather informational data, to form a theory or model and to help better understand the acquired knowledge in alternative methods. Through analysing the visualised data, which is produced by translating and embodying the users' emotional experiences into graphics, the designers and researchers are expected to have more inspiration to satisfy the users' emotions.

## **5.3 Aesthetics, Emotion, Probes**

The main purpose of the EPs is valuable when researchers try to explore a new issue and explain ongoing phenomenon for a design research topic, hence, the interest of this study is to offer a relatively interdisciplinary and alternative methodology that can be introduced to design researchers and practitioners. The idea of the EPs have engaged with aesthetic stimuli to probe the users emotional experiences and take account of the variations in individual aesthetic tastes across cultures.

Through the mapping of the qualitative research process, these experiments will be conducted to identify abstract emotional value and aesthetics, as well as to prove the causal relationship between each visual attribute. We believe that the EPs could be adapted into a variety of similar design research. The collected results that used EPs method showed that they are able to offer designers more intensive ideas about what the users' emotional experiences are and how to decode those emotional responses and incorporate them into the design process. The results of the EPs are able to provoke the designers' creativity to discover significant perspectives about the users' emotional needs, rather than just following general habits, as the creativity of the designers should be used to improve the quality of human life. We expect that the outcome of the EPs survey will contribute further to design processes.

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# Discovering enhanced cultural probes through a rapid ethnographic evaluation of emotional design

\* TSEN-YAO CHANG \*\* MIKE PRESS \*\*\* SIMON POLOVINA

*\*Art and Design Research Centre, Sheffield Hallam University, Sheffield S11 8UZ, UK.*

*\*\*Gray's School of Art, The Robert Gordon University, Aberdeen AB10 7QD, UK.*

*\*\*\* School of Computing and Management Sciences, Sheffield Hallam University, Sheffield, S1 1WB, UK.*

Themes: Tools and Methods for Emotion-Driven Design

## 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).

## 1. 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.

## 2. 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?*

### 3. 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.

#### 3.1 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 CPs, in terms of rapid ethnography, for researching user emotional interaction via the visual representation of the GUI of a web site.

### **3.2 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:

- ( I ) Think-aloud interviewing technique
- ( II ) Self-completion Diary study
- ( III ) Mood board
- ( IV ) Creative drawing
- ( V ) Personal Interview

#### ***( I ) 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.

#### ***( II ) 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.

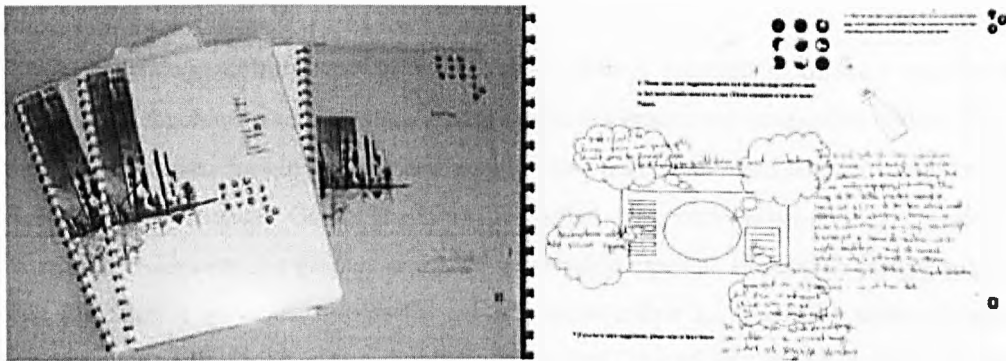


Figure 1: the diary of user experience- the subtitle is 'your emotion of visual interface'.

**(III) 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 experiment.

**(IV) 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.

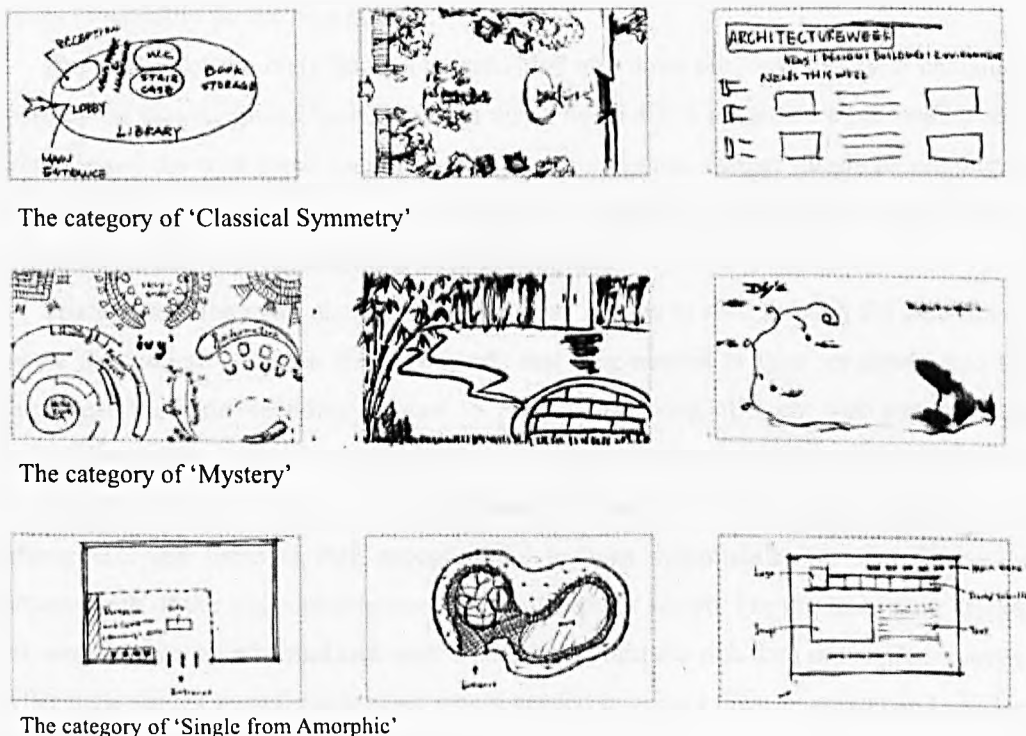


Figure 3: a series of Creative drawings of the garden, the library, and the personal home page. (The categories referred to Coatman, 2004).

#### ***(V) 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.

#### **4. 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 (IV) 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.

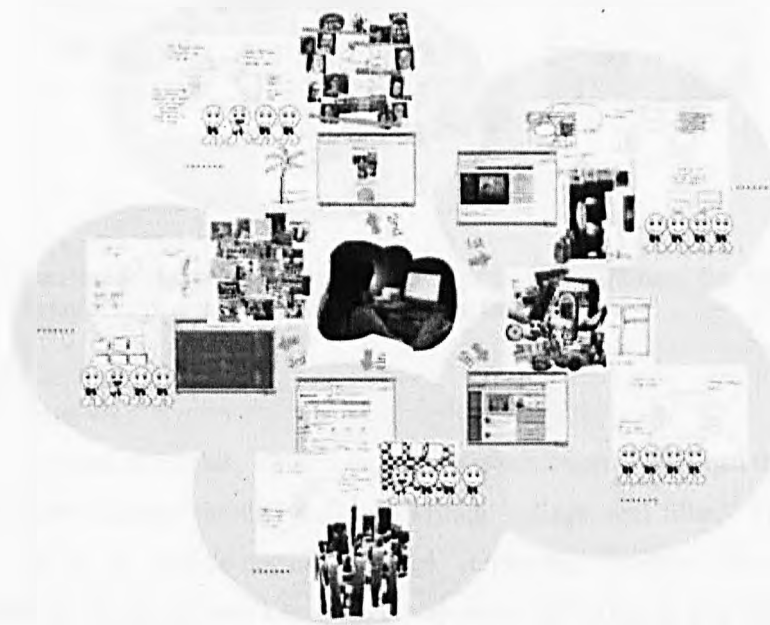


Figure 4: a rapid ethnographic strategy with the CP is like a data mechanism which can explicate different visual materials to present user emotional responses.

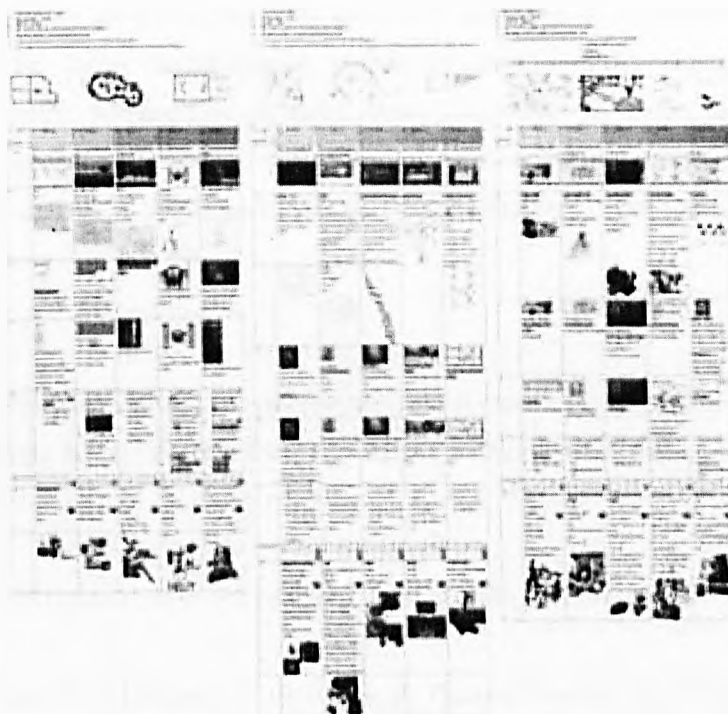


Figure 5: shows three examples taken from our participants, giving different data for their emotional responses, which were output from their diaries.

## 5. 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.

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# 跨越介面：剖析「情感涉入性設計」於 電腦中介視覺溝通之角色

## Beyond the Interface: the Role of Emotional Design in Computer Mediated Visual Communication

Art and Design Research Centre, Sheffield Hallam University, UK.

張岑瑤 / 博士研究生

Tsen-Yao CHANG / Ph.D. student

### 摘要

本研究主要討論「情感涉入性設計」(Emotional design)於電腦中介視覺溝通的應用，並嘗試建立一個概念模式，以說明「情感涉入性設計」與電腦中介視覺溝通之間的關係。其結果將有助於提供相關研究者與設計者一條進階路徑，以利剖析使用者情感認知的需求和設計者感性的創意。目前探討視覺化介面設計的相關研究仍著重於操作功能的可用性；因此於本文期望將可用性的問題結合常被忽略的「人的情感」因素，做進一步的討論。最終，本研究將釐清「情感涉入性設計」導入電腦中介視覺溝通介面的可能性，以期解決人性需求和科技效率的落差。

關鍵詞：情感涉入性設計、視覺溝通、電腦中介視覺溝通

### Abstract

This paper explores the application of emotional design to Computer Mediated Visual Communication (CMVC) and proposes a conceptual model to interpret the relationship between emotional design and CMVC. The result offers the researchers and designers in this field a shortcut in helping them refer to the convergence of the user's needs and the designer's creativity. As the dominant paradigm for visual interface design is driven by usability, this research will combine usability with the often neglected theme of human emotions. In joining both of these themes, this research will seek to ascertain whether the involvement of emotional design in the visual representation of Computer-Mediated Communication (CMC) could resolve the problems of maintaining technical efficiency when designing to meet human needs.

Keywords: Emotional design, Visual communication, Computer Mediated Visual Communication (CMVC).

## 1. 前言

電腦中介溝通(Computer-Mediated Communication, CMC)已成為現代人生活的一部份。透過指尖的移動，使用者可以輕易漫遊無邊界的虛擬空間，進行消費、蒐尋資料、娛樂、人際溝通等仿實體世界的生活。然而，隨著科技的進步，寬頻的普及，使用者可以透過螢幕所獲得訊息，不再只是文字訊息，而是多元化媒體整合的輔助溝通已日益普及。

從視覺、聽覺，甚至是嗅覺的電子媒介溝通都已陸續被開發，但視、聽覺的整合仍是最普及的媒體，尤其是視覺表現的強調，更是介面溝通的設計重點。從簡單的電子郵件溝通到虛擬線上遊戲，影像的多重變化與即時表現的便利性，使得使用者樂於利用電腦媒介為人際溝通的方式之一。如學者 Thorlacius (2002)所發表的視覺美學化的溝通模式為商業網站提出建議，除了列出視覺的表現功能(Expressive function)、美學功能(Aesthetic function)外，對於視覺所引發的情感功能(Emotive function)、互動功能(Interactive function)、意欲(Conative function)等，也提出見解，以提供相關研究者非純效用性導向的建議。其中對視覺的情感溝通功能最為有爭議，如 Nielsen(2002)也根據 Thorlacius 所發表的美學化的視覺溝通模式，陸續提出相關的論辯，進行討論。

為何視覺的情感溝通功能開始漸受重視？不僅是在電腦中介溝通的領域裡，其他如產品設計、圖像設計、建築設計、虛擬實境設計等等，也有相關的實例。2004年於土耳其將舉行的第四屆國際設計研討會，也將以設計與情感(Design and Emotion)列為討論的重點。而麻省理工學院(MIT)媒體實驗室的感性電腦操作研究小組(Affective Computing Research Group)，於1995年開始研究感性溝通的議題，深入研究人的情感與電腦的溝通互動。Picard 和 Klein (2001)於 MIT 的媒體實驗科學報告中指出，情感涉入性對於有效率的電腦中介溝通有其重要性。然而，目前的相關資料仍多偏重人機互動的關係(Human-Computer Interaction, HCI)與心理認知觀念的建立，對於實際的設計應用探討與視覺溝通內涵，仍需加強。因此，在情感涉入於設計的啟蒙期，本研究嘗試導入情感涉入性設計(Emotional design)的概念，其目的是期望能改善使用者於電腦中介溝通的使用環境，並且瞭解情感的涉入如何幫助使用者溝通更便捷，提供給設計者一多重面向的設計思考，從而建立情感涉入性設計於電腦中介視覺溝通 (Computer-Mediated Visual Communication, CMVC)的具體關係。

## 2. 情感涉入對設計的重要性

情感是人天生具有的天賦。因為人的情感反應，如高興、難過、憤怒等，使人會笑、會哭、會生氣，對方就可以感覺到我們情緒反應。除了聲音的頻率、節奏、音量，微妙的肢體語言外，最直接的就是臉部的表情。Donath(2001:1)於其研究中，指出：「於真實的社交互動中，臉是基本的：我們可以透過閱讀人的臉部表情，而瞭解對方；其中臉也是人的注意焦點。」<sup>1</sup>而在面對電腦溝通媒體的過程，視覺介面就如同人的臉，與使用者溝通；如視窗、操作介面、網頁、網站等，視覺的「臉」隨處可見。從設計者所開發的視覺介面與使用者面對面的過程，這些視覺的「臉」，也靜靜向觀者陳述，設計者欲溝通的動機與設計創意表現。

在 Jacobson 的溝通模式中，提到溝通具有的六項因數：發訊者、受訊者、內容、訊息、接觸、符碼。其中發訊者需具有傳遞情感的功能，而受訊者需具有認知的功能，讓彼此之間的訊息傳遞順暢(Thorlacius, 2002)。而此時視覺的「臉」，就是發訊者和受訊者之間的媒介，包含了內容、訊息、接觸、符碼，並在雙方情感的互動中，完成情到意到的溝通目的。因此，當設計者欲利用作品，和消費者/使用者進行非面對面的溝通時，同樣的，「臉」即視覺的設計表現，代替了作者表現出欲傳遞的動機與情感，提供給目標對象視覺認知的指示；而其背後所暗示的意義，則發生在消費者/使用者也樂於接受溝通的情緒下，達成視覺傳達目的。由設計的意圖，瞭解這些視覺溝通介面，不僅是促銷設計者的動機，還是提供一種情趣、一種希望、一種感覺的滿足，給消費者/使用者。因此，當設計者應用視覺語言（如點、線、面、色彩、質感等）時，設計者需考慮如何運用適宜，正確的傳達訊息與情緒給消費者，完成有效率的溝通，同時思考如何減少錯誤的感情干擾訊息,如：預防視覺噪音的產生 (Baskinger, 2002)<sup>2</sup>。因此，即使設計者轉換設計平台於電腦媒體時，所提供的互動影像和服務，也須能適時反應使用者感官的知覺經驗。Campbell 和 Pisterman(1996)曾說：設計者於網路世界所面臨的挑戰，即是思考如何設計出適合使用者的情感需要。於此，本研究提出情感涉入性設計，其概念始於思考如何設計出具有情感涉入的感性經驗給予使用者，而非一味強調設計的功能性與技術性，而忽略人性的需求，即重視與使用者之間的情感溝通與分享。下一段，本研究將深入探討情感涉入性對

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<sup>1</sup> “The face is essential in real world social interactions: we read character and expression in the face, we recognize people by their face, the face indicates where one’s attention lies.”

<sup>2</sup> Baskinger said, “This discrepancy, which can have a detrimental effect on prouidence use, can be called ‘visual noise’(2002:2).

電腦中介視覺溝通的影響。

### 3. 情感涉入性對電腦中介視覺溝通的影響

#### 3.1 電腦中介視覺溝通的特性

電腦中介溝通已成為綜合科學的研究。從討論網際網路廣泛的應用到人機互動等，其所構成的研究議題，可從不同角度切入探究，如資訊工程、人因工程、人際溝通、視覺設計、哲學、社會心理學等，其議題之廣泛，顯示出，電腦中介溝通這門研究的複雜性。

在網路的便捷和科技持續進步下，寬頻的使用戶逐年提升，網路上流傳的訊息和介面表現，由過去的純文字，到現今影音多媒體的呈現，也成為設計者競相較藝的平台。而電腦中介溝通的功能，如 December(1997:1)所說，「電腦中介溝通是一種透過電腦輔助人際溝通的方式，並利用特別的文本，構成媒體，進行各種的目的<sup>3</sup>」。而 Bubaš (2001:2) 認為，「電腦中介溝通主要就是幫助使用者交換訊息，藉著電腦和電訊科技的傳送和控制技術，運用不同形式的材質、音訊和/或視訊來進行<sup>4</sup>」。因此，在這些說明下，電腦中介視覺溝通於此，所強調的是使用者藉由與電腦螢幕或是軟硬體介面所呈現的視覺表現部分，所進行的溝通過程。

而就目前所見於電腦螢幕或軟體介面所發展的視覺溝通語言，已被全球化和科技化所限制，透過大眾媒體的散布，逐漸建立起標準化的視覺語言(Kress and Leeuwen,1996)。如部分視覺溝通語法在電腦影像技術的相似性下（如廣泛應用的影像套裝軟體或網頁編輯軟體），設計者若不善用巧思，直接套用視覺效果或格式，就容易設計出與其他作品相似的畫面，減少視覺表現的區別性(Distinction)。這也是為何視覺設計者一旦投入這個產業，需考慮與程式設計師合作或自行開發應用程式，以利於創意的顯見。然而，一昧的科技競技，真的表示設計者與使用者具有良好的視覺溝通介面嗎？如 Drewe(2001:2)所提，「視覺化於電腦中介溝通所被瞭解的是，包含數位的計畫、架構、靜態或動態的影像、和人的喜好<sup>5</sup>」。而針對人的喜好，這應該就是設計者最大挑戰。因為構成人的喜好因素相當複雜，但是設計者可以嘗試透

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<sup>3</sup> "Computer-Mediated Communication is a process of human communication via computer, involving people, situated in particular contexts, engaging in processes to shape media for a variety of purposes."

<sup>4</sup> "Computer-Mediated Communication involves exchanges of information in textual, audio, and/or video formats that are transmitted and controlled by the use of computer and telecommunication technology".

<sup>5</sup> "Visualisation as it is understood here includes digital plans, maps and pictures, computer animation and the like."



過觀察目標使用群，對其作品的情緒反應，經過測試和修正，端倪出目標對象的喜好，進而完成有助於情感交流的視覺溝通介面。這也是本研究為何一再強調情感涉入性設計對數位媒體的主要原因。即觀察人的情緒反應，瞭解人的需要，設計出符合愉悅情境的使用環境，讓使用者自然的融入。因此，Picard 和 Klein (2001)提出，好的設計者對於情感涉入作品的影響，或多或少都有某種程度的重視。所以，情感涉入性設計該如何被使用者解讀？關於這點，本研究嘗試以「視覺感受性」(Visual sensitivity)、「視理解力」(Visual intelligence)、「視覺互動性」(Visual interactivity)和「視覺審美觀」(Visual aesthetics)，此四個視覺反應過程，瞭解情感涉入性設計對電腦中介視覺溝通的影響。

### 3.2 視覺反應於電腦中介視覺溝通的關連性

#### 3.2.1 「視覺感受性」(Visual sensitivity)的學習

視覺感受性是人對於外界資訊的接收器，但並非是人類天生既有的本能；它需要被學習，其學習的對象來自於生活中所接觸的各種事物。透過學習，視覺感受性使人能夠瞭解他們所看到的事物為何，也幫助人累積視覺的經驗與記憶，得到知識和技術，進而建立出人類的思考模式、文化和歷史。而現今視覺平台的轉換，人透過學習而來的視覺感受性，應用從實體世界學習的視覺經驗，轉換到電腦裡的虛擬空間；此時，人也透過再一次的學習，累積更多的視覺經驗，因應數位時代的快速轉變。

#### 3.2.2 「視理解力」(Visual intelligence) 的培養

視理解力佔了腦下皮層一大半的能力，且連結人的感性與理性理解力。因為視理解力，人可以建構出一個提供生活、移動、互動的視覺實體世界(Hoffman,1998:202)<sup>6</sup>。透過人類天生具有的感性理解力，幫助人產生情緒、喜好、感覺、需要、慾望等內在需求。而當這些內在需求，轉換到虛擬世界的溝通時，使用者也開始運用他/她的視理解力，建構在虛擬世界的視覺經驗。以使用者圖形介面設計(User Graphic Interface, UGI)為例，其強調的親和性設計(User-Friendly Design)的概念，可說是一種善用視理解力，涉入使用者感性經驗的設計概念。因此，當研究視覺溝通介面如何的影響使用者的情緒反應時，設計者需考慮使用者於實體世

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<sup>6</sup> “Virtual intelligence occupies almost half of your brain’s cortex. Normally it is intimately connected to your emotional intelligence and your rational intelligence. It constructs the elaborate visual realities in which you line and move and interact.”

界所建立的視覺理解力過程，設計出可以透過現有視覺的經驗反應，不需刻意學習，使用者即可知道如何操作媒體，不需花費時間理解複雜的程式與系統。於此，使用者不僅樂於使用，也可減少操作上的挫折感。所以，本研究認為視覺理解力對於視覺溝通有其不可忽略的影響力。

### 3.2.3 「視覺互動性」(Visual interactivity)的強調

當提到溝通時，互動性(Interactivity)的影響就存在溝通過程。參考 Laurel(2002)的內在與外在互動模式。他指出，人內在的互動性，是一個擴展使用者已知經驗的過程，即反映出讀者的想像世界。而人外在的互動性，則是發生在人正在感受的經驗程度。互動性最重要的價值，在於內在與外在資訊相互結合，所產生引人注目的互動性價值。舉例說明，就像在電腦操作面板上的圖像(Icon)，基本上這些圖像都有其象徵的意義，聯繫著使用者過去認知的經驗；假設當使用者欲上網時，透過滑鼠移動指標時，這些圖像牽動內建功能，讓使用者順利的進入網路世界，開始進行他的目的。在整個過程裡，互動性的意義不在於圖像的設計表現，也不單指使用者操作滑鼠的經驗，而是在於使用者瞭解設計者所創造的圖像，產生理解而有行動，這不只是人與媒介的單向參與，而是透過媒介，使人與人的雙向溝通更加和諧。特別在人無法面對面的電腦中介溝通過程裡，這個新的溝通科技更是依賴良好的互動性經驗完成溝通(Kiousis,2002)。因此，設計者更需要仔細思索如何設計出，讓使用者可理解或可回顧過去經驗而得知的視覺溝通圖像，刺激使用者提高參與的意願與愉快的心情來使用，如此一來才能完成良好的雙向溝通。

### 3.2.4 「視覺審美觀」(Visual aesthetics)的轉變

人生活於實體的空間，每個人有其特有的感官經驗和文化背景，透過與生活周遭的人事物所產生的互動，建立屬於個人視覺經驗的審美觀。當電腦與網路結合，成為日常生活不可或缺的溝通工具時，人們過去所習慣的閱讀方式，由平面印刷刊物轉為螢幕映像點所構成的內容時，大眾的喜好也開始影響傳統審美觀。

從工業革命到現代主義，「形式順於功能」始終是設計的主流概念。而在後現代主義的反動下，形式的美感要求不再居於弱勢。而在近年來，電腦影像技術的普遍化，設計者開始思考，如何讓沒有觸感的數位影像，讓人感動。因此 Baskinger(2001:6)指出，「形式是獨立於功能之外」<sup>7</sup>。因此，於數位時代是有其必要建立一套新美學觀，重新思考一個平衡點，兼顧使用者知覺(User's Perception)和設計者動機(Designer's

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<sup>7</sup> "Form is independent of function."

Intention)。在相關的文獻裡，對新時代的美學觀，很多研究者找尋新的註解，以符合時代性審美需求，如新數位美學(New digital aesthetic)、非傳統美學(Alternative aesthetic)、新時代美學(New-age aesthetic)等普遍概括性的名稱，描述數位媒體已進入我們的日常生活，漸漸滲入我們的個人心理、社會、文化觀，以及新美學觀的思考如何影響我們的行為。此外，尚有互動美學 (Dynamic interactive aesthetic)(Bennett,2002)、浸入式美學(Immersive aesthetic) (McGonigal,2003)等，在這些名詞的背後，除了上述意義外，更強調數位互動媒體對人際溝通文化的影響，並對其溝通平台有更深入的期望：如，有關虛擬線上遊戲的研究者，需要特別瞭解浸入式的審美感，思考如何讓使用者更易融入遊戲裡，即使用者情感真實的融入虛擬實境。因此，這些研究的背後，人對情感涉入性的需求，促使設計者不在只是提供功能，服務使用者，更需要具有感情的回應(Emotional response)。Baskinger(2001:6)對於此點，也提出肯定的看法<sup>8</sup>。所以，新的審美觀對於情感涉入的認同下，設計者有必要更瞭解情感涉入對設計的重要性，如同 Hartmut Esslinger 所說的設計規範是 - 形式順應情感 (Form follows emotion)(Cooper and Press, 1995)。

### 3.3 視覺化介面於電腦中介溝通的類型

視覺化介面的設計重點是配合程式設計、人因工程(Human Factors Engineering), 使用性工程(Usability Engineering), 並提升使用者對使用媒體環境的滿意度、互動性與情感上的涉入。此重點也是近年來人機互動研究者的研究重點之一。根據使用者經驗，電腦中介溝通的視覺互動介面，可分為三種類型：第一種類型常見於操作系統、應用軟體、網站索引等。如微軟系統的視覺化操作介面、Photoshop 軟體的視覺化操作介面、網頁的視覺索引和 Yahoo! Messenger 的使用介面等（如圖 1~3）；此類型的視覺化介面，提供給使用者視覺化的使用環境，並有助於操作電腦系統與應用軟體時的輔助示範。第二種類型，是經由設計者和程式設計者合作的創意，所設計的個人化、個性化視覺語言，使人與人的溝通透過電腦，更加生動有趣；如：MSN 聊天室的情緒符號(Emoticons)、Yahoo 造型精靈、線上遊戲的虛擬扮演角色等（如圖 4~6）。第三種類型，即硬體的操作面板，如電腦主機的面板設計、手機的操作介面等；這類型的視覺介面，主要是完成設計者和使用者之間的視覺和觸覺溝通。上述

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<sup>8</sup> "rather than drawing cues from functional requirements, these objects use form to elicit an emotional response."

的類型，皆是設計者透過視覺化的圖像溝通工具，傳達訊息給使用者，提供使用捷徑，縮短使用者學習操作系統、軟體的時間。而對使用者而言，視覺化的符號指引可代替厚重的操作手冊，更自在的航行於數位電子世界。

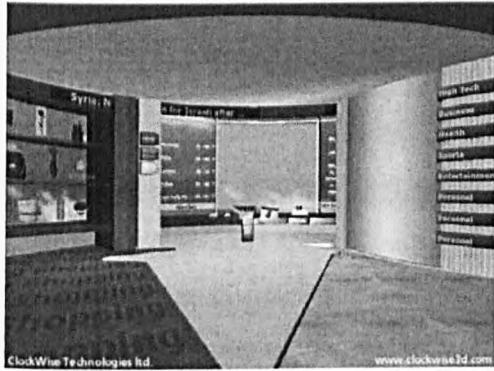


圖 1. Win3D 為立體化的 Windows OS 界面。  
(資料來源：  
<http://www.clockwise3d.com/win3dplatform/win3dplatform.html>)



圖 2. 為 Photoshop 軟體的視覺化操作介面。

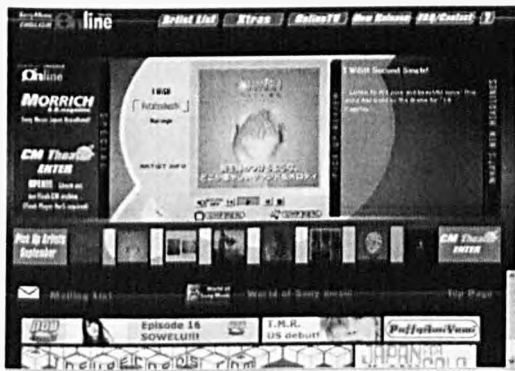


圖 3. Sony 音樂網站的網頁介面。  
(資料來源：<http://www.sonymusic.co.jp/eng/>)



圖 4. Yahoo 造型精靈。(資料來源：  
<http://tw.avatar.yahoo.com/>)

### 3.4 相關情感涉入性設計於電腦中介視覺溝通的實例

當有些學者在認為電腦中介溝通的缺乏「社會情境線索」(Social context cues) Baym (1995)、Chenault (1998)的同時，鄭君良(未註明日期)提及 Walther 的「社會資訊處理理論」(Social information processing theory)，卻主張人們可以透過電腦中介溝通的過程，在長時間的溝通下，產生近距離情感關係。因此，在觀察使用者於線上溝通的長時間表現，可以發現使用者，對於人潛在的情感需求就如現實生活中一樣，是積極存在。

由於圖像溝通比文字的溝通更容易存有情感元素，如在電子佈告欄(Bulletin Board System, BBS)、電子郵件、新聞討論群等，使用者之間嘗試利用標點符號，設計出一連續表現情緒符號(Emoticons)，如：-) (代表快樂)、:-o, (代表驚訝)、>:-c (代表生氣) 等，減少純文字敘述的單調，以增加溝通的趣味性，重要的是，可模擬彼此的真實情感。進而在 ICQ(I seek you)網路通訊軟體和微軟公司的 MSN 聊天室，情緒符號有了更清晰的輪廓，如圖 5。於 2002 年微軟平板電腦(Tablet PC)的問世，其使用系統提供更自由的平台，讓情緒符號經由手繪式線條(如圖 6)，表現出特有的幽默，反而是面對面的肢體語言，所沒有的，也成就了微軟平板電腦使用者專屬的情緒表現。更多的例子，如 Active Worlds<sup>9</sup>的擬人化聊天室和線上遊戲的虛擬角色扮演等，都是設計者所開發出的互動商品服務。經過 3D 空間的包裝與擬人化的角色替代，讓電腦中介視覺溝通的內容，越來越擬真，甚至允許使用者在虛擬的空間突破個人於真實空間的性情壓抑，塑造出另一個想像的自我，於網路世界發展出另一模式的人際關係。

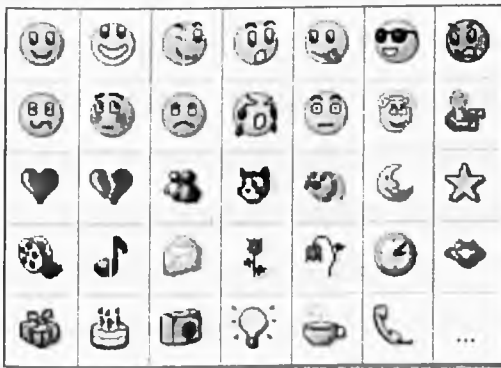


圖 5. MSN 的情緒符號 (Emoticons)。(資料來源：[www.msn.com](http://www.msn.com))

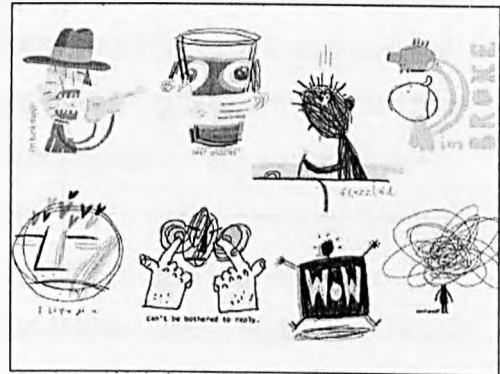


圖 6. 微軟平板電腦的手繪式情緒符號。(資料來源：<http://www.ananova.com/>)

因此，由這些情感涉入性設計於電腦中介視覺溝通的實例，我們更清楚的發現，人與人之間的溝通，即使是藉於電腦輔助的溝通之下，情感的希望與需求如同於真實的生活中的人際溝通一樣，始終是不可被忽略的部分。因此，對於解決使用者問題的設計者而言，應該多觀察現實生活中人與人之間的互動關係，思考生活經驗中種種反應，如此一來，設計者會得到更多好的創意。如始終強調人性化介面的蘋果電腦，於 Mac OS 系列，利用微笑的臉，讓使用者一打開電腦，就好像看到一張母親

<sup>9</sup> Activeworlds 的官方網站：<http://www.activeworlds.com/>

微笑的臉和自己打招呼(Alben,1997)。而諾基亞(Nokia)公司也強調，科技始終來自於人性，加強手機的美學符合個性化的需求，從大型圖形顯示幕、訊號與電池用量指示、操作外殼等，都可見其「以人為設計中心」的設計風格象徵。因此，透過這些情感涉入性設計的視覺表現，我們可知，設計創意不只是創意的顯見，更需要設計者用心體貼、關心使用者的心情，滿足使用者的希望和需求，設計出以人為中心的作品，成就感性的溝通，這是目前科技技術需要挑戰的。

#### 4. 情感涉入性設計應用於電腦中介視覺溝通

基於說明情感涉入性設計所相關的議題，本研究設計一個概念模式(如圖7)，涵蓋於文中所提到的相關議題，以提供給設計者與研究者一個可延展的應用方法，可進一步思索如何改善使用者於電腦中介視覺溝通的情感涉入性議題。

於此表，本研究架構的中心思考是探討情感涉入性設計於電腦中介視覺溝通所扮演的角色，其中於本研究特別著重視覺傳達的議題，進而提出四個面向的延展議題：使用者的知覺、設計者的動機、文化層面與科技層面的影響。由文化層面逐漸提出相關的焦點議題，並向兩側逐漸延展，向使用者知覺和設計者動機的議題靠攏。其之間關係的描述，皆是以社會文化、慣例所發展出的涉入性議題。而相對於科技層面，是以人為中心的設計概念，在強調技術的便利與效率時，關心使用者經驗的互動。設計者於產生設計動機時，需秉持細心觀察、探究、分析、歸納出使用者生活經驗的習慣性，以感性的關懷，設計出可閱讀的情感性視覺語言(Emotional visual language)(Chang and Press,2003)。此外，在視覺審美感與互動性的影響下，此種情感性視覺語言，可產生高涉入性的情感溝通；如此一來，使用者不需長時間的學習，可依賴後天學習而來的視覺感受能力與個人視覺的理解力，而提升學習效率；使操作軟體或硬體介面時，趨近於人面對面的溝通，並降低學習時的挫折感。

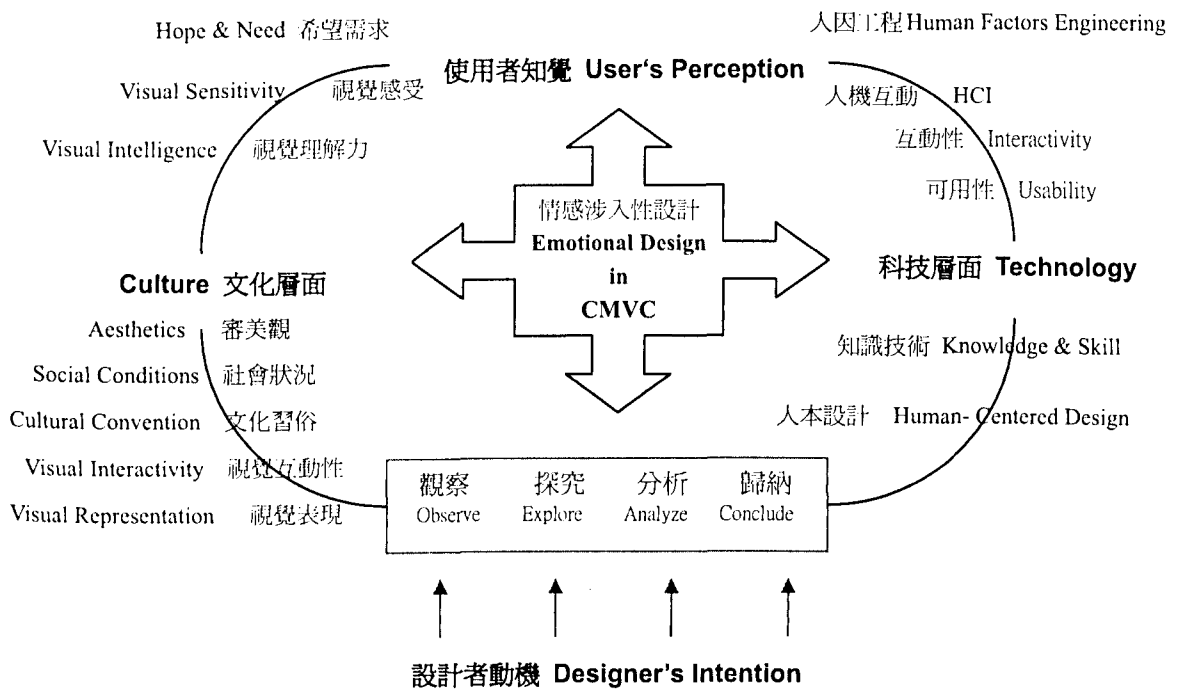


圖 7. 此概念模式敘述「情感涉入性設計」與電腦中介視覺溝通之間的關係，以及其相關的議題。

## 5. 結論

探討情感涉入性設計對電腦中介視覺溝通的影響時，其牽涉到三個重要的因素：人的情感、視覺溝通、電腦媒介。隨著多元化的媒體功能，電腦不在只是複雜的程式系統，它成為人日常生活溝通、娛樂、工作、交友等的一部份。因此，我們很難說，電腦只是個工具；然而若說它是生活的媒介之一，它又不該只是程式、功能、電子訊號。所以，透過視覺化轉換數據成為可閱讀的圖形介面，電腦有了情感的表情，人與科技之間的距離漸漸被這些視覺圖像拉近，人與媒體的視覺溝通為科技與文化找到一個相應的平衡點。所以，情感涉入性溝通媒體，就如溝通媒體注入感情，讓溝通媒體不只是純粹代表技術、效能工具，而是文化記錄的一部份。因此，當設計者瞭解情感涉入性設計與人性接軌的重要性時，設計者有其責任，設計出更體貼人性，發揮情感的視覺語言，提供更順暢人際溝通與人機互動。這也是情感涉入性設計的主旨- 模糊科技與文化的界線，呼應人性的需求。

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## **E-motion**

### **-Exploring the emotional design of Computer Mediated Visual Communication**

Tsen-Yao CHANG\*, Mike PRESS\*\*

\**Sheffield Hallam University, Art and Design Research Centre, Sheffield S11 8UZ, UK.  
coralinuk@ms74.url.com.tw*

\*\* *Sheffield Hallam University, Art and Design Research Centre, Sheffield S11 8UZ, UK  
m.p.press@shu.ac.uk*

**ABSTRACT:** This paper considers the emotive experience of computer-mediated visual communication (CMVC) and proposes a conceptual model for design research within this field. The dominant paradigm for user experience research in Computer Mediated Computer (CMC) is usability, which has been driven by perspectives from the Human Computer Interaction (HCI) field. While this has greatly furthered issues relating to functional usability, the ease of such mediated communication does not just rest upon the technological functions of the interface design. As a number of researchers have suggested, the emotional dimensions for usability and user engagement need to be investigated further. As a consequence of such research, a new area has been identified for academic inquiry in a number of different design disciplines – that of ‘emotional design’. Emotional design is a specific design that considers the emotional involvement of the user. This is beginning to suggest potentially useful approaches for considering the cycle of user experience in respect of interaction design and CMVC. The objective of this paper is to propose a conceptual model for research into the emotional design of interactive visual media. This paper draws upon a review of literature and research in the newly emerging field of ‘Emotional design’, together with studies from the HCI field. The breadth of this review also incorporates communication and cultural studies, especially issues relating to ‘aesthetics’ and ‘interactivity’ for interpersonal communication. The proposed model is based on a multi-disciplinary perspective that includes creative practices within art and design. This paper presents *‘the mapping of E-motion design’* for the further exploration of this question. It concludes that e-motion is a viable outcome of interaction design, but only if that design is informed by a broad based perspective that goes beyond the accepted parameters of Human Computer Interaction design.

**Keywords:** computer-mediated visual communication (CMVC), *aesthetic, interactivity, emotional design*

## **1. Introduction**

According to Baym[1], "*The computer medium is often used to diffuse forms of expressive communication usually associated with face-to face communication*". Although there are many different forms and methods for CMC, we can broadly divide them into two categories: (i) people to people on-line communication and (ii) users' interfaces. People to people on-line communication is self explanatory and refers to 'electronic conversation' (i.e. electronic mail, bulletin boards, newsgroups, chat rooms, computer conferences, on-line computer games, and other elaborates systems for supporting on-line communication) whereby people connect with each other on-line, and focus on the content of their communication. 'Users' interfaces' refers to the interactions between people and computers, such as the display of software, the operating system's graphic interface, or the design of the web site.

Mostly though, it relates to visual representations.

There are many people who work in offices or at home, who access the internet whilst at work. After finishing work, they also use the internet for information collecting, shopping, entertaining, or for interpersonal communication. From turning on the computer, right through to accessing the internet, people seem to 'talk with the computer' through visual representations of their intentions. This raises the question of how people understand and learn these visual interpretations? The screen based interfaces, website designs, and the content of reciprocal communication are all produced by the interaction between the communicator and their users. So, does the term 'the computer' only refer to its use as a medium, or is it a 'person' that we intend to talk with? One can be sure that the behaviour of CMC is not a term of technology as it is related to modern people's daily communications.

The objective of this paper is to propose a model for the emotional design of visual communication in terms of CMC. We present a methodology for the further exploration of this field that is rooted in creative practice, aiming to demonstrate that 'E-motion' is a valuable consideration for a more effective and user-friendly development of CMC, so that in the future there is a more personal computer interactively between man and machine.

## **2. Literature Review :The theoretical bases of computer media communication**

### **2.1 Visualisation of CMC = Computer-Mediated Visual Communication**

In human communication culture, visual materials create multi-form content that enables people to exchange messages or information. Visual language is made up from the basic elements of points, lines, faces, colour, shapes, structures, gestures, postures, and movement, which are all changeable over time. These basic elements not only make up all the graphics of

the traditional media, such as advertisements, though to digital media, but they also are the basic elements that make up cyberspace. But how can these be used to create a positive emotional response within the user? We suggest it is through visual sensitivity.

Visual sensitivity is not inherent in human beings: it needs to be learned as a form of interdisciplinary knowledge. Through learning, visual sensitivity enables people to understand what they see and helps them to gain visual experiences in their minds. People use their memory and learning experiences to build their thinking and culture, and thereby create human history.

Therefore, visualisation media - such as drama, film, photography and graphic design - all seek to enrich human lives through visualisation. Now when people use the computer, their inherent visual experiences are transformed into CMC. This distinctive digital culture and new aesthetic created by the new media has made an enormous impact on contemporary life. The convenience of computers and the internet mean that people can use the computer to convey images and photographs in real-time. Via a computer, the visual communicating ability enriches interpersonal communication. Therefore, visual communication in terms of CMC is mostly realised by visual language. Drewe[2] mentions that: "*Visualisation as it is understood here includes digital plans, maps and pictures, computer animation and the like.*" The 'likes' could be various types of graphic design which depend on the arrangement of the designers' creativity. But how are these components applied effectively in mediated communication? To answer this we need to examine the relationship between visual components and CMC.

## **2.2 The visual components of Computer-Mediated Visual Communication(CMVC)**

The first step in examining the visual design process of CMC is to review the basic design parameters, or essential visual components, such as the dots, lines, shapes, directions, textures, that make up its form. These components are the same as those that are used within the print-based media that are utilized by a designer's skills and knowledge, to form various types of designed media including interfaces, images, texts, typography, and graphics [3]. The compositional sources of visual communication come from all kinds of visual materials, objects, messages and experiences [4].

Each visual component has its own meaning which affects people's feelings and cognition. Research has investigated visual representations of CMC, considering the emotive function of visual components, which can affect it. Conveying information by written words or drawn pictures holds significant meaning for people, with various visual communicating processes having helped to establish our cultures, engaging people's cognitive processes on an emotional level.

### 3. E-motion of computer mediated visual communication (CMVC)

From traditional media to digital media, the feeling of psychological immersion helps people to interact with objects offering them a connection to reality [5]. Within interactive experiences, visual representations on screen provide the user with a mix of emotional experiences; such as the positive emotional aspect (such as happy, aware, and safe), to the negative emotional aspects (such as angry, confused, and afraid) [6]. The emotions of the users of CMVC are complex, but these emotions, which are molded by human life experiences, are integral to all human interaction and play a vital role in interpersonal communication. So, the effective management of emotion plays an important role in communication (i.e. Turnbull[7]).

Therefore, the authors will track the source of '*E-motion*' within human life experiences for CMVC. We will consider this under three broad successive headings: (i) examining human everyday life, (ii) understanding people's perspectives, and (iii) beautifying the vision.

#### 3.1 Examining human everyday life

Through observations of human everyday life, as well as their engagement with the wider society, people develop certain kinds of relationships between objects and spaces. All events and objects that happen around a person's vicinity carry various kinds of meanings, but none by themselves. This means that each object or event is given meaning through the interaction of people. For example, why do we call a house a 'home'? If a house is only just a building, no one thinks of it as a "Home". "Home" can be a place which has been storing your childhood or other memories. Therefore 'Home' is an emotive term. Each person builds his/her own emotional interaction with their family, pets, furniture, decoration, etc. thereby piecing together a distinctive pattern within memory. Travis [8] asserts that '*these emotional associations are the actual bricks and mortar of the experience of 'Home'*', while Christopher Alexander contends that "*every place is given its character by certain patterns of events that keep on happening there* [9]." Alexander's approach to architecture suggests that we need design patterns that are user-friendly and present the concept of emotional growth [10].

Just as Alexander argues that architecture captures emotional patterns from people's everyday life through the architectural design processes, so we consider that digital media design has a similar capacity for emotional capture and engagement. A notable example of this is the interface design for the Apple Macintosh, which effectively signaled a radical redefinition of the "face" of the computer [11]. After the Macintosh was introduced in 1984, users opened their own Mac, which greeted them with a smile (some people say "*their Mac is like a mother's face*"[12]). From the designers' perspective, they try to design an interface with a familial and familiar appearance.

Referring to the Mac, Alben [13] emphasises that the user interface for interactive design

can preset 'Human experience' beyond 'Technology'. She encourages the designer to use *'heart'* to step into people's lives, to observe what is happening there. Getting rid of the stereotype of design disciplines and paying attention to real human experiences, enables designers to engage with users' emotions and thinking. That is to say, it is a way toward 'Human-Centred Design'.

### **3.2 Understanding people's perspectives**

Information media has dramatically changed human lives through electronic digital technology. One of the main characteristics of this change is 'communication'. With this change, designers have acquired a popular stage to display their visual designs to audiences. But what is the ideal user interface that will assist the user and help them to perform their tasks with ease, without misunderstandings and frustration? To answer this we need to research the needs, the experiences and the perspectives of users.

We can research the impact of the visual design of websites on users' emotions through a variety of methods. Automatic systems can track the patterns of visits by particular users, enabling designers to record visitors' preferences and habits. Users can also be asked to provide feedback, via e-mail, enabling designers to interact with users to a far greater extent. We can also undertake scientific experiments to ascertain the physical and psychological reactions of the users (e.g. McGlaun et al. [14]), such as blood pressure, galvanic skin response, or eye movement. Furthermore, designers can use empirical research, participant observation, interview, or questionnaire to record user behaviour. When designers use these methods, they need to talk, listen, share or participate in the users' real experiences. According to Hawkins 'people want and need to interact' [15]. These methods are also suitable to help to observe on-line communication behaviour. By the methods summarized above, we now can begin to understand how to attract the user's attention to make CMVC more effective.

### **3.3 Beautify the vision**

In CMVC, designers encode the visual language into media, such as an interface, a web page, an operating systemic environment, etc, to connect with users. From a designer's perspective, they need to consider what kinds of visual expression, within the computing environment, can begin to attract users' attention more effectively. If a user is not attracted by the visual expression, then effective communication has not taken place with that user. So, designers have the freedom to create various imaginable forms for visual expression, with the hope that they engage with the users' attention and begin to connect with their emotions. However, designers also make use of techniques such as Gestalt theory, visual semiotics and visual semantics for making sense of visual communication.

Emotion is a fundamental component of being human, which enables us to feel happy, angry, proud or sad, to motivate actions and make meaning to enrich human experience. Most commonly, art seeks to trigger emotional engagement, and in a similar way the visualization of CMC seeks to elicit the user's reaction. The designer - as addresser - expresses their intention to catch and maintain an addressee's attention within the visual communication processes.

In addition, the representation of CMC seems to have less social cues and a lower social presence (e.g. Chenault [16]); researchers call this the "Cues filtered Out" approach. Therefore, people try to express their emotion by use of 'Emoticons' (e.g. :-)) (means happiness); :-o, (surprise); >:-c (anger)) in CMC [17]. 'Emoticons' seem to assist the efficiency of CMC as face-to-face communication; even though, people cannot communicate their emotion accurately on the screen itself, just with words alone, so the participants created 'Emoticons' to express a range of emotions within their communications. Emoticons were initially developed by Scott Fahlman, a computer scientist at Carnegie Mellon University, who proposed :-)) as a means of indicating those parts of messages posted on bulletin boards which were jokes or not to be treated seriously.

This simple typographic device has since been developed by companies such as Microsoft into graphically more elaborate emoticons, such as those shown in figure 1, which are offered to users of the MSN Messenger service. The launch of the Microsoft Tablet PC in 2002 was accompanied by a range of 'designer emoticons' developed by Aardman Animations, who produce the Wallace and Gromit films. At its launch Neil Laver, Windows Product Marketing Manager at Microsoft UK, said: "*Up to now, use of emoticons has been massively popular but the emotions they've been able to express have also been extremely limited. The launch of the Microsoft Tablet PC gives people unlimited freedom to individually express themselves*" [18].

We may take issue with this remarkable claim, just as we may question the qualities of 'designer emoticons' from an aesthetic perspective. However, the short history of the emoticon vividly demonstrates some key points we wish to make. While the written word has the potential to convey the full range of human emotions, the time challenged 'shorthand' communication that has evolved with the computer is often emotionally ambiguous. Providing visual clues to emotional intent through typographic devices was a user response to this problem. More considered design thinking has since been applied to them, to both beautify and enhance them in terms of their affectivity of visual and emotional expression, with the result that users have a higher willingness to interact with computer media. As Dorai [19] argues: "*The affective computing media aim to understand and enable computers to interpret and respond to user's emotional states*".

#### 4. Analysis: The mapping of e-motion to Computer Mediated Visual Communication

So far this paper has established the case for CMVC to engage on an emotional level with users, if it is to be effective and accessible as a communicative medium. We have seen how enhancing usability can involve a range of research methods to elicit user needs, perspectives and preferences. However, crucially, communication must also provide a ‘fit’ with everyday life experience and provide appropriate means of enabling the expression of emotions.

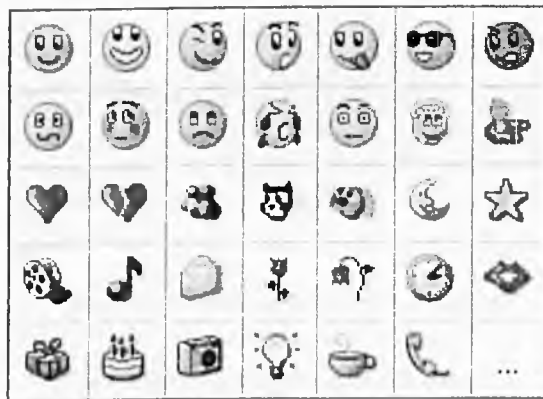


Fig.1 Different kinds of ‘Emoticons’ (Source: [www.msn.com](http://www.msn.com))

We will now consider a research framework that locates the key issues and themes of this discussion as well as setting out their inter-relationships. It will emphasise the primacy of interactivity, aesthetics and the visual communication of life experiences. In this way the authors will map the dynamic contours of an ‘*E-motion landscape*’, which offers the potential of further research and practice within this field.

##### 4.1 The fundamental factors of E-motion

Thorlacius [20] refers to the expressive function, emotive function and aesthetic function of visual and aesthetic communication in terms of web sites. Nielsen [21] also applied psychological theory from visual communication to visual interaction with designers’ and users’ perspectives. According to Nielsen [22], computers offer dynamic and still representations which required the user’s participation and embed “*possibilities of sensual, emotional, and intellectual engagement, even possibilities of virtual exploration of materials and the electronic exploration of materials and electronic images and animations of designers’ imagined vision.*” With this in mind, the user’s experience might improve his or her intellectual, sensual, emotional, and physical understandings. The emphasis on the user’s



participative and emotional experience is a key issue and should be explored by the designer to enhance user involvement within the parameters of CMVC. In addition, the aesthetic expression of media cannot be denied either, without the process of CMVC. Therefore, the authors have produced a diagram to conceptualize the fundamental factors of e-motion for CMVC in terms of CMC (See figure 2).

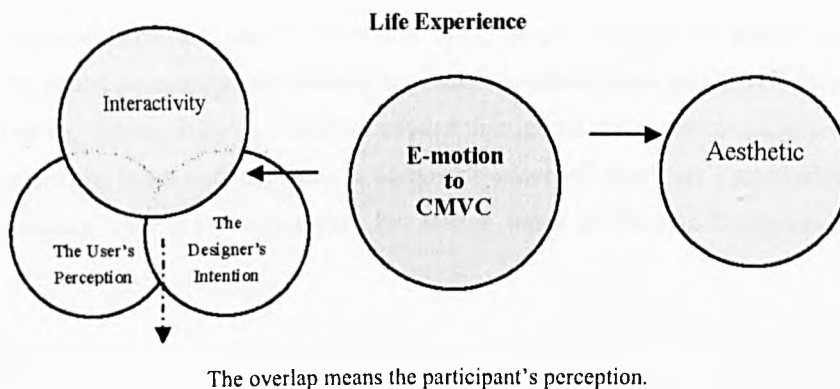


Fig.2 The fundamental factors of E-motion

The comment: the overlap means the status of participant is combined with the designer and user because both of them can create their community culture in CMC.

## 4.2 The conceptual mapping of e-motion to Computer-Mediated Visual Communication

Below we will discuss, in turn, the three key research issues: 1. interactivity; 2. aesthetics; 3 life experience.

### 'Interactivity'

Empirically, "*interactivity is associated with new communication technologies*" [23], including the internet, the World Wide Web (WWW), the software interface, etc. Interactivity is a communicating bridge between human and machine interaction. From the information transmission, the designer as addresser performs his or her intention to convey information to users via the computer. The user as addressee uses her/his perception to receive this information. In on-line communication, each participant can undertake both roles, but the medium is still a computer. According to Green [24], "*interactivity must be used instead of the emotional elements that are lost in on-line communication*". We can see here how interactivity is engaged in 'human emotion'; in previous analyses 'interactivity' has been claimed to be an affective advantage for successful media so that design professionals can

approach audiences’ ‘personal experience’ in the new media age [25].

A report by MIT Media Lab’s *Affective Computing Research Group* mentions that [ 26 ]: “*Affective communication may involve giving computers the ability to ‘Recognize Emotional Expressions’ as a step toward interpreting what the user might be feeling’*”. Engaging an emotional communicative response is crucial and needs further exploration. By higher degrees of interactivity, the addressee and addresser convey their communication on a higher emotional level actively during their on line interaction. Furthermore, the designer’s intention can be engaged with the user’s perception more deeply, helping to reduce inconsistent cognitions, whilst pursuing a user-friendly relationship without removing the ‘E-motion’ effect from the users. ‘Interactivity’ is human-orientated throughout the communication process [27], and consequently, is not only engaging ‘a designer’s intention’, the ‘user’s perception’, and the ‘communicating content and technique’, but also in terms of ‘Human-Computer Interaction theory’.

### ‘Aesthetic’

The aesthetic expression of CMVC refers to the packaging of a product, which attracts the browser’s gaze whilst retaining their attention. According to the training of visual principles, designers build up a specific aesthetic that makes visual sense to their users. However, in Thorlacious’s distinction [28] the aesthetic expression is two-fold in nature; one is the expressible (formal) function, the other is the inexpressible function; both the expressible and inexpressible function communicates through visual language. However, the difference is ‘that the former one is an ‘aesthetic expression’ which connects “*sensuousness and the cognitive in classifiable terms*”, while the latter one is an ‘aesthetic expression’ which is born in human “*senses and feelings*”. These two functions happen almost simultaneously when the viewer appreciates a visual representation of CMC. Davis ascribes this to “*the viewer as active role to viewer in creating understanding and sense-making, and he understands the process as interpretations made on the basis of shared, cultural conventions*” [29].

From these statements, we can see that when an addresser intends to show her/his thinking in visual terms, when talking with an addressee, they both use their inherent patterns learned from our cultural conventions and social conditions to interpret what they see and feel. In this process, the intention of the addresser is to stimulate the viewer’s emotion and psychological expectancy to trigger the addressee’s physical response.

This focus on ‘aesthetic’ is not just about ‘showing”, but also dips into the emotional interaction of cultural conventions, social conditioning and also visual representations. Behind the designer’s intention, the designer should consider more their responsibility to the ‘quality of human life’ to help to evoke the user’s positive emotion, association, mood, attitude,

sentiment and perception. If they have the capability to improve the 'quality of life', why then do they not actively pursue this goal?

### **'Life Experience'**

People live in a physical space; they use their individual behaviour and senses to experience what is happening around them everyday. Through everyday life, people interact with what happens around them consciously and then gain various visual experiences and conventions, such as remembering traffic signs. Gradually, these experiences become "visual culture". While people log onto virtual space and navigate the internet, they also transform their life experience from physical space to virtual space. The digital visual technologies evoke an active involvement with the users. Through interactive media, designers engage with people's feeling, and senses, whilst in turn encouraging the designer to evolve a more harmonious 'Human-Computer Interaction' design.

People also have a different aesthetic sensibility. What one person likes, another one does not. Designers however, tend to misuse the visual communication elements, choosing to beautify the image at the expense of usability. The design paradigm of modernity "Form follows function" was modified into the post modern "function follows form" with the "form" (or image) being prioritised over the "function" (usability), with usability becoming a less important concern. Baskinger[30], however says that "form is independent of function, suggesting a new aesthetic that can bridge the gap between the users needs and the designers aesthetic priorities." He states that, "*rather than drawing cues from functional requirements, these objects use form to elicit an emotional response*". This new aesthetic should engage with human emotion by transforming the designers' concern and priorities, concentrating their attention on observing people's everyday interactivity. A more concise formulation of this argument is expressed by Hartmut Esslinger's design credo – form follows emotion [31].

### **4.3 The mapping of E-motion design**

Resulting from the issues mentioned above, the authors have designed a framework for the application of 'E-motion' design for CMVC. The sources for the framework are drawn from 'life experience', 'interactivity' and 'aesthetics'. These three main sources connect the elements of technology and culture within 'life experience', as shown in figure 3, which come from the phenomenon of human need. In the past, people produced craft objects as a result of this human need and with this kind of application of experiential development, people improved the techniques and quality of their lives forming the foundations of human culture.

The primary aim of 'E-motion' design is to benefit human life through the combination of culture and technology. Within this proposed framework the notion of 'Interactivity' relates to

the concepts of ‘designer’s intention’, ‘user’s perception’, ‘content’, ‘technique’ and ‘HCI’. The second salient theme in the framework of ‘Aesthetics’ relates to ‘cultural convention’, ‘social conditions’ and ‘visual representation’, which in turn engages with the ideas of ‘visual sensitivity’ and ‘sensory activation’.

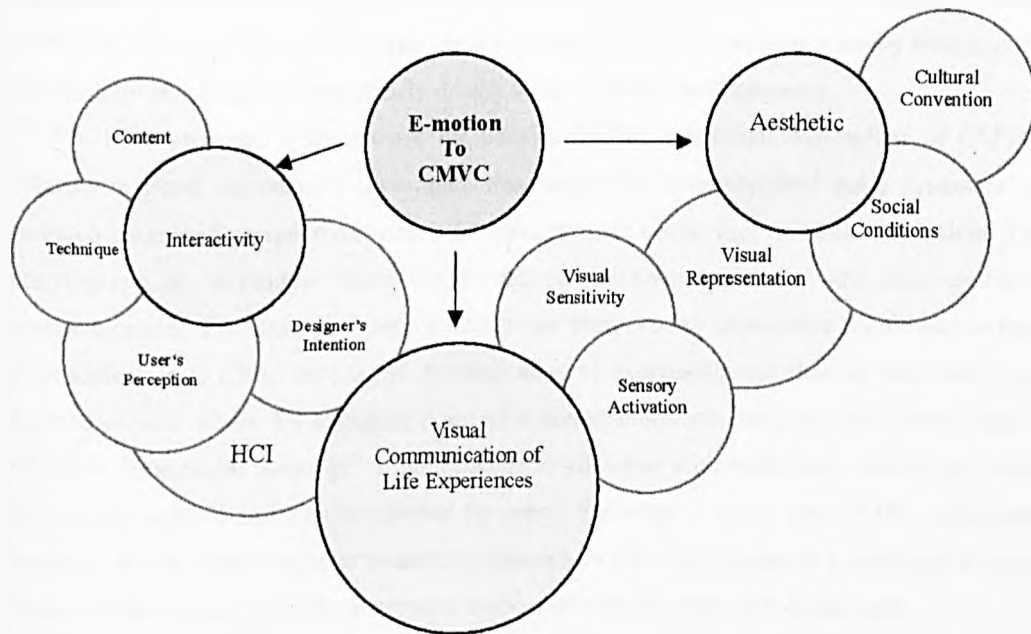


Fig. 3 The conceptual mapping of E-motion design

## 5. Conclusion

What drives technology and determines the forms into which it will be designed and used? To paraphrase Bill Clinton’s election mantra: ‘It’s the emotional, stupid’. It is when technologies engage with the emotional richness and depth of life experience and the inherent desire of people to communicate and be communicated with meaningfully, that they become transformed into useful, usable and desirable products and systems. But seldom is this understood by those who develop the technologies in the first place. Thomas Edison envisaged his new phonograph (and the subsequent gramophone) as an office-based device to support dictation and recording phone messages. It was The Beatles who most powerfully demonstrated its value as an entertainment medium, and the basis of a global industry, to communicate messages such as “All You Need Is Love”. Tim Berners-Lee developed the World Wide Web as a means of enhancing the accessibility of technical documentation. But the WWW only took off once, young researchers in the United States developed <IMG> - the image tag which enables images to be used in HTML documents. Berners-Lee criticised the frivolity that images could bring to the WWW saying “this was supposed to be a serious

medium – this is serious information”[32]. An American female model currently claims the record for the most popular web image, claiming over one billion downloads. SMS mobile phone texting was developed in 1992 as a means for operators to inform users of changes or problems in the network, and there was certainly no intention to enable user-to-user texting, which has since become the most profitable mobile phone service, with 16.8 billion texts sent in the UK last year. The most popular use of texting is to wish somebody a happy birthday[33]. Technology and design is very clearly driven by love, desire and happiness.

We have proposed a framework for considering the emotional dimensions of CMVC; offering a broad approach to investigate this issue. We have sketched out a landscape of research issues and perspectives, which form the basis of continuing research in this field. The convergence of ‘E-motion’ blurs the boundaries between traditional and new mediated communication. For example, people transform their visual experience from face-to-face communication to CMC, seeking to develop ways of expressing and sharing their emotional experience with others. By engaging more with human emotions, designers will create a more effective ‘E-emotional language’ to help people to converse with each other, and design tools that can be applied and adapted further by users; the latter is a key aim of this continuing research. As we have sought to underline, research in this field demands a multi-disciplinary approach that is directed at the expressive empowerment of people in a digital age.

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## **Appendix 2— Glossary**

- Emotion
- Web interface
- Aesthetics
- Usability



## Appendix 2– Glossary

There are four key terms in this research project which need explanation: “*Emotion*”, “*Web interface*”, “*Aesthetics*”, and “*Usability*.” They may be described as follows:

**Emotion** is also called feeling or affect and concerns a person’s internal state (Santrock, 2005). Emotion is part of human nature and is inseparable from individual experience when interacting with the world. It can influence one’s personal sense of value and judgement. Emotion has been an important factor in design. Pleasure, enjoyment, or satisfaction as one dimension of emotions, are also regarded by designers as a way to evaluate design quality in order to enhance user experience (e.g. Douglas & Hargadon, 2000; Green & Jordan, 2002; Frøkjær, Hertzum, & Hornbæk, 2000).

**Web interface:** The primary role of websites is to provide users with information (Ivory and Hearst, 2001). The interface of a website is used to visualise and organise information and provide limited operational systems such as menus, links, and forms. The role of the interface is to be an intermediary between users and information (content) by offering a communication platform. It is also an interpreter between designers and users that guides users through the complexities of the website (Fleming, 1998). In the graphic-friendly environment of the Web, interface design constructs visual cognition with visual metaphors, icons, images, and colours to catch users’ attention. Through graphic design, Web interfaces can be seen in a wide diversity of styles to not only present Web aesthetics to enhance users’ visual experiences but also assist designers to convey legible and readable information via visualised menus, indexes, and maps. Web interfaces should be designed with a balance of function and aesthetics in order to complete users’ emotional experience.

**Aesthetics** is traditionally part of the art and design field and seeks to explain human aesthetic experiences. Every visual element, such as colour, typeface, shape, line, and size, has its own aesthetic weight and together they compose a visual form that can raise all kinds of feelings. Web aesthetics basically aims at creating a pleasing user experience.

**Usability** is an essential factor for designing users' requirements and needs of a product or service. Mainly, it is related to other aspects like effectiveness and efficiency; however, the current focus of this issue is on creating user satisfaction and pleasure, a topic which is introduced in section 2.3.4.3.

## **Appendix 3—**

### **Transcript of the interview with a design specialist**

- The interviewee: Malcolm Garrett
- The current position: i-designer
- Location: 59 Knighthood Point, the Quarterdeck, London, E14 8SS
- Date: 23, September, 2003

## Appendix 3– Transcript of the interview with a design specialist

NVivo revision 2.0.163 **Malcolm Garrett interview-London, 23rd September 2003**

Licensee: RGU

Project: Garrett's interview User: Administrator Date: 2006/2/18 - 11:02:33:44

### DOCUMENT CODING REPORT

**Document:** In Garrett professional experience

**Created:** 2005/10/16 - 11:17:11

**Modified:** 2005/10/18 - 11:43:45

**Description:**

In Garrett professional experience, the researcher was starting the conversation from his current job- interactive media designer.

**Nodes In Set:** All Nodes

Node 1 of 18 interactive media

Passage 1 of 1 Section 0, Para 3, 17 chars.

#### © Interactive media

Node 2 of 18 (1) /interactive media

Passage 1 of 6 Section 0, Para 77, 900 chars.

Malcolm: The fundamental thing is that televisions are important. Interactive media is becoming more important because of what they can do, what people can do with them, the way that you can enhance communication, the way they have greater **powers** than some other media. The ability to put together a library full of books and television into a space and to be able to access that stuff very **rapidly**. That's just one very powerful aspect of what interactive media can do. So television's important, interactive media's getting very important. It's very important to understand that interactive medias are really young and because they're young, they still don't work, but more importantly that have yet to be a generation of people who have grown up knowing interactive media. Because if you grow up with something, you know how to use it instinctively. It has become invisible because it's always been there.

Passage 2 of 6 Section 0, Para 77, 540 chars.

Malcolm: So kids don't notice houses, do they? Mum and Dad got a house. I've sort of extrapolated and thought about it and Playstation, video games, I think are extremely, extremely important. It's like how many years has Playstation been around? What year was Playstation introduced? I don't know but I expect it's about 1996, which is not very long ago but we all think that Playstations have been around forever but they haven't. However, for the generation of people for whom it has been around forever, they're only about 7 or 8 years old now.

Passage 3 of 6 Section 0, Para 79, 204 chars.

Malcolm: Playstation which is the most effective interactive television we've got so far, has only been around, or the people for whom have never know a time before playstation, they're only 7 or 8

years old now.

*Passage 4 of 6 Section 0, Para 107, 341 chars.*

Malcolm: The work I did for the Spice Girls was to actually enhance CDs which was effectively making digital versions of record sleeves. To do the record slaves that goes on the disc itself. So I wasn't doing the packaging, wasn't doing the paper. I was doing the website and putting the video onto the CD. So that was the bit that interested me.

*Passage 5 of 6 Section 0, Para 111, 565 chars.*

Malcolm: That's a challenge. If music becomes totally digital and you're only downloading it over the Internet and this is what great problems with the music industry is at the moment, is like what happens when there isn't a music industry? what if music, it's selling point, what clothes you wear, what you look like, that visual component of enjoying music when you're in your teenage years if you don't have a record sleeve to **visually portray that**, what's going to happen to the visual component of music? That's one of the interesting challenges for the music industry.

*Passage 6 of 6 Section 0, Para 131, 393 chars.*

Malcolm: That's a very good question and a very complicated one because interactive design is so dependent on understanding software and the technology then it's very easy to fall into the trap of learning how to use the software and that's understandable and to a certain degree, again because we are dealing with media that we haven't grown up with and therefore we don't instinctively understand it.

## © Designer

*Node 3 of 18 (2) /designer*

*Passage 1 of 6 Section 0, Para 25, 174 chars.*

Malcolm: I think a lot of graphic designers actually love the interface, whether it's a book, whether it's a poster or flash movie on a website and they want you to see the interface.

*Passage 2 of 6 Section 0, Para 83, 630 chars.*

Malcolm: It's a combination of not knowing what to do and running a business and so as a professional graphics designer you only do the things that people pay you to do so there has a business before you start, there has to be a need. Even in 1994 when we started Day and Night there wasn't that much difference out there. There wasn't that many people that even understood what new media was let alone would pay you to do a new media project. There's the need to survive and the need to have people to pay you to do things but also as a designer, part of the reason I became a designer is because you want people to ask you to do things.

*Passage 3 of 6 Section 0, Para 83, 570 chars.*

Malcolm: "Malcolm, how do you do this?" and I'm like I never thought about that actually, and then you start to think. If you say, "Malcolm, what would you like to do?" I go "I don't know". It's like until there's a **problem to solve**; your brain doesn't start working. So if no one out there understands new media and therefore there's no one asking you to do things then you don't know what to do with new media. But when people ask "**can we do this?**" **I think we might and then we start working**. I'm a car, I'll just sit there until someone gets in, and then I'll do the driving.

*Passage 4 of 6 Section 0, Para 131, 393 chars.*

Malcolm: That's a very good question and a very complicated one because interactive design is so dependent on understanding software and the technology then it's very easy to fall into the trap of learning how to use the software and that's understandable and to a certain degree, again because we are dealing with media that we haven't grown up with and therefore we don't instinctively understand it.

*Passage 5 of 6 Section 0, Para 131, 541 chars.*

Malcolm: You have to think why am I doing this, why am I doing it? And who am I talking to? If you ask those questions of yourself every day, you'll be a good designer for new media. But if you don't have any technique skill, you probably won't be able to understand the media so you won't be able to design within that media. It's a sort of double edged sword. So I'm not saying ignore the technology just design, nor am I saying embrace the technology. You have to be able to do both and that makes it very difficult to learn because it's so complex.

*Passage 6 of 6 Section 0, Para 131, 376 chars.*

Malcolm: Because it's the danger that student designers fall into, it's also the danger that the teaching profession have been taking a negative view of new technology because they want people to be designers and not technicians and so rather than celebrate the technology, there's been a tendency to throw away technology stopping you being a good designer and that's equally dangerous.

## © Graphic design

*Node 4 of 18 (3) /Graphic design  
Passage 1 of 5 Section 0, Para 5, 454 chars.*

Malcolm: I'm a graphics designer; more specifically I'm a designer who's interested in communication design. Design that has a job to do and when I was young I went to school to learn graphic design. Interested in art that has a purpose, and I discovered an interest in language and talking to people I was able to use and typography to talk to people through the work that I've produced so that's always been my motivation, representing ideas in a visual way.

*Passage 2 of 5 Section 0, Para 9, 1382 chars.*

Malcolm: As a graphics designer, I'm very involved in this because there was a need for communication designers to work in this area because all the new media work at that time was effectively being produced by engineers so their concern was with media itself and technology, and wasn't really what I was using technology for to communicate and I was interested in it. The irony being that **I'm interested in technology but not in what it is but how to find it and use it to do something else.** So I thought it was necessary to make a very obvious statement about that so I fairly publically said I was giving up design for print and moving out of the weight paper business and I'm just in the process of design for interactive media. 10 years ago. For me design for print or design for television or film or information design or packaging or whatever, they're all components of a bigger graphics design picture. Now I'm trying to reestablish myself as somebody who's interested in communication in general and being a mediator between design disciplines. Since the development of interactive media as a discipline, it seems that graphics design has taken on the meaning of design of anything on paper which I don't think is the case. **For me, graphics design is still the bigger thing that embodies all other individual disciplines like advertising or information design or interactive media.**

*Passage 3 of 5 Section 0, Paras 51 to 53, 1267 chars.*

Malcolm: I don't think that repackaging will work. People don't actually buy packages, they buy what's in the packages. If they stop being interested in what's in the package then they won't buy it, no matter how attractive the package is. That's also why it's impossible for designers to understand, what it is that's important is the **contents** of the package and not the package itself. Because people don't like the package. Other designers like the package, but there are not that many other designers out there. The world at large buys the content which is why I'm interested in the design but lets people get to the content because I understand that it's the content that's really important, that's what people want. That's what people need, that's what drives the world is content, whether it's food, whether it's electrical, whether it's practical, whether it's a camera, whether it's cornflakes, whether it's music.

Malcolm: What people buy is those things. When people buy a camera, what they're buying is photographs of their holiday, that's what they want. They don't want the camera. When they buy a box of cornflakes they don't want a box with a picture of Tony the tiger on the side, they're buying things with sugar on them. **It's very easy for designers to forget that.**

*Passage 4 of 5 Section 0, Para 61, 1175 chars.*

Malcolm: That is one of the great things about graphic design is that it is not a science. We can discuss the sorts of things that motivate people, the agencies and what they buy. We can sort of guess but there's no real rules. Why the Spice Girls successful and All Saints are? I don't know, nobody knows. It just happens but it's got nothing to do with graphic design to create it. Graphic design, especially in the music industry, **Graphic design is there to capture and perpetuate what is happening** so if you're a Spice Girls fan, you'll very soon, quickly spot, two CDs side by side, that's a Spice Girls CD and that one's not, even if it says Spice Girls on it. If it doesn't say Spice Girls in the right way you'll know that one's a fake you'll know it instinctively. That's not Spice Girls, that's someone else calling themselves Spice Girls, and so **graphic design helps to maintain that authenticity, if you like. Graphic design can never create the Spice Girls, it can only extend, it will enhance the Spice Girls ability to communicate with their audience and to grow their audience, but it can't create it from nothing.** Only the Spice Girls themselves can do that.

*Passage 5 of 5 Section 0, Para 63, 742 chars.*

Malcolm: It's gone beyond that, it's about the **personality** of the Spice Girls, it's about the fame, the fundamentals of what you understand from that and the need for fans to stand up and actually say that **I, being a fan of the Spice Girls, actually you will know something about me. Because I like the Spice Girls, I can tell you something about me in a way that I wouldn't be able to tell you by any other means. It's all about personal identity,** and therefore as a graphic designer, working for the music industry, I'm simultaneously extremely important and very unimportant. From a fans perspective I didn't do any of this but what I did, or had to do was extremely important in order to keep the thing going for the bands. Practically invisible.

## © Communication

*Node 5 of 18 (4) /communication*

*Passage 1 of 4 Section 0, Para 61, 209 chars.*

Malcolm: **Graphic design can never create the Spice Girls, it can only extend, it will enhance the Spice Girls ability to communicate with their audience and to grow their audience, but it can't create it from nothing.**

*Passage 2 of 4 Section 0, Para 63, 742 chars.*

Malcolm: It's gone beyond that, it's about the **personality** of the Spice Girls, it's about the fame, the fundamentals of what you understand from that and the need for fans to stand up and actually say that **I, being a fan of the Spice Girls, actually you will know something about me. Because I like the Spice Girls, I can tell you something about me in a way that I wouldn't be able to tell you by any other means. It's all about personal identity,** and therefore as a graphic designer, working for the music industry, I'm simultaneously extremely important and very unimportant. From a fans perspective I didn't do any of this but what I did, or had to do was extremely important in order to keep the thing going for the bands. Practically invisible.

*Passage 3 of 4 Section 0, Paras 93 to 95, 213 chars.*

Malcolm: Some of it's instinctive and some of it's just, you just try things out. When it didn't work, it doesn't get written about. But there's plenty of things where, you know, didn't work... **Engaging with people...** Communicate with people with your work Malcolm: I do yeah, I like, as well as being invisible...

*Passage 4 of 4 Section 0, Paras 125 to 127, 94 chars.*

## © Technology

Node 6 of 18 (5) /technology  
*Passage 1 of 3* Section 0, Para 13, 490 chars.

Malcolm: At the conference this morning, the key note speaker was Tim Berners-Lee who invented the World Wide Web and so it was packed audience and most people come out and didn't understand what he said which is really stupid because he spoke plain English things that you would expect to be on everybody's mind. He was speaking about the Internet and communication networks; it was very straightforward and very easy to understand so I still think that people don't want to understand technology.

*Passage 2 of 3* Section 0, Para 77, 540 chars.

Malcolm: So kids don't notice houses, do they? Mum and Dad got a house. I've sort of extrapolated and thought about it and Playstation, video games, I think are extremely, extremely important. It's like how many years has Playstation been around? What year was Playstation introduced? I don't know but I expect it's about 1996, which is not very long ago but we all think that Playstations have been around forever but they haven't. However, for the generation of people for whom it has been around forever, they're only about 7 or 8 years old now.

*Passage 3 of 3* Section 0, Para 79, 1251 chars.

Malcolm: Playstation which is the most effective interactive television we've got so far, has only been around, or the people for whom have never know a time before playstation, they're only 7 or 8 years old now. Imagine the way that their brains are going to be and the demands that they're going to make on media when they're 15, when they're 20. I think the world will begin to change. When that generation of people. Technology will have moved forward by then, it's stability, it's capabilities will have moved forward and you'll have a generation of people who've grown up with it so instinctively they'll know what to do with it and they'll be doing things that we'll be completely surprised by, like wow I never thought you could do that or I never thought that I'd want to do that. At the moment we're still stuck in this middle ground where **the world is struggling to make new technology work, struggling to make new media work and simultaneously struggling to understand what it means and how to use it which is why I'm saying television is really important. It's in everybody's home and it's a platform that the next generation of creative people will be coming from. It's a really simple premise, like the playstation generation is the one to watch.**

## © Personal design experience

Node 7 of 18 (6) / Personal design experience  
*Passage 1 of 13* Section 0, Para 5, 231 chars.

Malcolm: I'm somebody who is very interested in many things, my interests are very diverse and I'm quite excited by things, I've always been interested in technology, not really because it's technology but because it allows me to do things.

*Passage 2 of 13* Section 0, Paras 5 to 7, 1451 chars.

Malcolm: For me in the past 15 years or so there's been **two major shifts** in how I've worked. **The first shift was to start to use computers, effectively** to do the kind of work that I would have been doing before but instead of using drawing board, pens and pencils, I used a computer. Then through the computer I made a fundamental realization and that was that digital drawing boards were a publication media. The tool that I was using to create design works was also the of means of distribution for these things so I guess it's the first time in communications history that that was the case - the things that you wrote on were also the things that you published, I guess it's the



equivalent of a medieval manuscript, the manuscript that you wrote was also the thing that you gave away and that excited me a lot.

Malcolm: I thought that I was doing one thing like moving my way of working into a new century but actually I was developing an interest in a new medium and that made me very excited that as a graphics designer or a designer that's interested in communication, I was working this new communications platform, and that excited me and I was very surprised that no other designer was as excited as I was. It seems strange, we're talking about 1989 that was exciting and people were like oh no computers, we don't like computers keep them away, and so I just found that very difficult to comprehend and so that was **the second shift** in the way that I worked.

*Passage 3 of 13* Section 0, Para 9, 143 chars.

Malcolm: Now I'm trying to reestablish myself as somebody who's interested in communication in general and being a mediator between design disciplines.

*Passage 4 of 13* Section 0, Para 37, 1677 chars.

Malcolm: I do think that design in the music industry is for young people. I think you feel most in tune, not in tune with music but in tune if you like the musicians themselves when you happen to be a bit like them. I established and became known in the mid 70s through working with a band called the Buzzcocks and that's because I was from the same background, I was the same age, we liked the same music, we went to the same places. I was part of a gang if you like. I couldn't play music but I could do something else, I could design, draw things and I could do letterings so I found my role within my cultural circle and the challenge was to understand who that band were, what they were trying to say and to whom they were saying it. **Being one of them, one of their fans**, I got a head start. If I did something that I thought was right for that band and I liked, the likelihood was that they're other fans would like it too. We had the same taste, same motivation and we were driven by the same thing. **The challenge then was again for me to become invisible in the process.** Anything that I designed for the Buzzcocks in my mind had to appear to a Buzzcocks fan to be designed by the Buzzcocks themselves. If I could become perfectly a Buzzcock during that moment of designing then theoretically I would get it right. So the challenge then is that you would move onto work with another band, is to always try to understand the band, get into the whole psyche of what they're about, what their music is saying what their audience appreciates about them and then try to represent graphically and consistently across all the products that you get to work with that in a natural way.

*Passage 5 of 13* Section 0, Para 39, 1113 chars.

Malcolm: So the challenge is easy. **Doing it can be difficult and the older you get**, I couldn't do it now. I couldn't work with a new band like The Darkness or whoever is flavour of the month or you know, Gareth Gates. **I couldn't do it because I'm not that generation.** I don't understand what is motivating young bands to do what they do because it's all about youth, it's all about rebellion, it's all about tribalism, **it's all about identifying with other people in your age group or not identifying with other people in your age group or not identifying with different age groups and so I can't do it.** I can still appreciate that, it still loves music; I will buy music and will be surprised and delighted and enjoy it. **But I can't be involved in doing that anymore but what I can be involved in doing is to continue to help promote good design and either working with younger people or working using, you know** I've got 25 years of skills and experience that I can help shortcut other designers and help contextualize what they're doing and get better at what they're doing and so I can help them become better designers.

*Passage 6 of 13* Section 0, Para 39, 1546 chars.

Malcolm: A lot of designers like me in the past, especially when they hire people, hire an assistant, and what they want the assistants to do is to be like them but do all the hard work. So they can think of great ideas and then that assistant will physically do it in their style. **The more work they get the more assistants or clones of themselves they need.** I've never been able to do that. I'm always interested in what I can't do, whenever I hired people in the past, I've always hired people

who do something completely different and so from a business perspective that's sort of counter-productive. You can't grow, you can't get any bigger because there's only so much you can do yourself and therefore there's always a limited amount of work. You either got to put your fees up to make more money or **you've got to clone yourself, and if you can't clone yourself then you have to think of someway of growing.**

*Passage 7 of 13* Section 0, Para 47, 249 chars.

Malcolm: Exactly, I can't anymore. I used to be able to because I was from that generation. The older you get, the more out of touch with the generation, the teenage generation, the older you get, the more out of touch you are the less able to do that work.

*Passage 8 of 13* Section 0, Para 79, 675 chars.

Malcolm: At the moment we're still stuck in this middle ground where **the world is struggling to make new technology work, struggling to make new media work and simultaneously struggling to understand what it means and how to use it which is why I'm saying television is really important. It's in everybody's home and it's a platform that the next generation of creative people will be coming from. It's a really simple premise, like the playstation generation is the one to watch and that's why I'm involved in it because I'm obviously interested in the future. I'm interested in new things. I'm always interested in new and fascinatingly different things, I always want new stimulus.**

*Passage 9 of 13* Section 0, Para 83, 570 chars.

Malcolm: "Malcolm, how do you do this?" and I'm like I never thought about that actually, and then you start to think. If you say, "Malcolm, what would you like to do?", I go "I don't know". It's like until there's **a problem to solve**, your brain doesn't start working. So if no one out there understands new media and therefore there's no one asking you to do things then you don't know what to do with new media. But when people ask "**can we do this?**" **I think we might and then we start working.** I'm a car, I'll just sit there until someone gets in, and then I'll do the driving.

*Passage 10 of 13* Section 0, Paras 85 to 87, 380 chars.

Tsen-Yao: What is the limitation for you when you design work and you want to do new things?

Malcolm: Funnily enough, design work is all about **limitations**. When you design a book, one of the limitations is that it's got to be in ink on paper so there are limitations to the media that you're working in. It's how to get the best out of those limitations that seems to be one of these things that you like.

*Passage 11 of 13* Section 0, Para 99, 1465 chars.

Each job you do has a different part of it where you think you can have some fun and experiment but there isn't a generality really. But there is a part of my that is quite playful so if you're working for Coca-Cola, then the challenge would be to get some balloon in there because they wouldn't like that, as an example, you'd never get away with it. The challenge or experiment kind of changed according to what the job is and who the audience is and I think that is one of the things about why I'm interested in interactive media because there were more challenges to it because not much work has been done in that area, then **there were new things to learn and new things to teach people**, new things to establish and that excited me, again I did some work that was good and I did some work that was less good. But there all sorts of challenges. The first challenge was to just **get people to take it seriously**. Because even now people are like, no you can't read text on screen, it's like well obviously the World Wide Web is a complete waste of time because you can't read text on screen, but then I can't see a video in a book. If it was the other way around and the Internet existed before books then people would be saying about books, "well, this is really bad, I can't watch movies" or "I can't hear it." **People like what they know and like what they've grown up with. They understand them. It does come back to what you've grown up with, it's so important.**

*Passage 12 of 13* Section 0, Para 107, 65 chars.

Malcolm: I'll carry on designing but I can't design record slaves anymore.

*Passage 13 of 13* Section 0, Paras 141 to 143, 1478 chars.

Tsen-Yao: Do you think computers make you work better?

Malcolm: Malcolm: In some ways it does, yes. There are three ways of making me work better. **It's made me a better draftsman, I can draw better. It's made me a better writer**, writing is now easier and I enjoy writing. So in terms of creating things, **I think my computer has enabled me to grow as a creative person in a number of ways**. I've learned how to make animations, I've learned how to make videos, put videos together. Lots of things that would have been denied to me in the past and now possible through a computer. That's one aspect, but the most important aspect is that **I'm no longer tied down to one location in the world**. My office is my laptop and I can go anywhere and sit down, and it becomes my office. Also, **another aspect of that is because my office can be anywhere**, it can be also at anytime and therefore when I wake up a 3:30 in the morning as I sometimes do, with an idea. I work then, and then I go back to bed. So I'm not tied to 9 in the morning, I go to work and 5, 6 o'clock I go home again, and I've got to do all of my work in that space of time and if I don't have any ideas during that time slice then that day's wasted. I'm able to work whenever it's right for me. **So it's liberated me in lots of ways. So yes it's made me a better designer**. Has it improved the quality of what I do? Well, no it hasn't. **The quality of what I do comes from in here. What it's facilitated is to get the best out of here when I can.**

## © Invisible interface

*Node 8 of 18* (7) /invisible interface

*Passage 1 of 10* Section 0, Para 21, 680 chars.

Malcolm: **For me the goal is always to take away the interface**. The word interface is an explanation of a meeting point of two things. In computing, the point is between a person and a computer. A successful interface would be invisible; you wouldn't notice the interface the communication between the two people would take place. If you like, the interface between you and I - if you were speaking Taiwanese and I was speaking English, our interface would be impossible. If we were both speaking the same language the interface becomes invisible. We don't even think about it and the point of interest of interfaces is trying to reduce them to **the point where they're completely invisible**.

*Passage 2 of 10* Section 0, Para 25, 202 chars.

Malcolm: I think a lot of graphic designers actually love the interface, whether it's a book, whether it's a poster or flash movie on a website and they want you to see the interface. They want you to enjoy it.

*Passage 3 of 10* Section 0, Para 29, 1840 chars.

Malcolm: **Simplicity is the word that I'm looking for, Simplicity and obviousness**. Nokia, I think, have designed really good interfaces, where they marry the physical interface, i.e. how you press the buttons, how everything works with what you get when you press the buttons. I can control the entire phone, simply by pressing one button. **You know with my thumb, and it's really really good so the physical experience of being able to do that is match by the quality of the quality of what the information looks like on the screen and the order in which you find it and so I think Nokia are one of the most advanced companies when it comes to marrying the soft interfaces, if you like, what's on the screen with hard interfaces**. I tried using Sony Ericsson, I've tried using Motorola, I've tried using Siemens and I can't find things which should be obvious to find. The ultimate objective is to make every thing easy. You have to identify what is it that you're trying to do or what is it that you're trying to enable people to do or what is it that you're trying to say to them and if you can understand that and answer those questions then you've got a starting point to design interfaces that work. That's the goal to design something. Things haven't

actually changed. When you go to design school, very early on when you're studying typography. You study typography for the first time in your life when you're 16 and you come across somebody who quotes "**good typography is never noted**". What does that mean? "good typography is never noted" and then you start to realize what it means is If you read the words and understood them and acted on them before you even noted what the typeface was and how big it was or whatever then it really worked. It's actually invisible and the same is true, I think in digital. **Good interfaces are never noted.**

*Passage 4 of 10*      Section 0, Para 37, 340 chars.

Malcolm: **Being one of them, one of their fans**, I got a head start. If I did something that I thought was right for that band and I liked, the likelihood was that they're other fans would like it too. We had the same taste, same motivation and we were driven by the same thing. **The challenge then was again for me to become invisible in the process.**

*Passage 5 of 10*      Section 0, Para 37, 362 chars.

Malcolm: So the challenge then is that you would move onto work with another band, is to always try to understand the band, get into the whole psyche of what they're about, what their music is saying what their audience appreciates about them and then try to represent graphically and consistently across all the products that you get to work with that in a natural way.

*Passage 6 of 10*      Section 0, Para 63, 742 chars.

Malcolm: It's gone beyond that, it's about the **personality** of the Spice Girls, it's about the fame, the fundamentals of what you understand from that and the need for fans to stand up and actually say that **I, being a fan of the Spice Girls, actually you will know something about me. Because I like the Spice Girls, I can tell you something about me in a way that** I wouldn't be able to tell you by any other means. **It's all about personal identity**, and therefore as a graphic designer, working for the music industry, I'm simultaneously extremely important and very unimportant. From a fans perspective I didn't do any of this but what I did, or had to do was extremely important in order to keep the thing going for the bands.

Practically invisible.

*Passage 7 of 10*      Section 0, Para 75, 590 chars.

Malcolm: Most people in the western world get most of their information and most of their entertainment from the television. It's extremely important. It's a piece of technology that's been around for 50 years has entered every home, and is taken for granted and it's there. It seems to be technology, television is there. Technology is what didn't exist when you were born which is why people are scared of computers, they break down, they don't work properly, they're complicated and they seem complicated and they seem scary. **With television, you press a button and then you get Eastenders. Easy.**

*Passage 8 of 10*      Section 0, Para 77, 900 chars.

Malcolm: The fundamental thing is that televisions are important. Interactive media is becoming more important because of what they can do, what people can do with them, the way that you can enhance communication, the way they have greater **powers** than some other media. The ability is to put a library full of books and television together into a space and to be able to access that stuff very **rapidly**. That's just one very powerful aspect of what interactive media can do. So television's important, interactive media's getting very important. It's very important to understand that interactive medias are really young and because they're young, they still don't work, but more importantly that have yet to be a generation of people who have grown up knowing interactive media. Because if you grow up with something, you know how to use it instinctively. It has become invisible because it's always been there.

*Passage 9 of 10*      Section 0, Para 79, 100 chars.

Malcolm: **Going back to this idea that if you grow up with something, it's instinctive to know how to use it.**

*Passage 10 of 10*      Section 0, Para 119, 1480 chars.

Malcolm: I think I could do a good job. I hate to contend I think as **Jonathan Ive, the product designer started to design better and better Apple products, the interface is getting worse and worse.** So all the things that I said was good about Nokia, about how the interface is really working well with the hardware, **I think is beginning to diverge for Apple.** I don't know whether you've used Macintoshes yourselves or whether you're familiar with system 10, but it's horrible, **it's like it's designed by Walt Disney. What I liked about Apple, all those years ago, was that interface was cool, it was so clean, and it really was extremely well designed.** The icons, all the interface were just well designed. There was **nothing too extraneous.** There were fun little details but it was designed with **efficiency, with cleanliness** and getting the job done was at its par. And the interface on OS X **seems to be about, I don't know, I can't even bring myself to talk about it, it's toy town.** You make a computer more and more powerful and in your adverts you make it like the world's most powerful computer and **waste all the computing power doing stupid stuff on screen. All I talked about in the beginning, the interface should be invisible.** They've gone the opposite way. **Making the interface so visible, but it's so visible in an horrible, ugly way,** so yes they should get me to redesign it and I'd advise them on **how to redesign it at the very least,** but I don't think that that's going to happen.

## © Colour

*Node 9 of 18 (8) /colour*  
*Passage 1 of 1 Section 0, Para 57, 817 chars.*

Malcolm: It's about people making associations and wanting other people to know something about them by what they show about themselves. If I drink Coke, it's so you know that I'm a Coke drinker and not a Pepsi drinker. You could put the Pepsi in a Coke can and It'll taste the same but there's a kind a style of life, there are other things at work, I still don't know why. Coke and Pepsi are a really bad example. I've got no idea why that is. But, I don't know, Red and Blue, in a football team, Manchester United are red, Manchester city are blue. I don't know why red and blue are you know, Conservative Party is blue, Labour Party is red. Red and Blue seem to signify opposites so there's something more fundamental at work there. But you still buy it because of the contents; you still want some fizzy cold water.

## © Language

*Node 10 of 18 (9) /language*  
*Passage 1 of 2 Section 0, Para 21, 218 chars.*

Tsen-Yao: If you like, the interface between you and I - if you were speaking Taiwanese and I was speaking English, our interface would be impossible. If we were both speaking the same language the interface becomes invisible.

*Passage 2 of 2 Section 0, Para 33, 1897 chars.*

Malcolm: It's interesting. **A good analogy is design in cars, what you see on the dashboard of a car and an American car. In the United States, the principle language is English and above the dial that tells you how much petrol's in there, it says gasoline.** Above the switch that switches the light, it says light and although that's changing the major language was English so why on earth would they think that they needed to use anything other than plain English. Lights, gas you know. But in Europe then with the French, Italian, German, English, Dutch, Spanish and so there is a move especially from central Europe and from Germany and Switzerland where they were always inventing symbols and clarity of thinking and reducing ideas to basic concepts then above the light, there's a picture of a light. **That aspect of European design has led to the need to develop icons.** Icons that are understood across languages. What's now more interesting, but now the market is

now global, they're international, but there you **start to get all sorts of different problems where symbols can mean different things in different countries**. Chinese symbols are nothing like European symbols. The desire to create a common language through symbols is now getting really difficult. And actually I think we'll see more of a move back to the use of English. **Most cultures are agreeing, where we don't want to lose our own language, our own understanding, our own culture, that the international language would be English**. And so there might be a move backwards to get that symbol to say light. Which is kind of difficult if you have to be English because then you only get you learn one language and one culture. And now you see lots of advertising campaigns like **HSBC that say we are open to all languages which it is addressing global problem, not a global problem but a global challenge of global interest to everybody**.

## © Audience experience

*Node 11 of 18* (11) /audience experience  
*Passage 1 of 12* Section 0, Para 43, 414 chars.

Malcolm: Yes, not in a very formal way. Understanding an audience is sort of instinctive through observation and actually the way audiences work and respond doesn't change very much. Teenage audiences want the same sort of things that they did 10 years ago, or 20 years ago, or 30 years ago. It's just that the style is different, the details and that's what's very important in the music industry, getting the detail right.

*Passage 2 of 12* Section 0, Para 47, 535 chars.

Malcolm: It is an instinctive thing. Nobody create trends, creates fashions. They sort of happen and when you think back to when you were at school. The clothes you wore when you were like 13, you wouldn't really think about where that was coming from or how that happened. It was just the natural thing; **you knew that the people that were looking that way or liking those bands were the people in your class that you identified with, that you liked the same ideas, same aspirations, same thoughts, and same reactions to the big wide world out there**.

*Passage 3 of 12* Section 0, Para 47, 763 chars.

Malcolm: Their fans are not really ultimately interested in the band themselves, but interested in finding their own identity and that's why bands get really really big and suddenly they disappear. Spice Girls disappeared, nobody was interested in them because the fans were **trying to find their own selves. They were interested in themselves and their own place in society and what they were going to do with their lives, and as soon as the start to understand that and know that, then the Spice Girls wouldn't matter to them anymore**. Nor do the spice girls matter to the next generation of fans growing up because they're trying to find their own identity through somebody else. Unless the band themselves understand that, they will get difficulties or mental problems.

*Passage 4 of 12* Section 0, Para 63, 742 chars.

Malcolm: It's gone beyond that, it's about the **personality** of the Spice Girls, it's about the fame, the fundamentals of what you understand from that and the need for fans to stand up and actually say that **I, being a fan of the Spice Girls, actually you will know something about me. Because I like the Spice Girls, I can tell you something about me in a way that I wouldn't be able to tell you by any other means. It's all about personal identity**, and therefore as a graphic designer, working for the music industry, I'm simultaneously extremely important and very unimportant. From a fans perspective I didn't do any of this but what I did, or had to do was extremely important in order to keep the thing going for the bands. Practically invisible.

*Passage 5 of 12* Section 0, Para 75, 591 chars.

Malcolm: Most people in the western world get most of their information and most of their entertainment from the television. It's extremely important. It's a piece of technology that's been around for 50 years has entered every home, and is taken for granted and it's there. It seems to be

technology, television is there. Technology is what didn't exist when you were born which is why people are scared of computers, they break down, they don't work properly, they're complicated and they seem complicated and they seem scary. **With television, you press a button and then you get Eastenders. Easy.**

*Passage 6 of 12* Section 0, Para 77, 540 chars.

Malcolm: So kids don't notice houses, do they? Mum and Dad got a house. I've sort of extrapolated and thought about it and Playstation, video games, I think are extremely, extremely important. It's like how many years has Playstation been around? What year was Playstation introduced? I don't know but I expect it's about 1996, which is not very long ago but we all think that Playstations have been around forever but they haven't. However, for the generation of people for whom it has been around forever, they're only about 7 or 8 years old now.

*Passage 7 of 12* Section 0, Para 79, 1251 chars.

Malcolm: Playstation which is the most effective interactive television we've got so far, has only been around, or the people for whom have never know a time before playstation, they're only 7 or 8 years old now. Imagine the way that their brains are going to be and the demands that they're going to make on media when they're 15, when they're 20. I think the world will begin to change. When that generation of people. Technology will have moved forward by then, it's stability, it's capabilities will have moved forward and you'll have a generation of people who've grown up with it so instinctively they'll know what to do with it and they'll be doing things that we'll be completely surprised by, like wow I never thought you could do that or I never thought that I'd want to do that. At the moment we're still stuck in this middle ground where **the world is struggling to make new technology work, struggling to make new media work and simultaneously struggling to understand what it means and how to use it which is why I'm saying television is really important. It's in everybody's home and it's a platform that the next generation of creative people will be coming from. It's a really simple premise, like the playstation generation is the one to watch.**

*Passage 8 of 12* Section 0, Para 99, 464 chars.

Malcolm: The first challenge was to just **get people to take it seriously**. Because even now people are like, no you can't read text on screen, it's like well obviously the World Wide Web is a complete waste of time because you can't read text on screen, but then I can't see a video in a book. If it was the other way around and the Internet existed before books then people would be saying about books, "well, this is really bad, I can't watch movies" or "I can't hear it."

*Passage 9 of 12* Section 0, Para 99, 152 chars.

Malcolm: **People like what they know and like what they've grown up with. They understand them. It does come back to what you've grown up with, it's so important.**

*Passage 10 of 12* Section 0, Para 111, 563 chars.

That's a challenge. If music becomes totally digital and you're only downloading it over the Internet and this is what great problems with the music industry is at the moment, is like what happens when there isn't a music industry? what if music, it's selling point, what clothes you wear, what you look like, that visual component of enjoying music when you're in your teenage years if you don't have a record sleeve to **visually portray that**, what's going to happen to the visual component of music? That's one of the interesting challenges for the music industry

*Passage 11 of 12* Section 0, Para 119, 1481 chars.

Malcolm: I think I could do a good job. I hate to contend I think as **Jonathan Ive, the product designer started to design better and better Apple products, the interface is getting worse and worse**. So all the things that I said was good about Nokia, about how the interface is really working well with the hardware, **I think is beginning to diverge for Apple**. I don't know whether you've used Macintoshes yourselves or whether you're familiar with system 10, but it's horrible, **it's like it's designed by Walt Disney. What I liked about Apple, all those years ago, was that interface was cool, it was so clean, and it really was extremely well designed.** The icons, all the interface

were just well designed. There was **nothing too extraneous**. There were fun little details but it was designed with **efficiency**, with **cleanliness** and getting the job done was at its par. And the interface on **OS X seems to be about, I don't know, I can't even bring myself to talk about it, it's toy town**. You make a computer more and more powerful and in your adverts you make it like the world's most powerful computer and **waste all the computing power doing stupid stuff on screen**. **All I talked about in the beginning, the interface should be invisible**. They've gone the opposite way. **Making the interface so visible, but it's so visible in an horrible, ugly way**, so yes they should get me to redesign it and I'd advise them on **how to redesign it at the very least**, but I don't think that that's going to happen.

*Passage 12 of 12* Section 0, Paras 141 to 143, 1478 chars.

Tsen-Yao: Do you think computers make you work better?

Malcolm: In some ways it does, yes. There are three ways of making me work better. **It's made me a better draftsman, I can draw better. It's made me a better writer**, writing is now easier and I enjoy writing. So in terms of creating things, **I think my computer has enabled me to grow as a creative person in a number of ways**. I've learned how to make animations, I've learned how to make videos, put videos together. Lots of things that would have been denied to me in the past and now possible through a computer. That's one aspect, but the most important aspect is that **I'm no longer tied down to one location in the world**. My office is my laptop and I can go anywhere and sit down, and it becomes my office. Also, **another aspect of that is because my office can be anywhere**, it can be also at anytime and therefore when I wake up a 3:30 in the morning as I sometimes do, with an idea. I work then, and then I go back to bed. So I'm not tied to 9 in the morning, I go to work and 5, 6 o'clock I go home again, and I've got to do all of my work in that space of time and if I don't have any ideas during that time slice then that day's wasted. I'm able to work whenever it's right for me. **So it's liberated me in lots of ways. So yes it's made me a better designer**. Has it improved the quality of what I do? Well, no it hasn't. **The quality of what I do comes from in here. What it's facilitated is to get the best out of here when I can**.

## © Content

*Node 12 of 18 (12) /content*

*Passage 1 of 2* Section 0, Para 25, 543 chars.

Malcolm: I think a lot of graphic designers actually love the interface, whether it's a book, whether it's a poster or flash movie on a website and they want you to see the interface. They want you to enjoy it. I'm much more interested in what the interface allows to take place so if it's a book; I'm interested in the words, what's the story? I'm not interested in the paper, the leather cover or the typeface. I'm interested in those only to the degree that your enjoyment of reading that story fills your head with visions of what the story's about.

*Passage 2 of 2* Section 0, Paras 51 to 53, 1267 chars.

Malcolm: I don't think that repackaging will work. People don't actually buy packages; they buy what's in the packages. If they stop being interested in what's in the package then they won't buy it, no matter how attractive the package is. That's also why it's impossible for designers to understand, what it is that's important is the **contents** of the package and not the package itself. Because people don't like the package. Other designers like the package, but there are not that many other designers out there. The world at large buys the content which is why I'm interested in the design but lets people get to the content because I understand that it's the content that's really important, that's what people want. That's what people need, that's what drives the world is content, whether it's food, whether it's electrical, whether it's practical, whether it's a camera, whether it's cornflakes, whether it's music....What people buy is those things. When people buy a camera, what they're buying is photographs of their holiday, that's what they want. They don't want the camera. When they buy a box of cornflakes they don't want a box with a picture of Tony the tiger on the side,



they're buying things with sugar on them. **It's very easy for designers to forget that.**

### © Evaluation

*Node 13 of 18 (13) /evaluation*  
*Passage 1 of 3 Section 0, Para 25, 97 chars.*

**Through trial and error, I guess.** Trying to make things obvious and **trying to make things simple.**

*Passage 2 of 3 Section 0, Paras 41 to 43, 214 chars.*

Tsen-Yao: How do you understand the audience?

Malcolm: Yes, not in a very formal way. Understanding an audience is sort of instinctive through observation and actually the way audiences work and respond doesn't change very much.

*Passage 3 of 3 Section 0, Para 47, 784 chars.*

Exactly, I can't anymore. I used to be able to because I was from that generation. The older you get, the more out of touch with the generation, the teenage generation, the older you get, the more out of touch you are the less able to do that work. It is an instinctive thing. Nobody create trends, creates fashions. They sort of happen and when you think back to when you were at school. The clothes you wore when you were like 13, you wouldn't really think about where that was coming from or how that happened. It was just the natural thing; **you knew that the people that were looking that way or liking those bands were the people in your class that you identified with, that you liked the same ideas, same aspirations, same thoughts, and same reactions to the big wide world out there.**

### © Design guideline

*Node 14 of 18 (14) /design guideline*  
*Passage 1 of 5 Section 0, Para 9, 158 chars.*

Malcolm: **For me, graphics design is still the bigger thing that embodies all other individual disciplines like advertising or information design or interactive media.**

*Passage 2 of 5 Section 0, Para 29, 1263 chars.*

Malcolm: **Simplicity is the word that I'm looking for, Simplicity and obviousness.** Nokia, I think, have designed really good interfaces, where they marry the physical interface, i.e. how you press the buttons, how everything works with what you get when you press the buttons. I can control the entire phone, simply by pressing one button. **You know with my thumb, and it's really really good so the physical experience of being able to do that is match by the quality of the quality of what the information looks like on the screen and the order in which you find it and so I think Nokia are one of the most advanced companies when it comes to marrying the soft interfaces, if you like, what's on the screen with hard interfaces.** I tried using Sony Ericsson, I've tried using Motorola, I've tried using Siemens and I can't find things which should be obvious to find. The ultimate objective is to make every thing easy. You have to identify what is it that you're trying to do or what is it that you're trying to enable people to do or what is it that you're trying to say to them and if you can understand that and answer those questions then you've got a starting point to design interfaces that work. That's the goal to design something. Things haven't actually changed.

*Passage 3 of 5 Section 0, Para 29, 576 chars.*

Malcolm: When you go to design school, very early on when you're studying typography. You study typography for the first time in your life when you're 16 and you come across somebody who quotes **"good typography is never noted"**. What does that mean? "good typography is never noted" and then you start to realize what it means is If you read the words and understood them and acted on them before you even noted what the typeface was and how big it was or whatever then it really worked. It's actually invisible and the same is true, I think in digital. **Good interfaces are never noted.**

*Passage 4 of 5* Section 0, Para 83, 570 chars.

Malcolm: "Malcolm, how do you do this?" and I'm like I never thought about that actually, and then you start to think. If you say, "Malcolm, what would you like to do?", I go "I don't know". It's like until there's **a problem to solve**, your brain doesn't start working. So if no one out there understands new media and therefore there's no one asking you to do things then you don't know what to do with new media. But when people ask **"can we do this?" I think we might and then we start working.** I'm a car, I'll just sit there until someone gets in, and then I'll do the driving.... **The set of rules that you can't break is that you have to understand your audience and communicate with them. The set of rules that you can break is that when people say that you have to do it that way.**

*Passage 5 of 5* Section 0, Para 91, 202 chars.

## © Identity

*Node 15 of 18 (15) /identity*

*Passage 1 of 5* Section 0, Para 47, 1269 chars.

Malcolm: **The people that were looking that way or liking those bands were the people in your class that you identified with, that you liked the same ideas, same aspirations, same thoughts, and same reactions to the big wide world out there.** That's what music is all about. It's all about finding your own identity and I think what musicians admit, sometimes is that they actually believe in themselves, they actually believe that bands like them. When they've got this entire boy are girls saying how fantastic they are. Their fans are not really ultimately interested in the band themselves, but interested in finding their own identity and that's why bands get really really big and suddenly they disappear. Spice Girls disappeared, nobody was interested in them because the fans were **trying to find their own selves. They were interested in themselves and their own place in society and what they were going to do with their lives, and as soon as the start to understand that and know that, then the Spice Girls wouldn't matter to them anymore.** Nor do the spice girls matter to the next generation of fans growing up because they're trying to find their own identity through somebody else. Unless the band themselves understand that, they will get difficulties or mental problems.

*Passage 2 of 5* Section 0, Para 53, 188 chars.

Malcolm: When they buy a box of cornflakes they don't want a box with a picture of Tony the tiger on the side, they're buying things with sugar on them. **It's very easy for designers to forget that.**

*Passage 3 of 5* Section 0, Para 57, 584 chars.

People who buy brands are buying them, they're not buying Coca-Cola or not buying Pepsi or not buying Virgin Cola. What they're buying is an association with something. It's slightly more complex. But you won't buy an empty Coca-Cola can, no matter how much you identify with Coca-Cola; you'll never buy an empty Coca-Cola can. Fundamentally, you'll be thirsty and you'll want a drink but you will buy a Coke and not Pepsi, so why do people do that? It's about people making associations and wanting other people to know something about them by what they show about themselves.

*Passage 4 of 5* Section 0, Para 57, 683 chars.

Malcolm: If I drink Coke, it's so you know that I'm a Coke drinker and not a Pepsi drinker. You could put the Pepsi in a Coke can and it'll taste the same but there's a kind a style of life, there are other things at work, I still don't know why. Coke and Pepsi are a really bad example. I've got no idea why that is. But, I don't know, Red and Blue, in a football team, Manchester United are red, Manchester city are blue. I don't know why red and blue are you know, Conservative Party is blue, Labour Party is red. Red and Blue seem to signify opposites so there's something more fundamental at work there. But you still buy it because of the contents; you still want some fizzy cold water.

*Passage 5 of 5 Section 0, Para 111, 563 chars.*

Malcolm: That's a challenge. If music becomes totally digital and you're only downloading it over the Internet and this is what great problems with the music industry is at the moment, is like what happens when there isn't a music industry? what if music, it's selling point, what clothes you wear, what you look like, that visual component of enjoying music when you're in your teenage years if you don't have a record sleeve to **visually portray that**, what's going to happen to the visual component of music? That's one of the interesting challenges for the music industry.

## ◎ Personality

*Node 16 of 18 (16) /personality*

*Passage 1 of 1 Section 0, Para 63, 742 chars.*

Malcolm: It's gone beyond that, it's about the **personality** of the Spice Girls, it's about the fame, the fundamentals of what you understand from that and the need for fans to stand up and actually say that **I, being a fan of the Spice Girls, actually you will know something about me. Because I like the Spice Girls, I can tell you something about me in a way that** I wouldn't be able to tell you by any other means. **It's all about personal identity**, and therefore as a graphic designer, working for the music industry, I'm simultaneously extremely important and very unimportant. From a fans perspective I didn't do any of this but what I did, or had to do was extremely important in order to keep the thing going for the bands. Practically invisible.

## ◎ How to know users

*Node 17 of 18 (17) /How to know users*

*Passage 1 of 5 Section 0, Para 25, 97 chars.*

Malcolm: **Through trial and error, I guess.** Trying to make things obvious and **trying to make things simple.**

*Passage 2 of 5 Section 0, Para 33, 328 chars.*

Malcolm: Which is kind of difficult if you have to be English because then you only get you learn one language and one culture. And now you see lots of advertising campaigns like **HSBC that say we are open to all languages which it is addressing global problem, not a global problem but a global challenge of global interest to everybody.**

*Passage 3 of 5 Section 0, Paras 41 to 43, 515 chars.*

Tsen-Yao: You create a lot of different packaging, images for the band. how do you understand your audience?

Malcolm: Yes, not in a very formal way. Understanding an audience is sort of instinctive through observation and actually the way audiences work and respond doesn't change very much. Teenage audiences want the same sort of things that they did 10 years ago, or 20 years ago, or 30 years ago.

It's just that the style is different, the details and that's what's very important in the music industry, getting the detail right.

*Passage 4 of 5 Section 0, Paras 45 to 47, 826 chars.*

Tsen-Yao: How can you make sure the design detail right?

Malcolm: Exactly, I can't anymore. I used to be able to because I was from that generation. The older you get, the more out of touch with the generation, the teenage generation, the older you get, the more out of touch you are the less able to do that work. It an instinctive thing. Nobody create trends, creates fashions. They sort of happen and when you think back to when you were at school. The clothes you wore when you were like 13, you wouldn't really think about where that was coming from or how that happened. It was just the natural thing; **you knew that the people that were looking that way or liking those bands were the people in your class that you identified with, that you liked the same ideas, same aspirations, same thoughts, and same reactions to the big wide world out there.**

*Passage 5 of 5 Section 0, Para 57, 1267 chars.*

Malcolm: People who buy brands are buying them, they're not buying Coca-Cola or not buying Pepsi or not buying Virgin Cola. What they're buying is an association with something. It's slightly more complex. But you won't buy an empty Coca-Cola can, no matter how much you identify with Coca-Cola; you'll never buy an empty Coca-Cola can. Fundamentally, you'll be thirsty and you'll want a drink but you will buy a Coke and not Pepsi, so why do people do that? It's about people making associations and wanting other people to know something about them by what they show about themselves. If I drink Coke, it's so you know that I'm a Coke drinker and not a Pepsi drinker. You could put the Pepsi in a Coke can and it'll taste the same but there's a kind a style of life, there are other things at work, I still don't know why. Coke and Pepsi are a really bad example. I've got no idea why that is. But, I don't know, Red and Blue, in a football team, Manchester United are red, Manchester city are blue. I don't know why red and blue are you know, Conservative Party is blue, Labour Party is red. Red and Blue seem to signify opposites so there's something more fundamental at work there. But you still buy it because of the contents; you still want some fizzy cold water.

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## **Appendix 4—**

Transcripts of interviews with designers

(Section 4.2.3)

## Appendix 4– Transcriptions of interviews with designers (Section 4.2.3)

This interview evolved from the questions directed at the 9 designers who were originally interviewed by Dr. Malcolm Garrett. A profile of each designer is given below, in Figure 4-1. To facilitate formatting their names were abbreviated as follows: Dp/Cheng, Dp/Liu, Dp/Zeng, DP/Wang, DPChiu, DP/Lee, DP/Lin, DP/Chang, and Dp/Wo.

Interviewee	Name	Gender	Occupation
No1.	Chiu-Mei, Cheng (DP/Cheng)	Female	Visual Designer of Faraday Technology Corporation, Investment & Corporate Relation Office / 6 years design experiences
No2.	Cheng-Yi, Liu (DP/Liu)	Male	Senior Engineer of AU Optronics Corp. Information Technology Div. / three years working for ERP (Enhanced Product Realization)
No3.	Ya-Chi, Zeng (DP/Zeng)	Female	Occupation: Assist Manager of R&D Dep., Textile Business Center, Tung Fong Textile Co., Ltd., <a href="http://www.fabric.com.tw">www.fabric.com.tw</a> / 6 years design experience
No 4.	Ray-Ching, Wang (DP/Wang)	Female	The owner of PU-JI design consultancy / 16 years visual design experience
No 5.	Yong-Chung, Chiu (DP/Chiu)	Male	Design lecturer for 6 years / 12 years graphic design experience
No 6.	Shin-Yi, Lee (DP/Lee)	Female	Design researcher/3 years design research experience
No 7.	Shiu-Yuan, Lin (DP/Lin)	Male	Web designer /4 years design research experience
No 8.	Yu-Chuan, Chang (DP/Chang)	Female	Interface designer /3 years design research experience and 2 years for design working experience
No 9.	Karen, Wo (DP/Wo)	Female	Freelance web designer/ 4 years design working experience

Figure 4-1: Each designer's background details.

The interview focused on the following three topics:

- 1) What is important in graphic design?
- 2) What is appropriate interface design for users' needs?
- 3) What is important about user experience?

There were 8 items that were spread out to bridge the relationship between designers and users, as shown Figure 4-7. Through these items, the researcher wished to explore these issues more deeply with these designers in order to ascertain their views on the importance of graphic interface designs to users.

### 1) Web interface design

Each designer has professional experience of designing websites or developing Web structures. The following lists their individual perspectives about Web interface design.

DP/Cheng said, "It is about the look and feel of the website. Normally, I would like to refer to other sites which have similar contents and topics in generalising ideas for a site. This process could inspire me with design ideas more quickly, and could also give me an idea about what those potential audiences like [...] and colour is a very important element, which presents audiences with a quick view of the content. For example, when I design websites for IT products, I quite often use blue and grey colours for such kinds of Web content and product. This is about image identity."

DP/Liu said, "The layout is mainly about organising information. But I think about the usability issue first because most of my projects are about online-shopping. Usability design is very important for creating a usable website for users to browse well. Therefore, one needs to be careful in organising the information and images in order to attract the customers' interest to buy products and give them a secure feeling when shopping. The customers are concerned about how to easily buy what they want and pay securely online. All the information must be very easy to read and understandable. The feedback system is also important [...] The Web design is about building a relationship with people and business. Trust is the main thing. I would be careful to use colour and icons on the interface; I don't want to confuse the customers."

DP/ Zeng said, "Frankly, I think web usability is more important than the visual expression of pages. Thinking about if I am a user, I prefer to find the information I want as quickly as possible. I need a clear and well-structured interface. I look at the content more than those images. But, of course, those images mean something to me. When they are big and interesting, but not an ad, I like to click on them and see if there is any information [...]. A good interface should guide users to obtain what they want. So, talking about web page design, it is always connected with the usability issue. Maybe creating an interface with effective usability might cause a page to look engineered but at least it will be useful."

DP/Wang said, "Interface is something about building a kind of atmosphere for people to be involved and engage with; it needs to be enjoyable, intuitive, and easy to use. Two days ago, I visited a website which was introducing and selling classic music albums. When I opened the first page, the background music just came out spontaneously. It was so engaging and it inspired me at that moment. Also, its page design was created with Flash and perfectly fitted its product and content. I engaged with it for so long, I forget how long

I stayed there [...] I did bookmark its URL into my favourites list because it was so engaging.”

DP/ Lee said, “Users are already familiar with certain kinds of website formats, such as a common menu bar on the left hand side of each page or a category window on the left-hand side. Some users even anticipate where the menu bar will be on a page. If designing a new frame style that is different from the most common method, users can easily get confused during their first visit, so they need some time to get used to it [...] The layout format could be functional as a user-navigation guide; it also helps to keep the site consistent page-by-page [...] Of course, the layout must make a website look the way it should be, so if the content is about news, the style needs to be different from a personal website. The graphic design for a website integrates two aspects: aesthetics and functions, in order to attract users' attention.”

DP/ Lin said, “Information-rich web content is more important than beautiful visual expression for satisfying user needs, so that users would like to visit a site again because of the content.”

DP/ Chiu said, “I think that the non-linear style of page layout would be an interesting concept for building a website because of the hyperlinks and multimedia support, so that the content can be presented in different ways from printed-base design. Using Flash (software) for a website can make a website artistic and dynamic. But some people don't like splash covers in websites; they think it is a way of showing off the designers' skills rather than being usable. I don't quite agree with this; the Macromedia Flash format (.swf) contains sounds, animation, and fewer limits in expressing visual layout when designing interfaces. It is useful to design an engaging and visually striking website once it could present the sense of visual logic. Concerning usability, it depends on designers' considerations; basically, designers need to make sure their designs are usable – if the appearance is too plain, I like to think what I can give my users (...) I don't bother downloading flash because it is not a big issue because of the popularisation of broadband.”

DP/ Wo said, “In my recent experience of designing a website for music recording planers, what they wanted me to do was to interpret their image on an interface, which is about themselves. So I wanted to show my understanding of them via the visual expression of a Web interface.”

DP/ Chang said, “Ergonomic guidelines have to be concerned with the Interface Design of software development. Concerning web interfaces, it might be less important than the interface of the operating system of the software application. Sometimes, I found that web interfaces give limited consideration to ergonomics, but those designs of interface layouts suddenly become trendy and are mimicked by other websites. Users get used to using the interfaces, but it doesn't mean they appreciate such aesthetic expression. They just use it and get used to it [...]. The layout is like a map to show where they can go; it must clearly present information and be easy to use.”

\* \* \*

## 2) Catching users' attention

Continuing with the issue of “visual communication” from the interview with Dr. Garrett,



the following discussions took place with the same nine designers. They pointed out other important issues, especially how to best catch users' attention while they visit a website.

As section 2.4 highlights, attention can be conscious or unconscious depending on how information is processed. Dr. Garrett also addressed the topic of making the interface invisible. Thus, catching a user's attention is not contrary to what Garrett has said because it is more related to attraction, impressions, and visual aesthetics. The following three designers tended to explain how graphic design has an instant visual impact on people's attention when they open a webpage. This topic has also been further explored by testing user experience. (Faulkner (1998) also discusses the issue of attention through the interface: section 2.4.3)

DP/Cheng said, "Animated images are good for catching people's attention, although some people don't like it too flashy. Movement is an interesting character for a website, when compared with the printed media. If designers have something important to say and they want the audience to listen, animation is quite useful."

DP/ Zeng said, "I think colour is a very effective visual element. When I design a webpage, I prefer to use colour contrast to highlight the important information. When I visit other websites, my attention is caught by the colour before starting to read the content. I love to see beautiful colours around a site [...]. For me, the colour characteristic is the main thing for identifying the first impression of a website; colour could be used to imply different preferences between genders or difference likes of personalities. For example, for creating a more masculine appearance, a pink colour background might be a bit wicked, I tend not to use pink in that way."

DP/ Lee said, "Every single visual element has its individual meanings, so it is hard to say which one is the best for catching peoples' attention. Generally, an image is better than written words. A picture always contains a rich meaning, and sometimes when I visit websites, my eyes are dragged immediately to those impressive images, and I say "wow" or "cool". What I mean is that it is about touching and engaging [...] I am interested in some websites that are designed sensuously and use images and place each visual element in the right place."

\* \* \*

### 3) Emotional design

Regarding the role of "Emotional Design" for a website, these nine designers continued to offer valuable ideas and suggestions."

DP/ Lin said, "I quite like a website which provides 'Online Flower Delivery'. They've got a special service, which allows their customers to watch the recipients' facial expression when they receive the flowers. It is a real-time video show that is filmed with a Video Cam Internet kit and allows customers to watch it over. They can see their friends' facial expression in real time as they receive the flowers: the video conveys those images to the customers who ordered the flowers. So the customers can see how happy the recipients are when receiving the flowers. That's a clever idea and concerns conveying deep feelings, which could be a kind of engaging commercial service for delivering emotions."

DP/ Wo said, "Using intimate visual metaphors and familiar language when designing a

web interface is good for creating real feelings, without distancing ourselves from the users. This suggests emotional design [...] Human emotion is complex and can be predictable or unpredictable, but it always interacts with the surroundings whatever is happening [...] emotion is hard to cover with a single term.”

DP/ Lee said, “Emotional design, when designing a website, is related to the visual layout. The colour scheme is important, so the layout style is important [...] for example, a commercial website should make a good layout arrangement for creating an attractive impression of its homepage, in order to show their potential customers the quality of their services and products. The design of the corporate visual identity and layout style could reflect the aesthetics of the corporate style, and the service quality in how they care for their customers [...] Emotional design could be focused on how graphic design creates trust and user-centred concern via design for their users.”

DP/ Wang said, “Emotional design in website design could be used to get your target user group’s approval. It is a kind of design for enhancing the users’ satisfaction, agreement, and likes. I think emotional design could be like shouting at someone, but not loudly, so that they can just hear you (the designers) very clearly. It is a direct sensuous contact between users, designer, and products. So the audience (the users) can clearly hear what the designers want to say to them. The relationship between designers and users is established by a deep understanding.”

DP/Chang said, “I am not sure what emotional design is but it is a good question. In my experience, I think it is important to think what user experience is, rather than showing an exciting design, such as flash-laden interfaces. Sometimes, that’s overkill; such splash pages make me feel quite annoyed [...]”

DP/ Liu said, “I am not sure what exactly emotional design is. A usable interface is a more important issue than a emotional website in general [...] I agree that graphic design can affect user feelings but I have met too many clients who only pay me to give them something readable, usable and that costs as little as possible [...] Yes, they are not ideal examples, but their cases reflect most clients’ basic needs. And such experiences have happened again and again and taught me more—not to argue with your clients’ sense of taste, just give them what they want and satisfy their needs.”

DP/ Cheng said, “Emotional design should be related to users’ emotions but I always gain the information, requirements, and data from my clients. But they are not real users, so this sort of information is not directly connected to user needs as it is second-hand data. The information from clients who claim that they fully understand their users or customers’ needs provides me with a brief view for designing their commercial sites [...] in fact, because of budget limits, I wouldn’t have time to conduct a user survey, or even talk with the users directly. Mainly, my clients provide me with the information for the site content, so what I do is rely on what they give me. Mostly, I design website styles based on my professional experience and ideas. I mean, the clients think that’s my job, so I am in charge of developing and designing a practical and usable website to please them, but they do not pay enough attention to what users like, I think.”

\* \* \*

#### 4) Visual language

In order to understand how designers arrange visual elements to attract users' attention, therefore, the following lists their opinions about the topic: visual language. In particular, when discussing the visual language of a website, colour seems to be addressed more often than other elements as the following shows:

DP/Cheng said: "Colour is the most powerful element of visual language; it is able to show the strong sentiments of the whole visual expression of the website. The colour is the pervading atmosphere which enhances users' feelings and imagination."

DP/Liu said: "Colour is useful for highlighting the titles or key terms, so that readers can easily focus on the important information".

DP/ Zeng said: "Colour can express different feelings on screen; in particular, the colour can indicate where the first thing to be read is located. The colour could be used with each of the different tones which will usually present vastly different meanings in readers' visual experiences"

DP/ Wang said: "Colour has an amazing power to produce a good atmosphere in virtual reality. Colour is equal to visual identity and visual personality and helps immerse the viewers in the surroundings".

DP/Lee said: "Yes, designers can use a good layout and colour to design a good interface, especially a combination of colours, as they affect human emotions a lot. Which colour is more attractive to a person depends on their personal experiences or their preferences."

DP/Lin said, "Colour plays an important role in helping to convey human emotion."

DP/Chang said: "Colour affects human emotions most directly."

DP/ Wo said, "Emotional value makes design engaging and attractive, it is not easy to encapsulate what emotional design is, but I am concerned with making my design good and reflecting personal life experience and personal values, which are invisible but make design look alive."

\* \* \*

#### 5) Web interactivity

The difference between website design and printed-base design with respect to Web interactivity is one of the fundamental factors for creating different visual experience. During the interviews with the designers, some of them addressed their viewpoints about interactivity as follows:

DP/Cheng said: "It should work with icons that can facilitate users navigation on the Internet. Click- and-release interaction between the user and the icons, the website can respond to the user's actions and convey information to users. Such experience is quite different from the interaction of reading a book or magazine. The process of obtaining information is dynamic [...]."

DP/ Zeng said: "Web interaction is associated with fast movement, like with interactive

menus, so considered and usable designs makes the menu more sensitive in responding to users' needs through motion. It can create an intimate relationship between a website and its users by being convenient."

DP/Wang said: "The interactive devices of a web menu, icons, or information arrangement can encourage users to continue reading a website and guide users to get what they want to get."

DP/ Chiu said: "The design guidelines for digital media are the same as for the conventional graphic media; the interactivity of digital media is the main factor in discussing the difference between digital and conventional communication media. With interactive devices, web content can be viewed in a non-linear way. Hyperlinks have been developed as a useful way to link a page to other pages, depending on the Web content. Users can decide their route for searching for information in a website."

DP/Lin said: "It should be designed with a certain kind of enticement to attract users to use it. For instance, the button is a good place to set up an interactive device as a responsive mechanism, to show users how to use it better; or a pull-down menu is also a good way to show the interaction. A pull-down menu is not going to display all the content at the same time and is used therefore to arrange information through the use of multiple levels of cascading menus. Designer should lead users to have an interest in exploring the site for longer, otherwise a pull-down menu might discourage users from further exploring if they couldn't read the whole index of the content in a quick way."

\* \* \*

## 6) Web usability

In order to create a good user experience, usability design is essential in a user interface. Each designer has their individual perspective on Web usability, as follows:

DP/ Cheng said: "The user minds the length of the download time. So, a usable design is more important than having overly technical visual expression."

DP/Liu said: "Usability is the most important issue for a website. But, if the website is for on-line shopping, the visual expression of the layout is valuable, as usable interfaces affect a user's decision-making process."

DP/Zeng said: "Usability is more important than other factors". I believe that the speed of downloading images and information has to be fast, with enough technique tied to it."

DP/Wang said: "Usability design is an essential requirement for the interface, but I don't mean sacrificing the design of visual pleasure. I mean it is important to have a balance between Web engineering and aesthetic design."

DP/ Chiu said: "Creating a user-friendly environment is very important when designing a user- interface."

DP/ Lee said: "Usability has to fluently facilitate users browsing a website. A good website should offer a 'Home' link that can enable users to go back to the home page freely."

DP/Lin said: “The function is related to programming design, such as Lingo or Java. If a website wishes to have usability and visual aesthetics, the design work should be created through cooperation between programmers and graphic designers. The programmers can solve the software problems of the operating system. However, some websites without smart programming are still very attractive. In such cases, a graphic designer should think about how they can make an interface usable by using different visual languages to make users not be afraid of making errors when browsing a website. To reduce users’ anxieties is important for designers to consider.”

\* \* \*

## 7) User experience

The following lists each designer’s individual perspective on how to design or enhance user experience:

DP/ Cheng said: “All the information for my work comes from my clients’ requirements. I do not talk with users face to face about their needs [...] My job is to instantly attract the users’ eyes and beautify the interfaces of the websites. Of course, I am also concerned to provide a usable interface for users. If I have the time and budget to conduct a user survey, I will, and I know the outcomes will be useful for the process of generating design ideas. But how to do it effectively needs more research.”

DP/Liu said: “I think that the user’s main concern is the functions of the interface; so designers should design an easy to read webpage for users. My experience is oriented by my past design experience; it is hard to conduct a user survey when facing a very short deadline for completing a website.”

DP/Zeng said: “It should be considered how to approach the user’s real experience and consider their sense of aesthetics when designing the visual expression for a website. I am interested in how to do it properly.”

DP/ Wang: “It is very important to create an atmosphere for a user to immerse themselves in when browsing the Web [...] the designers’ personal life experience and sensitivity can have a big influence on their design work[...] Understanding users’ needs is important for observing how they are interacting with the Web.”

DP/Chiu said: “How do the new media get lots of teenagers to have fun when using? Because everyone can participate, everyone can take control to instantly go where they want in cyberspace [...] Sometimes, a designer should design a layout with a well-structured narrative as a story-telling device to convey the necessary information to the audience, so that everyone can be brought to participate. Trying to think how to tell users a story and make them engaged is the concept when I design a website.”

DP/ Chang said: “Some users might expect interfaces to have poor usability because they do not usually have any other choice [...] If the content really attracts users, they do not normally consider the matter of visual aesthetics. However if users are just browsing websites for no specific purpose, visual aesthetics do matter; they might see something interesting and stay on that website. We do need to understand more research about user experience and user behaviour in order to design good websites for users. [...] For a

novice, a user interface is better designed if it gives an instant response and has a visualised operating system that can reduce their fear of failing to understand.”

\* \* \*

## 8) Graphic design and usability

DP/ Cheng said: “Making well-designed usability for a website is basic and foremost. The visual expression is mainly for identifying the image of the company, and it can also be a way to make the website attractive and beautiful. However, a website without usability will be badly designed, even if it looks beautiful as a site.”

DP/ Liu said: “Good graphic design should fit the topic of the website. For instance: McDonald's Corporation, which uses a business graphic identity to integrate the image of their restaurants and website. When people log on to their website, they see a strong image, which informs them that this is McDonald's Corporation. This is important for a commercial website. Additionally, colour is a powerful factor for creating a business graphic identity [...]. On the other hand, the functions of icons are more important than the visual expression of the icons. And, too much decoration is meaningless and destroys user patience. For functionality, design is better when it is as simple as possible and focuses on promoting important information.”

DP/Wang said, “An ideal interface would be an invisible interface that reduced the uniform layout and framework, to help arrange the user interface. It is very important to create a virtual environment for users to immerse themselves in freely and to enjoy more. Even though the website is designed with very complex programmer language, the users don't need to read it. What they do need is a comfortable and secure using environment with easy-to-use functional design. How? Designers need to understand their users deeply; and website design is not just about usability issues or aesthetics content. More knowledge and experience are involved. ”

DP/ Lee said: “It needs user experience surveys to refer to the target users' real experience in order to find out which design will work or not, such as whether the icon design of a site is easy to understand or not.”

\* \* \*

In the above discussions with the designers, most of them mentioned that although content and web usability are fundamental there is something else that can make a web interface different, such as being engaging, inspiring, trendy, trustable, aesthetic, reflective of self-images, visually appealing, artistic, and having the capacity to elicit users' emotional responses. These variables that exist in the emotional dimension are noticeably different from those related to functional issues. Even though some designers tended to talk about the visual expression of interfaces, what they said didn't ignore the importance of usability and utility. This suggests that these graphic designers believe that aesthetics and usability could coexist in some way, especially with the improvements in broadband Internet.

Nonetheless, they all indicate the importance of an emotional influence on users' perceptions. However, there is a lack of development of effective and adaptable approaches for investigating user experience. Under the limits of budget and time, most designers do not conduct user surveys before generating design ideas. To have better understanding of user experience is important, so there is a need to seek appropriate

methods at relatively low-cost and within a short time, to develop design to meet users' needs.

Summarising the outcomes through the interviews with the designers, the next focus of this study is to develop a set of useful design/research tools in order to investigate users experience effectively and inspire designers with design ideas to achieve user-centred design.

\* \* \*

## **Appendix 5—**

Open-ended questionnaire about user experience

(Section 4.3.4)



## Interviews about web user experience






This questionnaire is designed to investigate web users' perception when they browse on the Internet. This is a survey that will be used to help the researcher observe whether graphic design of interfaces can influence a user's perception and emotional experiences in order to improve the quality of user experience. Please answer every question and express your opinions as fully as possible. All your answers will be used for this academic research only. All information received will be kept in confidence.

Thank you for your participation and time.

### A. Personal details

1. What is your age group?  
Under 15\_\_\_, 16-25\_\_\_, 26-35\_\_\_, 36-45\_\_\_, over45\_\_\_.
2. Gender? Female \_\_\_\_, Male \_\_\_\_.
3. How long do you spend on the Internet per week?  
Less than 7 hours \_\_\_\_, 8~14 hours\_\_\_, 15~21 hours\_\_\_, 22~35 hours \_\_\_\_, over 36 hours\_\_\_.
4. How many years have you been using the Internet? \_\_\_\_.

5. Do you agree that the visual expression of a website can affect your emotions when you browse on it? Please tick one of the boxes below the emotional icons to represent your feelings.

	-----		-----		-----		-----		-----
Strongly disagree	-----	Somewhat disagree	-----	No opinion	-----	Somewhat agree	-----	Strongly agree	-----

Please state your reasons.

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6. Please give an example of your favourite web interface. (Note: the answer must, if possible, include the URL address).

7. Continuing Q6. What are the visual elements on your favourite interface that captured your attention? (You can choose as many as you like, but you need to number each one in order. For example, 1 to 13, 1=the most affective one, 13= the least affective. In addition, you should write alongside each choice, under Factors, reasons selected from the right hand column.

Visual expression	Factors	
( ) Image	_____	A) Colour
( ) Background expression,	_____	B) Shape
( ) Button expression,	_____	C) Typeface
( ) Icon expression	_____	D) Movement
( ) The menu design	_____	E) Size
( ) The form of page Layout	_____	F) Position
( ) Animation	_____	G) The type of image (i.e.
( ) Video	_____	photograph, paintings,
( ) Page title	_____	illustrations, or icons)
( )The branding	_____	
( ) The text content	_____	
( )The pop-up advertising	_____	
( )The size of window	_____	

8. Continuing Q7. What do you think is the visual element that can express the emotion of a web interface? And why?

9. Mark the Homepage and the Second-level page below with the emoticons shown. If you have more than one feeling simultaneously about each page, you can use several emoticons to describe your feelings about them.

(note: copy the emoticons exactly as they are shown )

Home Page

---

Second-Level Page

---

10. Continuing Q9. Describe what you think about the interactivity of your favourite interface.
11. Continuing Q10. Describe what you think your favourite interface looks like.
12. Continuing Q11. State if the website is usable for you and why?
13. Continuing Q11. From your perception, what different is there in visual expression between the Homepage and the second-level page?

**Thank you for participation.**

## **Appendix 6—**

Users' responses to open-ended questionnaires (Section 4.3.4)

The researcher applied the open-ended questionnaire listed in Appendix 6. The following figures show the participants' responses to each question.

## Appendix 6— Users' responses to open-ended questionnaires (Section 4.3.4)

### 1. Age group

Under 15	16-25	26-35	36-45	Over 45
	P4,P6,P9	P1,P2,P3,P5,P6,P8		P10

### 2. Gender

Female	Male
P1,P2,P3,P4	P5,P6,P7,P8,P9,P10

### 3. How long do you spend on the Internet per week?

Less than 7hours	8-14 hours	15-21 hours	22-35 hours	Over 36 hours
P2,P9		P4,P5,P6,P7,	P3,P8,P10	P1

### 4. How many years have you been using the Internet?

6 years: P7, P9, P10 (please use one space in between)

8 years: P1, P4 (see above)

9 years: P8

10 years: P2, P3, P5, P6 (see above)

### 5. Do you agree that the visual expression of a web site can affect your emotions when you browse on it? Please tick one of the emotional icons in the boxes below to represent your feelings.

	Texts	Icons	Reasons
P1	<input checked="" type="radio"/>		When there is very distinctive design on the website, it tends to attract some attention, but it is not the most important determinant, content is still the most important thing.
P2	<input checked="" type="radio"/>		Visual expression can impact on our emotions.
P3		<input checked="" type="radio"/>	Animation and colour images, too much pop-up advertising are the visual expression of a website that affects my emotions when I surf on the Internet.
P4		<input checked="" type="radio"/>	When seeing some cute websites, i.e. Japanese style ones I will be put in a good mood.
P5	<input checked="" type="radio"/>		I believe that all visual stimuli can affect one's emotions to some extent.
P6		<input checked="" type="radio"/>	It depends on what I am looking at and if it can touch my feelings.
P7		<input checked="" type="radio"/>	If the website is crap, I look at another website! But sometimes, some websites with an older design are brilliant because they have an interesting content. For me visual experiences are important but the content is the most important.
P8		<input checked="" type="radio"/>	Of course, I normally go to some websites that I am already familiar with and have gotten used to their layout and design. Therefore, I don't feel bad when I am surfing.
P9		<input checked="" type="radio"/>	It depends on the material you are viewing. For example, when viewing

			news on the web, people are bound to get effected by what they see. E.g., natural disasters and wars could cause distress, anger and panic.
P10	⊙		Computer graphics affect a person as much as any other graphics. Also an exciting interesting website always makes me feel happier. Bad ones make me frustrated and angry or bored. Bad ones also make me tired.

**6. Please give an example of your favourite web interface. (Note: the answer must, if possible, include the URL address).**

P1: [www.google.com](http://www.google.com) (clear and easy to move around)

P2: [www.elmercurio.el](http://www.elmercurio.el)

P3: [www.google.co.uk](http://www.google.co.uk) ; [www.bbc.co.uk](http://www.bbc.co.uk) ; [www.msn.co.uk](http://www.msn.co.uk)

P4: [www.yahoo.com.tw](http://www.yahoo.com.tw)

P5: I am not sure what a web interface is.

P6: [www.ticketmaster.com](http://www.ticketmaster.com) (to buy tickets for any event); [www.virginradio.co.uk](http://www.virginradio.co.uk) ; [www.gazzetta.it](http://www.gazzetta.it) (sports website)

P7: [www.klm.com](http://www.klm.com) ; [www.google.fr](http://www.google.fr) ; [www.lequipe.fr](http://www.lequipe.fr) ; [www.angel-anime.net/v2/index.php](http://www.angel-anime.net/v2/index.php)

P8: [www.yahoo.com.tw](http://www.yahoo.com.tw)

P9: [www.funnyjunk.com](http://www.funnyjunk.com)

P10: I do not have a particular favourite but I prefer arty ones like artists or art organisation websites. For example: [www.tachdes.de](http://www.tachdes.de) (This is German).

**7. Continuing from Q6. What are the visual elements on your favourite interface that captured your attention? (You can choose as many as you like, but you have to number each one in order. For example, 1 to 13, 1=the most affective one, 13= the least affective. In addition, you should write alongside each choice, under factors, the reasons selected from the right hand column.**

**Visual expression:**

	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Image	2	5	1	2			5	4	11	1
Background expression	6	4	6	5		1	3	5	8	4
Button expression	12		7					8	10	3
Icon expression	8							7	9	6
The menu design	4		3	3		3	1	2	6	5
The form of page Layout	3	2						3	4	2
Animation	10		2			5		9	2	8
Video	13							10	1	9
Page title	11	3		1		2	4	11	5	10
The branding	5							6	12	11
The text content	1	1				4	2	1	7	7
The pop-up advertising	9		13				13	13	13	13
The size of window	7		5	4				12	3	12

**Comment:**

P5: I don't know what a web interface is. I agree that any website's visual design may have some emotional impact on my brain, but it's not something I think about consciously. In terms of the visuals, the only conscious generalisation I can make is that I prefer a website uncluttered, unobtrusive and easy on the eye. This probably works to keep me happy and focused. If the page has ugly or distracting ads, popup, colours and symbols, I certainly do notice this: it

irritates me, makes everything look slipshod (bad workmanship) and too commercialised and I make a mental note that the designer (and by implication the webpage owner) is unprofessional and - shock horror! - has "bad taste".

#### Factors:

	Colour	Shape	Typeface	Movement	Size	Position	Type of image (i.e. Photograph, paintings, illustrations or icons)
Image	P1,P3,P4,P7		P1,		P2	P2,P8	P2,P9,P10
Background expression	P1,P2,P3,P4,P6,P7,P8,P9,P10						
Button expression		P1,P3	P10		P8	P1	P3, P9
Icon expression	P8	P10				P1	P9
The menu design	P7	P7	P7,P10		P1,P3	P4,P6,P8,P9	
The form of page Layout		P2,P10	P1		P2,P9	P2,P8	
Animation	P1,P10	P6	P1	P9	P8,	P3	
Video			P1		P8,P9		P10
Page title		P7	P6,P7,P8,P10		P2	P1,P2,P9	P4
The branding	P1	P1				P8,P9	P10
The text content			P1,P2,P7,P9,P10		P2,P6	P1,P2,P8	
The pop-up advertising					P8,P9	P1,P3	P10
The size of window		P10			P1,P3,P4		

#### 8. Continuing from Q7. What do you think is the visual element that can best express the emotion of a web interface? And why?

P1: Colour, layout, size and content.

P2: Probably all of the above expressions to varying extents.

P3: The menu design, button expression and the image are attractive and very easy to use.

P4: Colour, it can affect people's emotion. For example, colour therapy.

P5: See above.

P6: The page title, because I can understand if the website is interesting for me.

P7: The font type and the colour.






P8: A visual element is a symbol that can be used in our lives, e.g. a word is a symbol that expresses a meaning to others. So for me, a visual element is another form of words.

P9: Bright colours, because they catch the eye and make the viewer interested.

P10: The colour composition, as it is like responding to a painted picture which we are conditioned to respond to.

9. Mark the Homepage and the Second-level page below with the emoticons shown. If you have more than one feeling simultaneously about each page, you can use several emoticons to describe your feelings about them.

**Home Page:**






					
P1:	<input checked="" type="radio"/>				
P2	<input checked="" type="radio"/>				
P3		<input checked="" type="radio"/>			
P4		<input checked="" type="radio"/>			
P5					
P6		<input checked="" type="radio"/>			
P7	<input checked="" type="radio"/>				
P8		<input checked="" type="radio"/>			
P9		<input checked="" type="radio"/>			
P10	<input checked="" type="radio"/>	<input checked="" type="radio"/>			

**Comment:**

P5: I don't understand what this means. Which Homepage are you talking about?

P7: It depends on the website that I am looking at. For my favourite website

**Second-Level Page:**

					
P1		<input checked="" type="radio"/>			
P2	<input checked="" type="radio"/>				
P3	<input checked="" type="radio"/>				
P4		<input checked="" type="radio"/>			
P5					
P6		<input checked="" type="radio"/>			
P7	<input checked="" type="radio"/>				
P8		<input checked="" type="radio"/>			
P9			<input checked="" type="radio"/>		
P10	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>		

**Comment:**

P5: What's a "Second-level page"?

P6: It depends on the website.

10. Continuing from Q9. Describe what you think about the interactivity of your favourite interface.

P1: Not too big a font, the window is not too big, and it clearly indicates where to find information, a moderate colour, and a good concise layout.

P2: Minimal. You can forward articles to people or write to the editor but there are no blogs or



anything like that.

- P3: Speed and not pop up advertising, the colour image is nice. For example, MSN, the news in the front page, head-line news, gossip and stock market.
- P4: The speed is ok, it is fluent.
- P5: I don't understand what this means. Which homepage are you talking about?
- P6: I am happy with my favourite website, no problem.
- P7: The interactivity is simple, accurate and efficient.
- P8: No comment.
- P9: It is simple and easy to use.
- P10: It is fine because it holds my interest and enables me to make good use of it.

#### **11. Continuing from Q10. Describe what you think your favourite interface looks like.**

- P1: Simple and clear, not too many pictures, one or two useful ones to impress will be good, not too big as well.
- P2: An online broadsheet.
- P3: Simple use, a quick loading speed.
- P4: It may be colourful and contain all the information that I need.
- P5: I do not understand what this means.
- P6: I cannot complain because it has been built up with my favourite colours, blue and red, also it looks clear when I am looking for the news.
- P7: Clean, Simple to use, download very fast and easy to browse because I know the website very well and because there are initiative menus.
- P8: No comment.
- P9: Bright, catchy, no pop-ups.
- P10: Bright, modern, colourful, clean graphs are easy to understand, and original.

#### **12. Continuing from Q11. State if the website is usable for you and why?**

- P1: It is very usable because I use it to search for information almost every day.
- P2: Yes, it always works when I look at it and it is a useful resource, but it is only updated once a day.
- P3: Yes, it can get a lot of information and shorten the distance of initial, useful communication.
- P4: Yes, it has a lot of information.
- P5: I do not understand what this means. Which website are you referring to? Do you mean the URL you asked me for back in Question 6? Of course, any good website is clearly one that is useable. Preferably, it should look clean, simple and businesslike (in terms of colours, fonts, photos and the like) and be up-to-date. And, generally speaking, possibilities for efficient interaction are always good too.
- P6: Yes, because I can get the information quickly and also I can use it to do my own business buying and pay bills etc.
- P7: Yes, of course because it gives me a lot of news about sports.
- P8: No comment.
- P9: Yes, because it is clearly marked.
- P10: Because it satisfies my functional requirement.

#### **13: Continuing from Q11. From your perception, what difference is there in visual expression between the Homepage and the second-level page?**

- P1: The second page is consistent with the first one but more pragmatic. All the information is on one page, you can easily make a choice where to go. The home page has strong branding function and the image is very clear and concise, not threatening and memorable I guess as well. Easy to use as well.
- P2: The homepage looks like the cover of a broadsheet newspaper. The second-level page looks like a newspaper article.

- P3: If the homepage is easy to understand then you will look at the second-level page in order to get more details about that you are looking for.
- P4: The second-level page has more test content. The homepage usually has a big title and more photos.
- P5: see above.
- P6: The homepage must attract the customer; the second one must be simple.
- P7: The homepage is the page where I make the choice when I want to go into the website. The second-level page gives me the information I was looking for.
- P8: No comment.
- P9: A home page is always given more importance.
- P10: The second level page focuses more on the details and information being sought.

## **Appendix 7—**

Participant profile for the application of “Emotional Probes”

## Appendix 7– Participant profile for the application of “Emotional Probes”

The participants' profiles are useful to report basic information about each respondent's background. In this section, each participant is referred as: P1, P2, P3, P4, P5, P6, P7, P8, P9, and P10 to profile their background.

Participant	Gender	Age	Participant	Gender	Age
P1	Female	26-30	P6	Male	26-30
P2	Female	26-30	P7	Male	31-35
P3	Female	26-30	P8	Male	31-35
P4	Female	26-30	P9	Male	31-35
P5	Female	26-30	P10	Male	26-30

Figure 7-1: Each participant's background details.

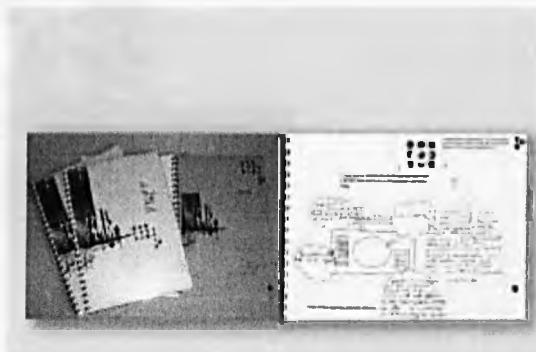
Participant	How long do you spend on the Internet per week?	How long have you been using the Internet?	For what the main reason(s) do you use the Internet?	In your opinion, what is the most significant part in the function of the visual interface on the Web?
P1	Less than 7 hours	8 years	E-mail, random queries, texts of songs or poems, research (academic)- and such kinds of articles	To browse for information, gather information more quickly and more efficiently.
P2	22~35 hours	7 years	Searching for information, contacting friends, on-line bookings, reservations, and shopping	To make a webpage more appealing and to allow users to surf on the Internet more efficiently.
P3	23~35 hours	6 years	Looking for particular information Communicating with friends Academic/Banking/Billing	Being clear to the users to do what they intend to do.
P4	Less than 7 hours	7 years	Checking e-mails	The image of the website or product/organisation

P5	Over 36 hours	10 years	News, Information, surfing	Layout of the page
P6	15~21 hours	6.5 years	Work (designing websites), solutions for technical problems (website designer or architecture), reading the news, occasional use of online forums	Attract and hold a user' attention long enough for them to work out how to browse the website.
P7	8~14 hours	2 years	Email	To help you understand the function of the webpage and to help you navigate easily around the site. This should be done by appearing to the eye.
P8	23~35 hours	10 years	Work (3D development)	Being clear to the users to do what they intend to do
P9	23~35 hours	6 years	Reference, Radio, E-mail	To inspire, and to make you feel welcome
P10	23~35 hours	6 years	Information, Entertainment	To capture a user's attention.

Figure 7-2: The details of the users' Web experiences.

## Appendix 8—

### Content of Emotional Probes



The following presents the content of the daily booklet, including the introduction and the first-day task. The other tasks follow the structure of the first-day diary and ask each participant to answer each question in order to record their emotional experiences.



## How to start the 'Diary of user experience'





## The Diary of user experience

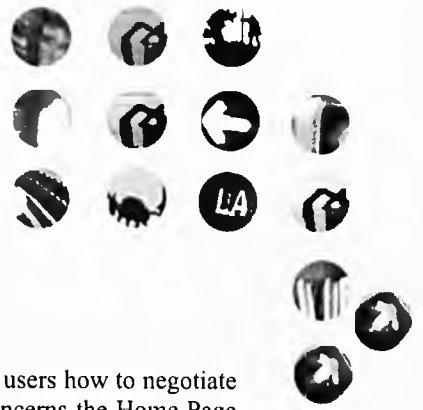
- Starting with the main diary, there are a few questions that I would like you to answer regarding your personal details (see page A & B). This booklet includes a diary book, which you will be required to fill in with your thoughts, feelings and experiences of the internet.  
You will also need magazines or newspapers of your own choice (it doesn't matter which magazines or newspapers you choose).
- Please refer to the daily survey and re-read the content of the diary book. This will give you a picture of what you need to do and the order that you will need to follow.

- Step 1: All participants will be given five key words: **Furniture, Monkey, New Year, Travel, and Weather.**
- Step 2: On each day please type a key word into the **Google search engine:** <http://www.google.com/>  
On the first day, you will type in '**Furniture**', on the second '**Monkey**', on the third '**New Year**', on the fourth '**Travel**', and on the fifth '**Weather**'.
- Step 3: Please spend **at least 15 minutes** browsing different web pages each daily session, concentrating mainly on **the visual interfaces** of the home pages (see Q/A 1.), rather than the contents itself.
- Step 4: After, you have selected your favourite home page, please save the address of this page and **E-mail it to me** at [coralinuk@ms74.url.com.tw](mailto:coralinuk@ms74.url.com.tw) , with the date of your search stated clearly.
- Step 5: You should refer to Page1 in your diary and start filling in the relevant boxes with information about, your favourite home page's visual interfaces.
- Step 6: After finishing the above steps, please produce a **Mood Board** (collage-see Q/A 2.), relating to your emotional responses from the chosen web pages.
- Step 7: After finishing all diaries and mood boards, please contact me, I will return to collect them back. In addition, I would like to conduct a **short interview about the mood boards you have made** and make a record. This will last no longer than 15 minutes.

.....Thank you for your participation.....^\_^







### Q/A 1. What is visual interface of a website?

The visual interface of a website page is a place that directs users how to negotiate each individual site. (see fig.1~3). In this survey, it only concerns the Home Page of a website, so please, each participant only look at the design of the home page, not its written content. Please, state all your answers based on your own **intuition**.



Fig.1



Fig.2

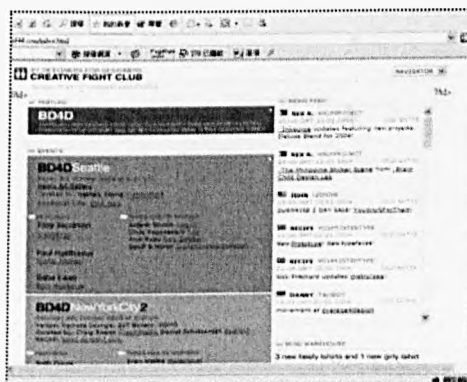


Fig.3





**Q/A 2. What is a basic Visual element?**

The most basic visual elements are such as the dot, line, colour and so on. Designers and artists use them to construct their artwork (see below ).



Dot



Line



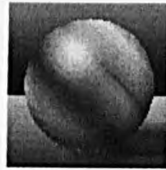
Shape



Direction



Texture



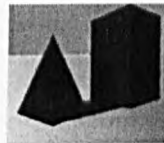
Colour



Value



Scale



Dimension



Motion

(source: <http://www.pomona.edu/Academics/courserelated/classprojects/Visual-lit/intro/intro.html>)







## Personal details







Box 1



Box 2



Box 3





## The 1<sup>st</sup> day



NAME \_\_\_\_\_

DATE \_\_\_\_\_





**After viewing these websites, what do you feel?**







**After viewing these websites, what do you feel?**

1. Which home page design did you like best? \_\_\_\_\_

Please, make a note of this web page address and send it, via [coralinuk@hotmail.com](mailto:coralinuk@hotmail.com) clearly stating the date you found the web page.

**Or** you can follow the underneath steps to finish it.

Step1. Press the Print-Screen key to copy the home page,

Step2. Then go to the Microsoft Word to open a new file and paste it on.

Step3. After pasting it, go back to the page and copy the web page address, then paste it underneath the picture.

Step4. Then type the date. Afterwards, you can repeat these steps for the remaining Q1. diary entries.

2. Below, please draw a picture that best expresses how you feel about your favourite home page.





3. What was the first visual element (see Q/A 2.) on your favourite home page which captured your attention? (You can choose to write or draw this depending on how you would prefer to express your answer)

A large rectangular area enclosed by a dashed line, intended for the user to write or draw their answer.









6. Do you think that the menu design and button design clearly direct you to where you want to go? Please circle your answer below.



7. Do you think the appearance of the visual interface does justice to the website's product? Please circle your answer below.



8. Do you think that the visual interface is easy to use? Please circle your answer below.



9. Do you think that the "navigation" of the visual interface is easy to follow? Please circle your answer below.





10. Now, construct a Mood Board (see Q/A 3.) to express your feelings on the next page. Select several images from magazines or newspapers that best describe the experience you have had with **Today's WEB SEARCH**.

## Mood Board

---

Please, synthesise your feelings of this mood board and circle your answer below.



**Appendix 9—**

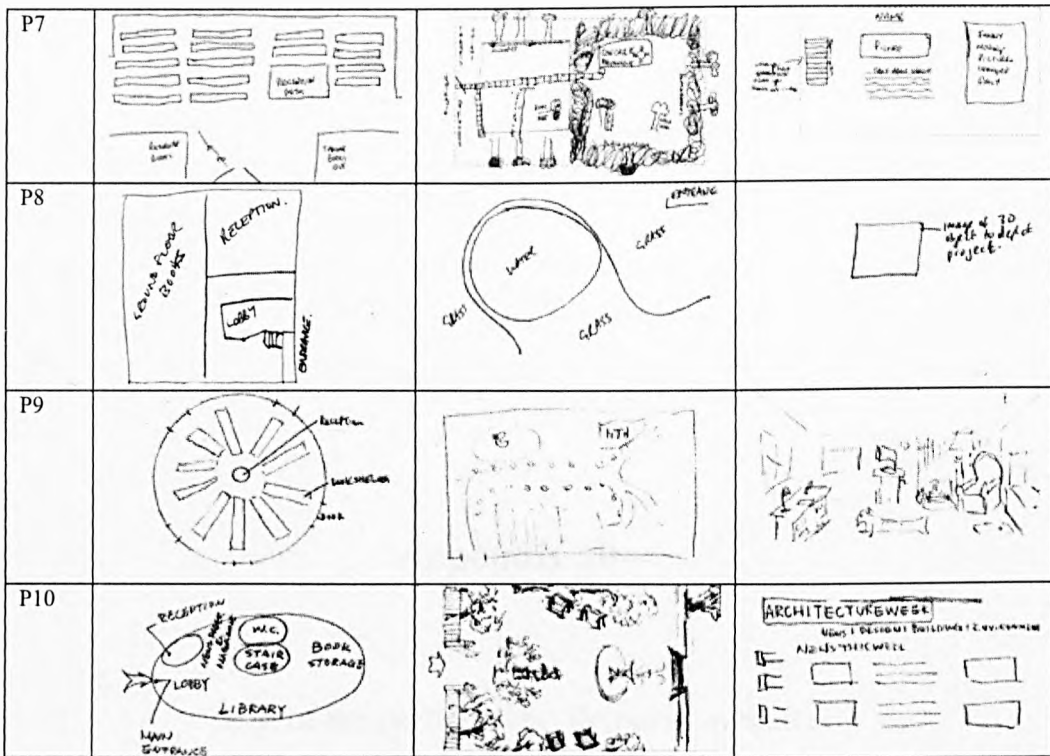
Outcomes of creative drawing

### Appendix 9– Outcomes of creative drawing

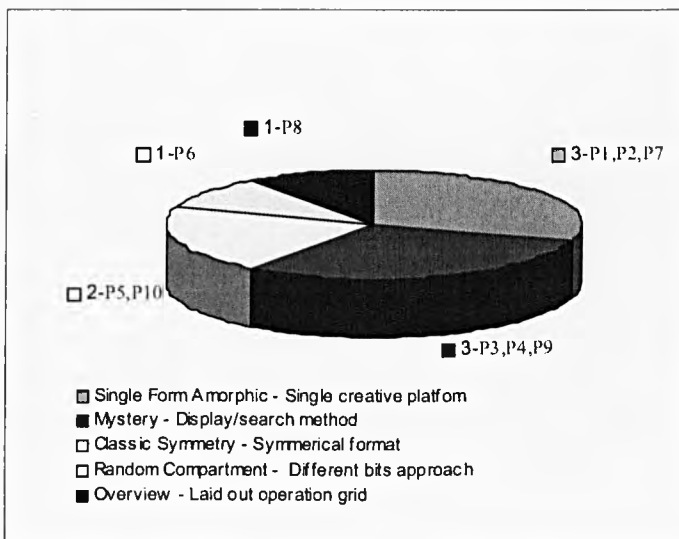
Modification of Goatman’s evaluation: The “garden drawing” practice has been divided into a series of creative exercise, such as drawing a garden layout, a library landscape layout, and a personal homepage. Ten participants contributed their creations in this practice as shown below:

	Library layout	Garden layout	Personal website
P1			
P2			
P3			
P4			
P5			
P6			





The drawing seems to indicate the users' personality via the categorisation of their creations, which could inform the users' preferences of Web interfaces. The following figure presents the personality categorisation informs the design of interfaces.





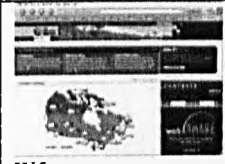

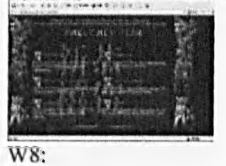














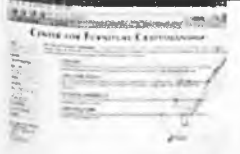
## **Appendix 10—**

List of the participants' favourite websites

### Appendix 10– List of the participants' favourite websites

The following website images were collected by the ten participants who browsed and searched online for a whole week. P1 refers to the first participant; likewise, P2, P3, P4, P5, P6, P7, P8, P9, and P10 refer to the other nine participants. Each of them selected one website per day as their favourite and they described their feelings for and browsing experiences of each website.

	1 <sup>st</sup> "Furniture"	2 <sup>nd</sup> "Monkey"	3 <sup>rd</sup> "New Year"	4 <sup>th</sup> "Travel"	5 <sup>th</sup> "Weather"
P1	 W1: <a href="http://www.furniturefind.com/">http://www.furniturefind.com/</a>	 W2: <a href="http://wilster.com/holidays/newyear.htm">http://wilster.com/holidays/newyear.htm</a>	 W3: <a href="http://www.new-year.co.uk/chinese/">http://www.new-year.co.uk/chinese/</a>	 W4: <a href="http://www.lonelyplanet.com/">http://www.lonelyplanet.com/</a>	 W5: <a href="http://www.theweathernetwork.com/">http://www.theweathernetwork.com/</a>
P2	 W6: <a href="http://www.centuryfurniture.com/default.htm">http://www.centuryfurniture.com/default.htm</a>	 W7: <a href="http://www.monkeyjungle.com/">http://www.monkeyjungle.com/</a>	 W8: <a href="http://www.new-year.co.uk/chinese/">http://www.new-year.co.uk/chinese/</a>	 W9: <a href="http://www.expedia.co.uk/default.aspx">http://www.expedia.co.uk/default.aspx</a>	 W10: <a href="http://www.intellicast.com/">http://www.intellicast.com/</a>
P3	 W11: <a href="http://www.ikea-usa.com/">http://www.ikea-usa.com/</a>	 W12: <a href="http://hotwired.lycos.com/webmonkey/kids">http://hotwired.lycos.com/webmonkey/kids</a>	 W13: <a href="http://www.panoramas.dk/Fullscreen3/f.html">http://www.panoramas.dk/Fullscreen3/f.html</a>	 W14: <a href="http://www.travel.yahoo.com">http://www.travel.yahoo.com</a>	 W15: <a href="http://www.theweathernetwork.com/">http://www.theweathernetwork.com/</a>
P4	 W16: <a href="http://www.stanleyfurniture.com/">http://www.stanleyfurniture.com/</a>	 W17: <a href="http://www.lucasarts.com/products/monkey4/">http://www.lucasarts.com/products/monkey4/</a>	 W18: <a href="http://www.new-year.co.uk/chinese/calendar.htm">http://www.new-year.co.uk/chinese/calendar.htm</a>	 W19: <a href="http://www.cnn.com/TRAVEL/">http://www.cnn.com/TRAVEL/</a>	 W20: <a href="http://www.bbc.co.uk/weather/">http://www.bbc.co.uk/weather/</a>

P5	 W21: <a href="http://www.woods.school.com">http://www.woods.school.com</a>	 W22: <a href="http://www.purplemonkey.com/">http://www.purplemonkey.com/</a>	 W23: <a href="http://www.holidaygraphics.com/newyear/">http://www.holidaygraphics.com/newyear/</a>	 W24: <a href="http://www.futuretr.com/">http://www.futuretr.com/</a>	 W25: <a href="http://www.pbs.org/wgbh/warming/">http://www.pbs.org/wgbh/warming/</a>
P6	 W26: <a href="http://www.franceshunt.co.uk/index.asp">http://www.franceshunt.co.uk/index.asp</a>	 W27: <a href="http://hotwired.lycos.com/webmonkey/">http://hotwired.lycos.com/webmonkey/</a>	 W28: <a href="http://www.new-year.co.uk/">http://www.new-year.co.uk/</a>	 W29: <a href="http://www.lonelyplanet.com/">http://www.lonelyplanet.com/</a>	 W30: <a href="http://www.theweathernetwork.com/">http://www.theweathernetwork.com/</a>
P7	 W31: <a href="http://www.furniture.com/">http://www.furniture.com/</a>	 W32: <a href="http://media.guardian.co.uk/diary/">http://media.guardian.co.uk/diary/</a>	 W33: <a href="http://chineseculture.about.com/library/weekly/aa_new_year2004a.htm">http://chineseculture.about.com/library/weekly/aa_new_year2004a.htm</a>	 W34: <a href="http://www.discovery.com/">http://www.discovery.com/</a>	 W35: <a href="http://www.spaceweather.com/">http://www.spaceweather.com/</a>
P8	 W36: <a href="http://www.bernhardt.com">http://www.bernhardt.com</a>	 W37: <a href="http://www.vectorlounge.com/04_amsterdam/jam/flamjam.html">http://www.vectorlounge.com/04_amsterdam/jam/flamjam.html</a>	 W38: <a href="http://www.new-year.co.uk/">http://www.new-year.co.uk/</a>	 W39: <a href="http://www.discovery.com/">http://www.discovery.com/</a>	 W40: <a href="http://www.wni.co.jp/cww/">http://www.wni.co.jp/cww/</a>
P9	 W41: <a href="http://www.rapidoffice.co.uk/">http://www.rapidoffice.co.uk/</a>	 W42: <a href="http://www.monkey.com/lobby_flash.htm">http://www.monkey.com/lobby_flash.htm</a>	 W43: <a href="http://www.infoplease.com/ce6/society/A0835506.html">http://www.infoplease.com/ce6/society/A0835506.html</a>	 W44: <a href="http://www.oratory.com/onebag/home.html">http://www.oratory.com/onebag/home.html</a>	 W45: <a href="http://www.w3.weather.com/">http://www.w3.weather.com/</a>
P10	 W46: <a href="http://www.furniture.com/">http://www.furniture.com/</a>	 W47: <a href="http://hotwired.lycos.com/webmonkey/kids">http://hotwired.lycos.com/webmonkey/kids</a>	 W48: <a href="http://www.new-year.co.uk/chinese/">http://www.new-year.co.uk/chinese/</a>	 W49: <a href="http://www.travel.yahoo.com">http://www.travel.yahoo.com</a>	 W50: <a href="http://www.theweathernetwork.com/">http://www.theweathernetwork.com/</a>

## **Appendix 11—**

Record of user experience study with “Emotional Probes”

## Appendix 11— Record of user experience study with Emotional Probes

The following reports list the data collected from each user-participant’s responses and observations through interviews, diary recording, and think-aloud techniques.

.....

NVivo revision 2.0.163

Licensee: RGU

Project: 27 May 2005 2 User: Administrator Date: 2006/3/22 - 12:59:57

### DOCUMENT TEXT REPORT

**Document:** P01-RTF  
**Created:** 2005/2/28 - 02:18:08  
**Modified:** 2005/12/6 - 09:25:15  
**Document Text:**

\*\*\*\*\*The 1st day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.furniturefind.com/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the first day of the diary.

A2: **(Navigation, Layout)**

I thought this was quite linear and clearly showed you where to go. The navigation was simple and you always knew where you were. It’s pretty good: Well done. You never feel lost.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(The image status)**

The status of the big image which is in the middle.

I like the status because it gives a clear indication of all the component parts of the main web page you can browse. It also has a ‘home’ section which I find useful—I usually get confused and bored with web pages quickly; so it is very important to have a ‘home’ button in the right place when you read the page.

**The image is quite effective in itself—it gave some interest to a page which is otherwise quite bland and boring visually.** It has vibrant colours and draws attention successfully; you can click on it to enlarge it—I supposed it gives visual pleasure. All the images on this page are quite crisp and good quality.

Q4. Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(Information)**

Getting Started

I clicked the “getting started” icon because it was located in the obvious status (position), which is the first element that caught my attention. It is the first element that makes sense of a way of providing information. I clicked on “getting started” because I like to follow a linear idea to search for information initially until I have got an idea. I like following a linear progression. I couldn’t say it was attractive and visual; it only worked as a navigation tool.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. Change the background to a more subdued colour—white is too bright and it doesn't hold the elements of the webpage together.
2. **Provide less information at once**—i.e. the user should be able to discover/explore, rather than be given all the information at once. More depth and breadth of information is necessary.
3. The layout is too rectangular and very conservative. A good point is that it makes the info legible, a bad point is that it's an outdated approach. I think the trend now is towards curves rather than straight lines
4. The company logo is boring—it needs to be a bit more exciting visually.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
2	0	1	0

Q10: Mood Board

A10: 0

About the 'one way' image: because this **interface lets you control the** navigation, it provides a clear pattern of **navigation**. But it also **limits** the navigation, so you can't explore a lot. It doesn't allow much basic exploring. About the clock image: it means that **everything is very engineered, there is not much space for exploration, it is not spontaneous, it s not sensual but it's all about information**. so that's all right. About the pen and texts: it means if **putting a lot of texts in a page, I preferred it less**.

And the **colour** was quite subdued, not very bright, earthy and natural.

\*\*\*\*\*The 2nd day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://wilster.com/holidys/newyear.htm>

Q2: Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the second day of the diary.

A2: (navigation)

It's a **labyrinth**. Like you are not going anywhere; you are trying to find the path but you are not going to find it, as **it doesn't have a destination**.

**It's confusing and unclear**, what is the purpose of the whole thing?

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: (The dynamic graphic)

**The visual side of this website was quite minimal and had little to attract your attention or create a feeling that engages you**. This image of the bottle with motion therefore seemed to stand out as one of the few elements that was potentially interesting. **However, it wasn't interactive in any way, even though it conveyed a sense of motion and its simple rendition kind of worked, which is why it attracted my attention. It also conveyed a festive and happy feeling of celebration and happiness—we all like that**.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

## A4: “Here” button—(Information)

**It didn’t attract my attention**—I clicked it because it was the only icon that could be clicked on, on the home page. It was very nearly an unfinished page with less graphics and more texts, so I looked for somewhere to click.

Q5: Please give your suggestions for how this home page could be made to feel more visually attractive to you.

A5:

1. **The text should be broken down into paragraphs**, it should also be divided into two columns—I found having to scroll down irritating.
2. **Animation could add to the visual appeal.**
3. The **navigation is poor and there is not much choice of where to go**. It is not made explicit to the user what the webpage can offer—a visual map, or index of the web site structure would be useful.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
1	2	1	1

Q10: Mood board

A10: -1

Just a lot of texts and lot of visual materials. I feel bored and tired. The long paragraphs should be broken down because I felt annoyed if I needed to scroll down the page. It is too linear without requiring any interaction.

I only looked at my favourite.

\*\*\*\*\*The 3rd day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.new-year.co.uk/chinese/index.htm>

Q2: Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the third day of the diary.

A2: This was a very traditional one; the **dragon** is a symbol regarding the “**Chinese New Year**”. The whole website was very ornamental and **had a lot of details, so I would like to put more detail on this dragon (drawing).**

Q3: What was the first visual element of your favourite home page which captured your attention?

A3: (Typeface, colour)

**It is very well chosen to represent the theme of the website—the Chinese New Year. It is quite ornamental, oriental, traditional, (but not tasteless, as the colour also has good cultural relevance).** The same is true for the background and the illustrations—they are drawn in a traditional style, so you can’t call it tasteless. **Folklore always involves a decorative, ornamental style—it’s to do with history so it’s quite valuable.**

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: (Information)

I clicked on “Calendar” even though **all the icons were the same—no emphasis was given to any one in particular**, so I chose “Calendar” because content-wise, it seemed to be the logical choice.



Q5: Please give your suggestions for how this home page could be made to feel more visually attractive to you.

A5:

1. I guess that **sound** could add to the appeal—there is no such element in the website, and it is mainly for enjoyment, therefore it could utilise multimedia elements such as sound to make it more appealing.
2. Some form of **animation** could be used for the illustrations—they are all quite appealing but they are essentially static.
3. **The text paragraphs in some places are a bit long. They could be broken down into areas of detail—with more depth than breadth of information in regards to the text.**

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
-1	-1	0	-1

Q10: Mood board

A10: +1

**It's about "Colour".** Because the colours were quite similar, very abundant, very bright colours, it is like this fruit, very juicy, very rich and ripe, that's what I felt about the website. **The website was very ornamental and had a lot of details, so I have used the top picture.** About the bottom picture: it was a very traditional type of architecture; I focused on the type of roof. I thought the "Chinese New Year" was a very **impressive** image for today's web search.

\*\*\*\*\*The 4th day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.lonelyplanet.com/>

Q2: Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the fourth day of the diary.

A2: **(layout, information)**

I quite liked this one. **If I was looking for travel information, I would feel quite happy.** It is a very good "medium" to **provide clear status input details and give feedback immediately.**

It looked **very balanced** and **not too cluttered.**

Q3: What was the first visual element of your favourite home page which captured your attention?

A3: **(The picture-logo)**

**The logo attracted my attention** because it was quite well-made, as it looks designed to grab your attention—it is simple and quite minimal, conveys motions, states the purpose of the website and **it is visually appealing.** Also, the web page as a whole did not include a great deal of visual elements, which was a plus, especially when you wanted your focus to be on substance and meaning, i.e. finding information quickly and efficiently. **So the little logo on the top left corner grabbed my attention, reassured me I was in the right place and it does not engage your attention any further than it needs to. It is also quite cute.**

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(Information)**

I clicked on the area "departing from" because **it was the most obvious choice for starting to search for information.** It is clear, the positioning and the area for inputting information are **clearly stated, with no unnecessary features, such as gimmicky graphics and annoying pop-ups that distract the user's attention.** If I was looking for a flight, this is definitely where I

would click first.

Q5: Please give your suggestions for how this home page could be made to feel more visually attractive to you.

A5:

1. I don't understand why it is not made to fit the whole screen—I find the blank white area to the right distracting and disturbing.
2. Besides the typeface is quite small and a design that fits the entire screen would be better.
3. I personally don't like white backgrounds. I find they glare. I would prefer something more natural or with a more subdued colour or background.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
2	2	1	1

Q10: Mood board

A10: +1

**I felt the navigation was good.** Like driving a bicycle down a straight road and you know where you are going, feeling good.

I was **happy** about this website.

\*\*\*\*\*The 5th day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.theweathernetwork.com/>

Q2: Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the fifth day of the diary.

A2: The picture signifies that **there was too much information**. Whatever you clicked on, there were four alternative directions shown at the same time. It never showed where you were coming from and sometimes pop-up windows showing on the same page were not related. You felt suddenly after **you had opened a new window that you were completely lost. I hated it**. Some **visual elements were quite good**, such as the **animation**, which I could click on and which looked **attractive**, but it didn't help this website.

Q3: What was the first visual element of your favourite home page which captured your attention?

A3: **(The logo in the upper corner)**

**The logo is quite well executed, it works—it tells you what the content of the website will be; it is quite reassuring to see**. By looking at it for 5 seconds you know you are in the right place. It looks like a TV, reminding you of its relation to the media, as it is a weather channel. **It is not too visually encumbering—it holds your affection just long enough to reassure**.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(The animated text)**

It attracted my attention because of the animated text. Also the graphic elements in the background worked quite well together with the text—they created an impression of depth, like it is designed to draw you into the image, which affects your attention.

Q5: Please give your suggestions for how this home page could be made to feel more visually attractive to you.

A5:

1. There are a lot of pop-ups that are annoying and lead you to links that are completely unrelated.
2. There is really too much textual and visual information on the homepage, so the different elements don't work together as a coherent whole.
3. Brings out the structural elements—such as headings and navigation buttons; they are less visual and graphically loaded....So less is more in this case. Move less important elements away in order to make the home page work better.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
-1	0	-1	-1

Q10: Mood board

A10: 0

The feeling is as if you were like a "lost Dalmatian", like a lost dog when browsing this website. There was a lot of magazine information appearing at the same time—a lot of things going on and not related really. Design is signifies catch your attention, but here there was too much and it was too full and just put together roughly, it did not hold the whole view very well. Those images might be interesting in themselves, but they didn't hold together very well. The images I selected from magazines were not related to each other, but each one was quite attractive in itself, so this replicates the situation on the website. This is kind of criticism for my favourite websites.

NVivo revision 2.0.163

Licensee: RGU

Project: 27 May 2005 2 User: Administrator Date: 2006/3/22 - 12:59:25

**DOCUMENT TEXT REPORT**

**Document:** P02-RTF  
**Created:** 2005/2/28 - 02:18:10  
**Modified:** 2005/12/6 - 09:34:45  
**Document Text:**

**\*\*\*\*\*The 1st day of the diary\*\*\*\*\***

Q1: Which home page design did you like best?

A1: <http://www.centuryfurniture.com/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the first day of the diary.

A2: (Picture, colour)

I just feel that this page matches my feeling. **I know where I can click** on a symbol and find something out. **This design is just right for me.**

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: (Big Picture, colour contrast)

**I felt that my eye was caught by this page**, especially the stood out colourful picture on the black background.

The colour of the picture contrasts with the black area and the white background.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: (menu bar-Information oriented)

**I am used to looking at the menu bar first**, and then I find what I am interested in. Normally, most information is in the 'products' section.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. The font size, colour and the style of the main menu should look good.
2. Nice photos are very important.
3. Don't put too much text and make the structures clearer.
4. The width of the view is too narrow.

Q6- navigation

1

Q7-visual personality

1

Q8-easy to use

1

Q9-easy to follow

1

Q10: Mood Board

A10: +1

(Light, Texture, information)

**The selected pictures fit the style of this site.**All the pictures I selected had a similar colour tone, as I felt the light was as elegant as the furniture websites.

The text for the picture is without any meaning and random, which indicates there was **lots of information** on the page.

\*\*\*\*\*The 2nd day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.monkeyjungle.com/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the second day of the diary.

A2: **(Background music)**

When I browsed this webpage, I could hear some background music. The music sounded like I was in the jungle. I didn't know how to draw a forest, so I drew a coconut picture instead of the jungle. I felt tense because of the music. The background music sounds were so realistic.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(The big picture, Scale)**

Because the big monkey was in the middle of the page, it was very prominent. Meanwhile I was grabbed by the jungle music. Even the big monkey was appearing in the middle of the window, I felt the music was very strong because the monkey was shouting. When I heard it the first time I felt the music was fine; but the music became noisier and noisier as time went by.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: (Information)

The big scale fonts and the words were very prominent.

Also, it indicated that I could click on it to go to the next page.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. Repetitive background music is annoying.
2. The loading speed could be faster.
3. The linking buttons could be designed more interestingly (the appearance of the buttons).

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
1	2	1	1

Q10: Mood Board

A10:0

The idea for this mood board was affected by my favourite webpage. I was inspired to appeal to people who protect these monkeys in the jungle. The issue was related to **money, people, and business**. So I cut out more images of people's heads. The map sketch signifies to show that this event is happening there. So the map signifies somewhere in the world or the whole world. The telephone number signifies a number to call on TV which might attract people, like a slogan on TV ads: "call in today". It has stood out images and colours to catch your attention because if you want to emphasise something you can use this method.

\*\*\*\*\*The 3rd day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.new-year.co.uk/chinese/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the third day of the diary.

A2: (The colour & framework)

The background colour was full of the colour red, so I felt it was as garish as the background style I put in my drawing.

Those irregular square pieces just signifies something with frames on the webpage, **without specific meanings.**

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: (Title, Colour)

The most obviously appealing elements were the title on this page and the colour.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: (Information)

The fortune cookie button was the first thing I clicked on.

It was the most interesting topic for me.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. You could add background music.
2. Have an interactive interface (flash) because all the design is still.
3. The structure of the website is too simple because all things are shown on the same page without any interesting links. If there was more content, it would be better and richer

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
1	2	1	1

Q10: Mood Board

A10: 0

It had a very strong New Year atmosphere.

Because those small icons are quite obvious, and they look quite similar, I cut out many small advertising pictures to represent all the similar icons on the page. If you want to emphasise some information, you can use this method. I didn't know how to make the same design to describe such a kind of meaning. So I cut out a lot of advertising pictures to represent it.

\*\*\*\*\*The 4th day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.expedia.co.uk/default.aspx>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the fourth day of the diary.

A2: (Image, shape)

I felt that the design of this page was very **neat and tidy**, so I drew a chessboard to represent that

feeling and I kept the framework of the page to show that **the style was also very neat**. In addition, I drew some rectangles that were supposed to represent those **cute** little buttons on the webpage.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(Icon, shape)**

**I felt that those icons were very cute and interesting.**

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(Information)**

I saw the travel tool button, so I clicked it at once because the information offered was sorted **clearly and seemed useful** for a traveller.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. Some nice scenery pictures could be included to make it more vivid.
2. Use colour blocks to highlight essential areas.
3. Don't put too many words at once (on the second page, not the homepage).

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
2	1	1	1

Q10: Mood board

A10: +1

**(Image)**. The picture of the scenery is more beautiful and bigger in scale than the others. I selected it because **the scenic pictures were beautiful**, so they were good to put into a Travel Planning site.

#### \*\*\*\*\*The 5th day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: [http:// www.intellicast.com/](http://www.intellicast.com/)

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the fifth day of the diary.

A2: **(The menu design and colour)**

The issue of weather is very abstract, so I didn't know how to describe the abstract feeling properly. So I drew a frame of the page to **demonstrate my feelings**.

The page was designed **very neatly** and the pull bar menu looked much better than the other websites.

The colour of the menu bar was well chosen and had good contrasting colours, when compared to the other sites.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(The menu design and colour)**

**The black menu bar stood out. The colour contrast of the menu bar was very different from the others sites and the design was very neat.**

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(Picture, colour)**

The second thing I looked at was the weather picture, so **I clicked on the button below the picture** to enlarge it and see more details.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. Could use more vivid colours to decorate the menu bar.
2. Don't put too many irrelevant ads that interfere with the pages.
3. The loading speed could be faster.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
1	1	1	1

Q10: Mood board

A10: +2

(Image)

The weather is like a puzzle because the weather is very difficult to predict.

The weather is related to daily life; therefore **I cut and pasted a lot of articles for daily use. This mood board is very rational, when compared to the other mood boards, because each item is very easy to understand.**



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Licensee: RGU

Project: 27 May 2005 2 User: Administrator Date: 2006/3/22 - 01:00:26

**DOCUMENT TEXT REPORT****Document:** P03-RTF**Created:** 2005/2/28 - 02:18:11**Modified:** 2005/12/6 - 03:19:43**Document text:****\*\*\*\*\*The 1st day of the diary\*\*\*\*\***

Q1: Which home page design did you like best?

A1: <http://www.ikea-usa.com/>

Q2: Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the first day of the diary.

A2: **(Image, colour)**

I liked the furniture on this website a lot (...) And I think that furniture is something related to relaxing and relieving tension.

Q3: What was the first visual element of your favourite home page which captured your attention?

A3: **(background images-Scale, pictures).**

The background is quite big and the images of the furniture look quite good and distinguished.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **The Pull-down menu. (information)**Because the location and colour of this area allowed me to clearly see and distinguish it from the other two options. I was curious about clicking on it and seeing what was inside.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. Full-Screen, not only a white background colour.
2. Special offers or sales (advertising).
3. Showing smaller items (pictures).

Q6- navigation

1

Q7-visual personality

2

Q8-easy to use

2

Q9-easy to follow

2

Q10: Mood Board

A10: -1

Images, action (**Feminine**)The mood board shows my feeling about this website, like being **relaxed** and feeling **at ease** to do something I want to do, or the feeling of being free at home.

The activities acted out in these pictures show a sense of freedom and a lack of restraint.

The IKEA site uses quite a lot of blue, so I selected the top picture, which is a lady massaging, because it is a very relaxing activity.The bottom-right photo is like sunshine spreading into a holiday home, it **made me feel very at**

ease.

The bottom-left photo is like the feeling of being alone at home, to show how secure it made me feel.

\*\*\*\*\*The 2nd day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://hotwired.lycos.com/webmonkey/kids>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the second day of the diary.

A2: **(Colour, image, icon)**

At first, when I typed "Monkey" into Google, I found most sites were related to the zoo. Afterwards I found a website for kids where there was a monkey at the top, and I became interested. So I selected a stuffed toy with a similar colour to represent the feeling of a children's TV programme. **I feel this web site is for kids, the colour is like candy, colourful, and like vivacious children.**

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(Background colour)**

Background colour, not including the colour of the graphics inside the button; I only liked the light yellow and green **colour arrangement.**

The candy colour (light-yellow) of the background colour and the background colour (yellow-green) of the buttons was really bright, so the colour coordination **made me feel good.**

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(Information)**

I was concerned about the content of this button. Because the four buttons were the same size, I clicked on the one that I was most interested in, concerning the content and information.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. The face of the monkey looks terrifying **(Image).**
2. Use a calmer **colour** instead of fluorescent blue.
3. Take **the orange bar** off.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
2	2	2	2

Q10: Mood Board

A10: +1

**Colour (especially green), images**

The children in the picture look very **naughty**, like they are playing a game or playing a joke, because the website offers a link to the games page.

Also, the child with a headscarf looks like s/he is playing and working, which means that this website offers many functions for kids to work and play with. This website is **full of light green and yellow colours, which made me feel joyful**, so I used similar yellows and greens in my mood board.

\*\*\*\*\*The 3rd day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.panoramas.dk/Fullscreen3/fl.html>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the third day of the diary.

A2: (360 degree panorama-Size and Colour)

**When I was searching "New Year" with Google, I found most websites had Chinese patterns and outdated styles, so the design style of them was not good. At the fifth item, I found one that was very nice; it was a view of the New Year's celebrations in a western country and had a whole view with a 360 degree panorama. The view made me feel a great sense of happiness at the celebrations. Because the view was at night and with a 360 degree view, I selected the image of that view as it had a stronger spatial sense, and it had a lot of light and vivid balloons in the night scene and everyone was happy and smiling: they were really enjoying it. So the picture of the website made me associate with the images of a red ball and happy, smiling children.**

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: (the main Image and Interactivity)

When I moved the mouse over the page, I saw the cursor turn into a circular icon, so I wanted to know what would be shown if I move the cursor onto the edge of the image. When the 360 degree panorama was presented, I was interested and wanted to play with it.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: (360 degree panorama—Size, Colour, and interactivity)

The size of the main picture was so big that I wanted to click on it.

In addition, the joyful atmosphere of the 360-degree view was quite attractive, such as the flying colour papers and the people with happy smiles.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. The Navigation was not clear.
2. I didn't understand what this website was about at the very beginning of my visit.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
0	0	2	0

Q10: Mood Board

A10: +2

Colour (especially red), images

The picture of the jumping girl made me feel like the people were counting down and shouting for joy for the coming New Year. The picture of the children playing is supposed to mean that some people are playing with balloons and so on, celebrating the festival. Because the website image is at night, I used a black colour to represent the night and a red colour to represent the atmosphere of the celebration.

\*\*\*\*\*The 4th day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.travel.yahoo.com>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the fourth day of the diary.

A2: **(Icon-Size and Colour)**

My favourite website was the Yahoo travel site. For some sites, I can see a certain kind of formulation for their functions. So I selected the Yahoo one because there are many small icons with yellow and orange colours, and they were **visually appealing** and reminded me of food, making me feel happy. So I drew some small objects to describe those small icons, because they made me want to click on them. Also, the children's eyes look like those icons and are **bubble-shaped and so cute**.

In fact, I think that the travel website should use blue and green colours for its design, but the Yahoo one uses an **orange colour** which is different from my original imagining of the travel website, but the colour made me feel happy about travelling, which is different from the feeling I got from the website that used the blue colour, which **has a more spatial, expansive view**.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(Icon-Size and Colour)**

The visual metaphor is easily understood without a written interpretation.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(Map)**

I wanted to click on it to find out information about different places. **The map is clear**, so it is **easy to locate** what I am interested in knowing about.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. Reminding the user of the location names.
2. Taking the adverts off.
3. The hue could be higher.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
1	2	2	2

Q10: Mood Board

A10: 0

**Colour, images** (children, smiling, swim suits, sunshine, good meals),

I focused on my favourite one. I used pictures, of **exotic** food for example, and images with children **playing outside and having fun**, as well as images of orange clothes. All the pictures are signified to display being happy and joyful when travelling. The background of this site is white, so the atmosphere feels insipid; just like there are small points spread out, without a strong focus or feeling. But I quite like those little icons.

\*\*\*\*\*The 5th day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.theweathernetwork.com/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the fifth day of the diary.

A2: **Icon (information-oriented)**

I felt that the **colours** looked quite plain and dull, so I used similar objects to show my feelings—boredom, disinterest, seriousness and dullness. I think the website for the weather forecast could be more interesting. Comparing other sites, I found that most of the websites included meteorological maps: the BBC one uses a cloud icon to show the weather forecast. The simplified icon is very clear at a glance. **But the whole page looks a little dull.**

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(Shape, Colour)**

**The icon showed exactly what it intended to say.**

Compared to the other site, I liked this one because the icon of the cloud was more user-friendly than the satellite weather images and it was easy to immediately understand the meaning.

The icon I selected was the clearest item on this page to click on and it could tell me what the day's weather would be like.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(information)**

**The Pull-down menu.**

I wanted to get the information. There was no visual attraction here.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. Too many **colourful** pieces.
2. **I didn't like the colour used.**
3. Simplifying the information with photos or icons.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
1	2	1	1

Q10: Mood Board

A10: 0

**Colour, images (regarding men)**

This website made me feel quite rational and calm, which triggered me to think about what I need to do tomorrow and what I need to prepare, so it looks more rational, without having strong feelings of change.

**The colours of the site, for example the beige and the grey- brown, made it feel like a masculine website.**

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Licensee: RGU

Project: 27 May 2005 2 User: Administrator Date: 2006/3/22 - 01:02:14

## DOCUMENT TEXT REPORT

**Document:** P04-RTF

**Created:** 2005/2/28 - 02:18:11

**Modified:** 2005/12/6 - 11:16:26

**Document Text:**

\*\*\*\*\*The 1st day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.stanleyfurniture.com/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the first day of the diary.

A2: **(Colour, Picture, Content)**

This website made me feel happy because of the furniture design.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(Colour, Image, Content)**

**I liked the colourful design of the furniture.** My favourite was a colourful website. I also considered my preferences for the style of the furniture (e.g. luxurious and elegant) in selecting my favourite one. **The picture was easier to understand than the texts.** The latter were often boring and the former more attractive. On this page, **I felt that each moving picture was very attractive.**

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(Animation, want to know more information)**

I thought that **the picture was big and stood out.** I wanted to click on it in order to see more pictures and any other information behind the picture.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. It would be better if it had a link behind the pictures (**a hyperlink**).
2. It would be friendlier to **put people into those pictures with furniture in them**, and not only have the furniture itself.
3. For the representation of the furniture, it would be better to have a **different background colour** for each item, so that they match up.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
0	2	1	1

Q10: Mood Board

A10: +1

**(Colour, Style)**

My furniture preference is for an elegant style, so **I selected some pictures related to an elegant style that were not too solemn.**

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Therefore, I selected colourful pictures, similar to a fruit stall, which signifies homely and beautiful colours. The royal blue car signifies a "good colour and stylish" and the Palais De Louvre used similar colours which indicated my feeling of today's web search for "furniture". In addition, I also used the picture on the near-right to refer to the pure and fresh colours I saw in today's web search.

\*\*\*\*\*The 2nd day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.lucasarts.com/products/monkey4/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the second day of the diary.

A2: (Colour, image, icon)

I associated the monkey with an animal, like the site was **very lively** and had a lot of other animals there. So I drew the picture to represent something **lively and bustling**. The ducks mean that there were different animals. **The pink colour signifies "lively"**. Those circles also **signify "lively"**.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: (Size, Picture, link).

The picture was bigger than the other small pictures on the right side; it **looked funny and interesting**.

I assumed that it was the main theme of the website. The picture was more attractive, as were the colour and the pictorial expression.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: (Picture, link)

The website was full of **comics** and I felt the content was very rich.

I am used to clicking on pictures first when I am browsing on the web without any specific purpose.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. It is better to have some **animation**.
2. The black background is too solemn to look at, rather than a blue or green **colour which would be better**.
3. The comics could be made as a watermark in the **background**.
4. It is better to **put more pictures with hyperlinks**.
5. It is better to **put some background music** that is related to the game.

Q6- navigation

-1

Q7-visual personality

1

Q8-easy to use

1

Q9-easy to follow

1

Q10: Mood Board

A10: +1

(Image)

The monkey made me feel like laughing because it was funny. So I cut and pasted a funny picture with a **woman's funny face on it** to show her feelings. In the upper section is something she made up to describe the feeling of "funny". I thought of the **"Monkey"** as funny, not solemn or elegant

like a swan.

\*\*\*\*\*The 3rd day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.new-year.co.uk/chinese/calendar.htm>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the third day of the diary.

A2: **(Colour, image)**

I have stronger feelings **about the "lunar New Year"**, so I wanted to find some websites related to the lunar New Year. So I **drew a picture with a red colour** to mean "happy", "bustling" and in a festival mood.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(Typeface)**

The characters of the "CHINESE NEW YEAR" that appear on foreign websites are quite interesting. In addition, the characters are quite big.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(Icon, Size, link)**

**I am used to clicking on big icons and on the pictures on pages before I do anything else. Like this icon, I clicked it and got a link to other pages.**

**However, if they had more beautiful pictures there, I would click on the most beautiful one.**

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. Have more **languages** for different readers.
2. The **font** is terrible.
3. One place should have **interesting graphics** to describe the information.

Q6- navigation

-1

Q7-visual personality

-1

Q8-easy to use

1

Q9-easy to follow

0

Q10: Mood Board

A10: +1

**(Colour (especially red), Information)**

I selected images with a red colour. In addition, I chose images with more people in them, to represent getting together at a yearly reunion, like the upper-left one. Because everyone dresses up in new clothes, I picked a man's picture with nice new clothes. **The red car is only associated with the colour of the New Year.**

\*\*\*\*\*The 4th day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.cnn.com/TRAVEL/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state



how you feel about it on the fourth day of the diary.

A2: **(Icon, Size, Colour)**

For "travel", I preferred to go away from city life and enjoy the blue sky, white clouds, the sun and green grass, all in a very relaxing environment. It made me feel very at ease.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(Brand-Image identity)**

CNN is a publicly trusted brand in the marketplace. I was attracted by the brand CNN. **I assumed that the CNN Company also managed their travel sites very well and that the content of it should be richer than the other sites.** In addition, the size of "CNN" is quite big, so it was easy to see.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(Picture, Size, link)**

The picture gave off a relaxing atmosphere. **As is my habit, I clicked on the biggest picture to find out more information.**

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. Put more interesting pictures.
2. I would like Travel.com to be Independent and away from CNN.
3. Many icons were **links for advertisements**; I felt this was not good and offered too many commercials.
4. I felt that the content was boring and like a news report.

Q6- navigation

1

Q7-visual personality

1

Q8-easy to use

1

Q9-easy to follow

1

Q10: Mood Board

A10: +1

(Image)

**I felt the need to have cars to represent travel.**

So I cut out a lot of car pictures out to show this.

I also cut out a lot scenery pictures to represent that it was very relaxing. All the pictures mean that open places have a lot of different scenery for travelling, like grass, villages and so on.

I only focused on the **images** and **did not consider the colours in the pictures.**

\*\*\*\*\*The 5th day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.bbc.co.uk/weather/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the fifth day of the diary.

A2: **(Icon, shape)**

It was raining on that day, so I just drew a picture to represent that. I felt bored and bad, so I used both black and white colours.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(Brand-Image identity)**

The BBC Weather Forecast has its reputation for providing precise weathers and I am used to watching their weather forecast by the BBC. Although there are many weather forecast websites on the Internet for the region, as I am living currently in the UK I go to this website more than others.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(Icon as a link, Size)**

Through this branded icon, I could get more detailed information about a full five-day forecast. In addition, I wanted to know about the weather, so I focused on the weather icon, which was related to the weather information I wanted to see. **Even though there are other pictures, I still focused on the weather icon, which is easy to read and understand. Also the icon stands out from the text, so it attracted my attention and I clicked on it.**

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. Generally, this website was quite nice, **having a clear interface, useful hyperlinks** and so on.
2. The marquee effect could be slower.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
2	2	2	2

Q10: Mood board

A10: +2

(Image)

I selected some pictures that reflect today's weather.

The colour of the images was quite overcast and meant bad weather.

But I also picked a picture to put above it to suggest that I "hope it will be a sunny day soon".

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NVivo revision 2.0.163

Licensee: RGU

Project: 27 May 2005 2 User: Administrator Date: 2006/3/22 - 01:04:16

## DOCUMENT TEXT REPORT

**Document:** P05-RTF  
**Created:** 2005/2/28 - 02:18:12  
**Modified:** 2005/12/6 - 12:06:08  
**Document text:**

\*\*\*\*\*The 1st day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?  
 A1: <http://www.woodschoo.com>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the first day of the diary.

A2: **(the background image)**

Compared with the other sites, **I felt that this one was neater and nicer**, but the background needs to be lighter. I was also attracted by the content.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(graphic and scale- for the watermark graphic)**

The background image is quite big. But the colour is a little bit darker.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(button)**

**All the buttons on this menu look identical**, so I chose something I would be interested in, the 'gallery' button, as I wanted to see more pictures etc. It's not because the button itself is very special. I also supposed that the background was without any links, so I clicked on the menu.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

The **buttons** could be designed better (more distinctive).

The image could be even lighter in the background (**the colour of the images**).

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
1	2	1	1

Q10: Mood Board

A10: 0

(Content)

**After a long search, I didn't find anything very interesting; I just found this site, which is not bad, it looks good and is not disordered.** Plus most websites made me feel that they were too commercial, so I used a picture of an eye to represent what "I am looking for" and the "just right" to mean that the website I selected is fine and ok.

\*\*\*\*\*The 2nd day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.purplemonkey.com/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the second day of the diary.

A2: (**Layout, animation, colour, navigation**)

**By comparison**, I felt that most of the other websites were **disordered**. I preferred the neater website. So I selected this one. Also, there is a small **animation** in the centre, so the whole page **made me feel happy**.

The advantages of the site are: **1. Pleasant colours; 2. Easy to navigate.**

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: (**The animation**)

**The animation** is there, and I wanted to see more things coming out from it.

I like websites that **don't have too many colours or pictures**. This site is **neat** and includes information that people would like to know about when browsing the site.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: (**The animation with a hand icon**)

I **felt curious** about what was inside the **animation** in the centre, so I clicked it.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. The little box on the right should be designed better, or moved to a different **place**.
2. **It's very simple, not too complex, but could include more information.**
3. The black bit is overused on this site (**colour**).

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
1	2	2	2

Q10: Mood Board

A10: 0

After a long search, I found one and I felt that it was ok. I think **the colour of this website is agreeable; but the black colour is quite muddy**, so I put the word "**colour**" to say "**make it better**". The mood board shows my full day's search, I felt like I was "still searching" and "**waiting for something more interesting**". **Even though the website I selected was not the optimal one it was better than the other ones I saw today. And it is has an appropriate colour, as well as information that is simple to read and an uncluttered layout.**

\*\*\*\*\*The 3rd day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.holidaygraphics.com/newyear/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the third day of the diary.

A2: (colour)

Happy.

After a long search, **this website gave me a good first impression because its colour was very bright, and the style gave me a new fresh feeling because it has fireworks and it is as if it is full of new hope for the New Year.**

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: Happy New Year (bright colour)

The **bright colour** of the **button design** caught my attention

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: (Information and colour).

I am interested in the **information** on the "virtual card", and **the bright colour** of the text is good.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. Brighter colours **make people feel a lot of hope.**
2. A better contrast of background and foreground (colour).
3. The layout didn't immediately display the purpose.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
1	0	1	1

Q10: Mood Board

A10: +1

**I feel that the website is full of hope and gives people new hope. Plus searching for "new year" made me feel that time was going by so fast.**

**So I think the design of the website gives people nice hopes and dreams.**

**The blue colour is related to the background colour of the website.**

**The picture of the hands represents having hope.**

\*\*\*\*\*The 4th day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.futuretr.com/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the fourth day of the diary.

A2:(image)

Most travel websites are going to ask people to buy travel products. However, this one not only offers products but also some pictures and information for the reader. It is quite different from the others because this site makes me feel like I am traveling, having fun and being happy on the journey. **The aim of the site is to show that people will be happy on their holidays.**

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: (image)

It is not really a very attractive design but stands out on the page.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(information).**

Every button looks identical, so I clicked on the one that I was most interested in because I wanted to see the content.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. The **button design is plain**, so it could be **more imaginative**.
2. The **picture shown in the middle of the page would be better** if it fitted the shape of the earth.
3. **Not a very imaginative site. It would be better if there was something in the background.**
4. The **text on the button could be clearer**.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
1	0	1	1

Q10: Mood Board

A10: 0

**Many sites looked very similar, so I felt quite bored after surfing.**

So I selected this one because it felt all right. As the whole site is related to travel, I associate the work with tiredness. In addition, I also felt like I lacked strength after searching for a long time and still couldn't find a proper one.

So I selected some images that are related to holidays, or are opposite to holidays, to describe my thoughts, such as the feelings of boredom, stress, and frustration.

**High heels represent my stress and wanting to release it.**

**Also, I wanted to roar loudly.**

**Holidays mean that there is a need to have friends present.**

There is not about the feeling of having a holiday, I feel stressful and need some "help".

The images I selected are concerned with the visual expression but not about colour.

\*\*\*\*\*The 5th day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.pbs.org/wgbh/warming/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the fifth day of the diary.

A2: **Most weather sites are about local weather** but this one I felt was giving different information about **"how is the weather"**. **Concerning the fire**, I felt the site was full of dynamic feelings and life-force as if it was a tongue of flame; this doesn't mean that it is like fire, it just focuses on the dynamics. So the feeling is positive.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(The image of a blazing earth).**

The **bright colour** of the earth against a black colour background immediately drew my attention.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(Information).**

The small title, because it seemed to have interesting information.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. The **text** at the top and bottom of the page seems to be quite plain when compared to the whole site.
2. If everything is in the same window (**layout**), it will make the homepage look neater.
3. **It will look good if the text is presented differently.**

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
1	2	1	1

Q10: Mood Board

A10: +1

I didn't have any special feelings about the other websites. But as for my favourite website, I felt it was very **dynamic**.

This is because the website is different from the others. It looks more **dynamic, better, has movement (even without animation), ace, and it is related to "come here, you can discover new things"**. I felt that it is quite good.

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NVivo revision 2.0.163

Licensee: RGU

Project: 27 May 2005 2 User: Administrator Date: 2006/3/22 - 10:05:46

## DOCUMENT TEXT REPORT

**Document:** P06-RTF  
**Created:** 2005/2/28 - 02:18:12  
**Modified:** 2005/12/6 - 12:27:31  
**Document Text:**

\*\*\*\*\*The 1st day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.franceshunt.co.uk/index.asp>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the first day of the diary.

A2: **(Animation)**

It is a very basic site for showing information about furniture.

**Quite Clean design.**

**Humorous.**

**Comedy.**

**Human feeling.**

**Enjoyable.**

Rather than drawing out the characteristics of a product or shop, this site use pictures to draw those feelings of enjoyment people have from their own furniture.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(Image)**

The outside box loaded first.

However, the images in the centre of the screen caught my attention.

They caught my attention because they are simple, and the bold images are humorous in the way they represent how people use furniture.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(Animation)**

A man/woman jumping on a bed: I was not sure what the link did but it attracted my attention by the sense of humour put into the design.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. Possibly smaller address text (**the size of text**).
2. **More information** when the page first loads about what the links do.
3. Slightly more **uniform space** around the site (**make the borders equal**).

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
1	2	1	0



Q10: Mood Board

A10: -1

Generally, I would compare my favourite one to the others.

**Compared to the other websites, this one was quite professional.**

The artificial drawing of the little house signifies that it is **not a careful drawing**.

The meaning behind it signifies that **some websites didn't have a good navigation system**, as it seemed that **the designers didn't know what they were designing for**. The users couldn't find what they wanted to see.

In such a relationship, **the sign board signifies that some websites have a professional sense of designing a site which could guide the user better.**

The colours of the pictures didn't mean anything.

**The black and white colour didn't mean anything; the website itself just was not very rich.**

The **fonts (typeface)** signify cosiness to express its meaning. Generally, when browsing the websites, **I didn't read each word on the pages.**

\*\*\*\*\*The 2nd day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://hotwired.lycos.com/webmonkey/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the second day of the diary.

A2: **(Logo, information-oriented)**

Using a small logo is very common.

Tried to **make the information very user-friendly, but the layout is old fashioned.**

From this site, I felt that the information was about programming and technical information.

The designer used small icons to design this website and tried to design a user-friendly website.

I felt that the information content was advanced, **but the delivery structure was basic and old.**

**The layout design did not fit the content;** they need to spend more time and work on the site's overall design.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: The monkey with a spanner **(Image)**

Although the page doesn't have a fixed structure, the background has a darker green and not the darker blue (as in the picture below) that **the monkey appears to be coming out of**.

It (the monkey) is also **brightly coloured** (the background is black and dark blue) and is holding a spanner, which is a motif used on the rest of the page. It is **an unusual thing** to see the monkey holding.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(Information)**

**Colourful, unusual background, uncluttered layout.**

The link I chose was distinctive because it appeared to be related to a picture (a person's face).

It is on a blank blue background—most of the others links are on a textured background.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. Put the bicycle picture in the navigation bar **at the top**.
2. Either make the **orange** Lycos network navigation bar smaller or present less visual decoration of the intra-site, so that it looks like the rest pages in this site.
3. **Space** the text from the pictures in rectangles better.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
1	1	1	1

Q10: Mood Board

A10: -1

The “monkey” could be created in different styles to decorate different information and mean different things... It was frustrating; there are a lot of sites which don't know what they are doing or what they are looking for. Some web sites are awkward as they don't know what they are doing and do not have a good design sense.

\*\*\*\*\*The 3rd day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.new-year.co.uk/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the third day of the diary.

A2: The **stripy backgrounds** were old fashioned (like somebody designed it ten or fifteen years ago).

So I picked some elements from the page, such as the star, stripes, and the framework of the page, because they look outdated.

The format is simple.

I feel that this website is like “me”—piled up with lots of information ... and the menu is designed well and very easy to understand and it's very quick to get the information you want.

The design didn't make you feel like it was the New Year. The **firework** was the only symbol that **made you associate it with the New Year.**

**The whole design was not really relevant to the New Year, you might put furniture in it and it would be a furniture website.**

**The design work looks very good and gave me the opportunity to use my imagination.**

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **Happy New Year (font)**

**The stripy background**

**Websites normally have a limited set of fonts (Arial, Times New Roman), so it is unusual to see a less common font on so much of the page.**

**Diagonal lines** are also uncommon on websites, which makes the site distinctive, though the “look” of the site is a little dated as a result (it reminded me of adverts and publications from the late 1980's and early 1990's).

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(Information)**

Fairly neat (if dated) design.

Professional

Slick

The link I chose caught my attention because it was **easy to read**, had a **distinctive font** and was in **the centre of the screen.**

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. **Better looking stars (style).**

2. Different link design (**hyperlink**).
3. Alter the diagonal pictures (**position**).

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
2	-1	1	1

Q10: Mood Board

A10: +1

The mood board represents all the websites.

Generally, the image means that people are looking forward to welcoming the New Year, which raises the questions of what will happen and what they are going to do at the New Year.

**I supposed the meaning of all the websites I searched for “New Year” represented having fun during the New Year.**

\*\*\*\*\*The 4th day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.lonelyplanet.com/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the fourth day of the diary.

A2: This website looks very neat, very clear, and very well done. There is a lot of **information**, but it is **not difficult to read or navigate around. It’s just a bit dull.**

The other websites I found had too many words and text to read.

**The icons caught my attention, they were quite fun.**

A little injection of colour as well, such as the icon on the white background.

**The picture designs are a little poor, so they need to be more interesting, colourful pictures.**

**The information is interesting... The “grid” signifies a very ordered site.**

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(Image)**

The thorn tree link and the Australia photo; although my favourite image on the page was the one of the people in the top right hand corner.

The Australia photo is near the centre of the screen and is larger than the other images.

It also has a **stylised** border making it appear **three-dimensional**. Most of the other images are **“flat”** and either integrated into the layout of the page (the picture of the people at the top of the pages) or **“symbols”** (the links).

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(link-information)**

The link chosen had a distinctive shape and intriguing text. **The stylised “tree” (image) is an unexpected symbol as it is difficult to imagine how it will relate to travel** (the site is a travel website). The shape isn’t as **“dense”** as the other links—there is more white space around the tree link than the postcards link, for example.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. **Less information on the homepage.**
2. Could be a little more **“organic”**. The design is quite clear but a bit regimented.

3. The different Australian photo-designs look a bit tacky.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
1	0	1	1

Q10: Mood Board

A10: -1

Almost all the websites I found had **surplus information** (too much information), like the background image showing that **the donkey couldn't carry** a lot of books. **The waving needles** mean that the information shows that too much is happening and that it is difficult to read and difficult to get it to calm down. I didn't know what the meaning was or how to read it. It is an **information overload**.

\*\*\*\*\*The 5th day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.theweathernetwork.com/>

Q2: Draw a picture that best expresses how you feel about your favourite home page. Then, state how you feel about it in the diary in the fifth daily entry page.

A2: The picture was a ball with some organic shapes and some rectangles to contrast the page. It looked **not complex**.

**Too much information for such a design.**

Once inside I felt good.

**I want to have no difficulty in browsing as much as possible for the information. The pictures were quite attractive; some graphics were even without a function, yet it fits the site well. It creates some feelings and emotions, and without such design, the website would be plain.**

**The homepage layout was dominant and too big, but it made the site look a little wide. But the blank place was too big, but the icon design was quite nice and functional and it allows you to know where you are going. The colour was attractive. I liked the colour, especially the weather colour of the map in the dominant place. It looked very good because it didn't appear very complex (If it had more colour, it would be dull and complicated. And the others grids with white, gray, and black were matching, if the black colour was whiter, it would have been better).**

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: (Map)

**The map was the first visual element that attracted my attention. The net on the page was made of rectangular shapes – so the map contrasts this with its **complex, organic shape. The symbols are interesting too and you are more used to seeing them in the context of the television. They are not very clear - such small symbols should be clear, bold shapes that are easy to read.****

Q4: Relating to your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: (Symbol on the map)

**Symbol on the map.**

It is an **unusual weather symbol**.

Behind the symbol, there was a **good interaction**, so it was nice here.

The icon I chose was not in the green part of the map- this meant that it is very outstanding there (white text and pictures are on a white background).

Q5: Please, state your suggestions about how this home page could be made to feel more visually attractive to you.

A5:

1. Reduce the **size** of the ad.
2. Clearer weather **symbols**.
3. Remove the **drop shadow** from the links at the top.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
0	0	0	0

Q10: Mood Board

A10: -2

**Most sites made it very difficult to get at the information and made you very confused looking at them. You don't get the information you want. The weather page had only the very basic information you want and presented the information very clearly.**

**Some websites had a good map, some didn't, as they just put a lot of colour and texts which were not really needed. I felt it was very chaotic. It would be good to get rid of a lot of the text on the home page; if there is a lot of information, it could be put on the next page. With a link, users can still easily find it.**

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NVivo revision 2.0.163

Licensee: RGU

Project: 27 May 2005 2 User: Administrator Date: 2006/3/22 - 01:06:39

## DOCUMENT TEXT REPORT

**Document:** P07-RTF

**Created:** 2005/2/28 - 02:18:13

**Modified:** 2005/12/6 - 03:34:40

**Document Text:**

\*\*\*\*\*The 1st day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.furniture.com/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then, state how you feel about it in the diary in the first daily entry page.

A2: **Pictures**

The feeling is like someone wishing that he could still use his arms if he didn't have any, and he is on a sinking ship which is surrounded by sharks. **This is because I felt that I was in an alien world and in the middle of ocean;** like I can't do anything. And **the sun is pretty evil**, really hot. I chose this website because of its content, not the layout, as the layout itself is quite well structured. **The environment of this webpage is quite alien to me, so I felt that I can't do anything about this webpage.** That's why the person doesn't have any arms and is on a sinking ship.

Q3. What was the first visual element of your favourite home page that captured your attention?

A3: **(the pull-down menu)**

Because when I was moving the cursor over the left hand column of the webpage, the pull-down menu was revealed and I could find all of the information immediately.

Q4. Relating to your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(The pull-down menu)**

The pull-down menu attracted my attention because it showed me that the website had a lot of the biggest types of information for furniture designs. I was curious about seeing some items from this section. It is a very **thoughtful idea for a website not to look too cluttered.**

Q5 Please, state your suggestions about how this home page could be made to feel more visually attractive to you.

A5:

1. **More colour.**
2. **Few advertisements.**
3. The **text (layout)** on the left menu should be more spread out.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
2	1	2	2

Q10: Mood Board

A10: 0

**(Image, scale)**

There are thousands of pieces of furniture for everybody: what is your style? The world looked a bit alien to me, **like a furniture world**, because I never go shopping for furniture. I never have more than 10 pounds to spend on shopping. **It looked like an alien world**. To me, all the furniture looks perfect and posh, a block of flats; the dog is very big, the helicopter is small, that's so alien, the alien part. That's the way I feel about the webpage. The helicopter with a girls face is a strange mix and represents the alien world.

\*\*\*\*\*The 2nd day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://media.guardian.co.uk/diary/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the second day of the diary.

A2: **Animation, Graphics.**

The feeling suggests something **thoughtful, agreeable, and pleasing.**

“mmm” is a bit thoughtful and I think it is **a bit more intelligent.**

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(Moving picture)**

The picture has moving elements. The monkey presses keys on the key board in front of it. Its eyes also move and when it does it makes me smile and I wait for it to do it again.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(Text-link)**

I clicked on the key link “Monkey goes to sky *agm*”.

My eyes focused on this **after my attention shifted from the “moving monkey”**. I think I clicked on this because **my eyes were already attracted to that area of the page because of the moving monkey.**

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. More **moving** monkey.
2. A shorter page **without a scroll bar.**
3. **More colour.**

Q6- navigation

2

Q7-visual personality

2

Q8-easy to use

2

Q9-easy to follow

2

Q10: Mood Board

A10: +1

What I didn't like about the webpage was that it is so like a game world, **for a younger Guardian reader**, as most of them, I think, are likely to **be male**. The picture was like **the conversational male way of thinking** that wearing the right clothes will get women to look at them. It is this kind of thing, a kind of English male drinking culture and attitude. It's like a male operation, a male room. Like the drinking culture in England: men and women go out to the pub, and the men just try to attract the woman as they go. **This website makes me feel that the people designing it are these kinds of people.**

\*\*\*\*\*The 3rd day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: [http://chineseculture.about.com/library/weekly/aa\\_new\\_year2004a.htm](http://chineseculture.about.com/library/weekly/aa_new_year2004a.htm)

Q2: Draw a picture that best expresses how you feel about your favourite home page. Then, state how you feel about it in the diary the third daily entry page.

A2: **Graphics, text, information.**

This is Chinese New Year.Com. I suppose, like **all the pictures**, every body is **happy**; today celebrate, tomorrow, you know, you need to return to normality and go to work. "Today" because it is Chinese New year, everyone had to be happy, to be happy. Tomorrow (after the New Year holiday) is normality, it becomes normal life again. Specifically, in China, you might be sad for the return of normal life really, very depressed by the government and how the women are repressed. Dramatic feelings.

Today is happy, but tomorrow is sad.

Q3: What was the first visual element of your favourite home page that captured your attention?

A3: **Logo (colour)**

The red text stood out from the rest of the black text. The colour mix was immediately appealing.

Q4: Relating to your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(typeface, colour, information)**

It was written in a "Bolder" text (**more solid text, bolder**) and suggested that it was photographs from around the world of people celebrating the Chinese New Year. This appealed to me and I was kind of curious about what it said, so **it drew my attention to it**. Like when I was looking and surfing on the actual guide search, it is like the same as the photo of the Chinese New Year. I thought about looking at the photos, that sort of thing. **The photos helped me visually see what Chinese New year is like in San Francisco.**

Q5: Please, state your suggestions about how this home page could be made to feel more visually attractive to you.

A5:

1. **Less adverts.**
2. **More colour.**
3. **Less text.**

Q6- navigation

2

Q7-visual personality

0

Q8-easy to use

2

Q9-easy to follow

2

Q10: Mood Board

A10: +1

**This mood board is more straightforward really.** The idea is **clearly** about Chinese New year. Everyone is happy; **eating, drinking**, Christmas trees and a winter wonderland. It is straightforwardly happy. You don't usually get drunk.

\*\*\*\*\*The 4th day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.discovery.com/>



Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the fourth day of the diary.

A2: **Colour, Logo, moving text, information**

This is the Discovery channel. It's all about history, the world and the universe. It made me feel that the world is a very big place when I am in England. But the world is a very small place, and the universe is a lot bigger. This is me in Sheffield; it is smaller than the universe. It made me feel that the universe is a very big place.

**I quite like the blue colour.** It made me quite calm. It's got shape as well.

The problem is the picture of the car: even if it is not an ad, it is like one.

The shade of blue is quite nice. I got a nice feeling from it.

The part picture of the car: I don't like the part picture of the car.

It's not an ad but it looks like one. I don't think it's the right thing really. The world, is not just a picture of a small car. I don't like the car. I don't know why there is advertising for a TV programme on the Discovery channel; it's a shame, like the car.

The text moves from here to there, like a story. Then another text comes out of some more discovery news and it stops there, then it vanishes and another headline comes, and you click on it. It attracted my attention immediately.

It's not the third thing I clicked on. **But it's the third thing that attracted my attention – it is the moving element, because ads are on a lot of websites and tend to be the only moving elements... I think it is not good for future use. I don't think this kind of thing will attract my attention so much, just because the moving ads all use this technique. I think this method will become ignored.**

I tend to ignore ads and forget about them. In this case, it is the only moving element on the page.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(The moving headlines)**

The moving text of the news headlines went from right to left across the screen. It was the main moving element on the home page.

Even though the text was small and thin, it was more captivating than any of the pictures.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(BBC America button)**

I was curious about this and I thought of the BBC site in America because it is intriguing and concerned with the sort of programmes that the BBC are selling to America. My interest probably had more to do with the content than with the website design. **As I am so used to this sort of information it has been left on the side.** An understandable webpage is the main thing, like I can click on something and **I can look there straightaway.** This must be sorted out in a particular way, such as the kind of layout (...) I was drawn to the contents on the left hand side of the page (left navigation rail). I clicked on the "BBC America" button because I was curious about what the BBC is showing in America.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. A greater variety of colours.
2. I didn't like the picture of the car. It seemed out of place.
3. **More moving pictures** (like moving in the universe, like the planets or nice moving pictures).  
Can't think of anything more than these (the above 3 opinions.).
4. There are a few more colours, like red; there are a few more colours chosen here, like the planet; it seems quite nice.

**For example, like this picture is moving around there—something like that. It will be nicer.** Other than that, I thought the page is quite a calm page and quite contained, **so more scroll bars. I don't think it really needs to be spread out in this case. I don't think it**

**needs more text.** These are the two things that I can think of that will make it **more visually attractive** to surf on. **It would make it look quite nice, simple and contained.**

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
1	2	1	0

Q10: Mood Board

A10: +2

**It made you think about the universe:** something real, and strange at the same time. I am on this planet, but I don't know why I am on this planet. I don't know about the substance and the atmosphere of the earth. I live in a kind of mystery or magical mystery. She (the image) could be in a normal bedroom. I am on a planet in the universe, but I am forced to think about the universe in front of my eyes. That takes me to different places that make me **think about much bigger things.** I thought these were really nice images. They show **a kind of normality,** put in a beautiful and strange environment. This is a very calm picture that doesn't make me stressed out **but it's a very strange picture (a bed in a forest).**

\*\*\*\*\*The 5th day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.spaceweather.com/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the fifth day of the diary.

A2: (Colour, Picture, information)

**It's about the different idea of the weather; it is my favourite webpage and has a lot of nice pictures.** There are many decent things that you can click on [...] Again this web page is about space that I don't quite understand. I am surrounded by many things in the universe that I don't understand and can't explain, such as mystery, chaos, order and intrigue. I wish I did understand them.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: (Picture)

The red sun-spots picture stood out immediately. Maybe it was the **colour** that attracted me, and that it was a **picture.** The colour makes it attractive.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: (Picture)

When I carried on looking, I just saw the picture, a really nice picture; I wanted to see it bigger even though it is quite small on the webpage but you can't see all of them at once. You can see here that **you need to do a lot of scrolling to see the webpage. I expect to click on the picture to see a full screen picture. I feel lost if I can't get a larger picture when I click on a small picture.** I like to read a web page in the space of one page, **without scrolling** down to search for more information, which means I like a webpage to **contain links** for me to choose other information. I also like the **colours** on the webpage.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. **Moving images** for the weather pictures.

2. A more contained text layout, instead of having to scroll down the page.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
2	2	1	1

Q10: Mood Board

A10: +2

Again it is a little bit of an alien world to me. To the dog, it is not normal but the dog might be curious about the big castle. It might think that the castle has many rooms and spaces where it can find a comfortable place to sleep. A comfortable place to sleep might be the dog's dream, although it might not understand what the castle is. This situation is similar to the spaceship picture because **I don't understand space but I would like to go there and explore things that I don't quite understand.** I was curious and intrigued.

NVivo revision 2.0.163

Licensee: RGU

Project: 27 May 2005 2 User: Administrator Date: 2006/3/22 - 01:09:51

## DOCUMENT TEXT REPORT

**Document:** P08-RTF  
**Created:** 2005/2/28 - 02:18:13  
**Modified:** 2006/3/22 - 01:09:16  
**Document Text:**

\*\*\*\*\*The 1st day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?  
A1: <http://www.bernhardt.com>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the first day of the diary.

A2: (Layout)

Basically, if I design something, it would be like this. Specifically, if I had a webpage, I would just use one icon which allows access into the whole project. Maybe the icon could change without your having to do anything, it just changes so you can see the entire project for as long as you like.  
**No writing, only images and objects.**

**I think this site is extremely stylish, simple and has nice layout.**

**The circle is supposed to mean a very simple webpage, and a very simple layout. This design style is nice.**

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: (Picture)

It is the main thing on the page; it stands out. The object is irritating and the only object on the page.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: (Picture)

Purely because it is the only object. I am more interested in objects, rather than text, basically. I always imagine that the object is the major element that will lead me to the text.

The main focus point draws my attention immediately and it is also the first thing I wanted to click on. Basically, I am interested in objects, rather than text. The objects are the major elements on the page.

Good links are very important; a good link should lead me to the correct access on the right page.

If I didn't access the page I wanted, I would be disappointed.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. Make the chair a **3D object** instead of 2D.
2. Change the **colour** of this interface background.
3. Change the **colour** of the two boxes at the bottom. The brightness of the main box is used as a kind of significance for the interface.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
2	1	2	1

Q10: Mood Board

A10: +1

**I think that the mood board is very interesting from my point of view. Obviously, it is limited partly by the source of the materials.**

The images I selected are from images detached from the magazines (it is a potential mood board), even though the mood board is under my control and choice.

If I spent one or two hours finding an image on the Internet, it would be good, but time doesn't allow that.

I limited myself (only selecting images from magazines).

**I haven't done a mood board before, so I feel like learning about it. It isn't like something natural for me. The mood board mainly is about shape, texture, and colour.**

The attractive chair is related to these images, I felt that this site is stylish and delicate.

The furniture is more like architecture. I like looking at the furniture, even though I didn't like the websites.

It's about the content, it is a different thing to separate the mood board from the content, and it is always a big thing, conscientiously.

The colour is not about the furniture, it's about shape.

This mood board is specific to this website.

The rings signifies that I was engaged with the website.

The black box represents being self-contained and refers to the black background. The red one signifies being connected.

\*\*\*\*\*The 2nd day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: [http://www.vectorlounge.com/04\\_amsterdam/jam/flamjam.html](http://www.vectorlounge.com/04_amsterdam/jam/flamjam.html)

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the second day of the diary.

A2: (big graphic)

The image is a monkey. Like a comedy. It is cheerful.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: (big graphic)

The graphics are funny, engaging and comic. It is just the biggest and best thing on the page. The blow-up monkey is just very comic and engaging.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4:(big graphic)

There is nothing else to click on. In fact, the monkey is used to encourage you to click on something, not directly.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. Describe the purpose of the website (the theme).
2. Fill the entire page with the original background (a liquid layout is better).
3. Use a blow-up hand to match the blow-up monkey (image).

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
-2	-2	0	-1

Q10: Mood Board

A10: +2

**Navigation is poor, and the actual interface is very unclear.**

**The idea of the design** is quite absorbing and absurd. It is really odd.

**The “Monkey” is a very unusual theme from the others.**

I found the blow- up monkey to be very unusual and the idea of being able to **interact with** the monkey by using the large hand appealed to me.

For “Monkey”, it is hard to describe the feeling of the website and hard to detach the content from the interface to make the mood board.

The interface is a “Monkey”, it is not distinctive, because there is little interfaces. **The content is just the interface.** It’s a very important point, specifically for this one.

This monkey attracted me a lot, even though I knew it didn’t have good navigation, good organisation or a good layout.

This is about organisation, not the structure, but even though if it had no layout and no information it was still a very engaging website.

**From an emotional point of view**, it’s pure basic emotion, rather than emotion linked to the way that the information is organised.

There’s a feeling of security which makes your comfortable [...]

Crazy! All the monkey websites are the same, so they are a little bit crazy. I am very happy to see the monkey.

It is not organised nor does it have a nice layout. **The monkey is a funny symbol for me: abstract, imaginative, and absurd.**

**The monkey is unusual and appealed to me.**

**The mood board was not related to the structure and organisation, but to the monkey.**

\*\*\*\*\*The 3rd day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.new-year.co.uk/>

Q2: Draw a picture that best expresses how you feel about your favourite home page. Then, state how you feel about it in the diary in the third daily entry page.

A2: **(Picture, Layout, Style)**

The picture is just a very simple layer with a structure.

So I did this sketch to indicate the layer of the model (website).

It’s a quite nice construct and **negotiates** that to absorb the distant, deeper meaning.

It is a complete layer and well organised (the shape was related to the layer of the website and was much organised. The colours and textures are really well thought out and **the aesthetics are particularly pleasing to the eye**). Hierarchy, layout organised well.

Q3. What was the first visual element of your favourite home page that captured your attention?

A3: **(Picture)**

**Fireworks exposed.** The picture made me feel shaky.

The big picture was as a surprise and made me feel jumpy. It is a big part of the screen and it made me feel shaky.

Q4: Relating to your favourite daily home page, which icon did you first click on because it attracted your attention?

**A4: (Picture)**

**The first thing that caught my attention was the first thing that clicked on.** If I move the cursor on an interesting object and no cursor appears, I would feel distracted, like when you have gone to a building and you can see through the glass over an interesting structure, but you can't actually go through the door.

Q5: Please, state your suggestions about how this home page could be made to feel more visually attractive to you.

A5:

1. Don't repeat **the menu** (Monorail navigation bar) items **as icons**.
2. Make sure the **scroll bar** is not present on the right hand side (a liquid layout is better).
3. **Make it clearer what is clickable.**

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
1	2	1	1

Q10: Mood Board

A10: 0

I found most of the websites to be very artistic talking about the future.

It concerns the technology of the New Year, basically the different aspects of the future and how to find good information through a good design.

Exotic research for the coming year.

The Chinese New Year is very impressive.

Amplification

Innovation

\*\*\*\*\***The 4th day of the diary**\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.discovery.com/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the fourth day of the diary.

A2: **(Theme)**

The Olympic ring means **travelling** to the whole of the world.

The line means **continuing**.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **The central graphics caught my eye.**

It's a moving image.

The central graphic kept changing every few seconds, I wanted to stop it moving and pin it down.

**This is because I didn't want to be controlled.**

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **Questions 3 and 4 are similar for me.**

**The first thing that caught my attention was the first thing I wanted to click on. And it is always the biggest thing on the screen that draws my attention.**

I wanted to stop the motion (here, it means the movement) to see what was behind the work.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. **Less use of moving images because it is a distraction**
2. Orange + blue do not **contrast** well.
3. **Limit the menus** to one on the left hand side.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
1	2	0	0

Q10: Mood Board

A10: +1

Distant, luxurious, Richness in colours, and images around the world.

Basically, a lot of websites are quite rich in colour and images, **drawing your attention away from this place to where you might travel**. They are quite **exciting images** and the **colour** on the sites made me feel touched.

Under the topic of travel, almost all the websites were designed with very rich images and colour, I felt quite excited viewing them. I found the travel one to be quite exciting.

\*\*\*\*\*The 5th day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.wni.co.jp/cww/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the fifth day of the diary.

A2: (Colour)

It's very cute and a typically Japanese way.

Even though it is about the weather, I found it was kind of romantic, which is a little bit absurd. Especially, the colour was cute.

The picture I drew is of me and my girlfriend.

**I miss my girlfriend; even though she is not Japanese (she is from Thailand).**

**She is kind of cute. I can't describe such things, but they just happened in my mind.**

The content is about the weather.

The content was not supposed to do that. **I like the map, I like the colour on the map, the colour (the crazy blue and the yellow are really such bright colours) immediately attracted my eye.**

A better design for their website wouldn't have a **scroll bar**.

But this one was my favourite of the 30 sites I looked at.

Because it's just very cute, this is the main thing.

**Even though I can't read Japanese, I found myself wanting to be very interactive in as many ways as possible with this site.**

I am not interested in the interpretation panel; I just see that there are **lots of cute engines behind the map**.

Basically, I just click on this (the map), the main image; actually, you find you can't click on the actual dot, temperature, or on the sun. I found out that I am crazy. **So it's mainly crazy and cute.**

The layout isn't particular brilliant, just the colour and shape. The Japanese have a funny shaped country. **It's weird, it's not normal for me to like cute things.**

**My knowledge of Japanese things is very limited, so I thought there could be pictures or words.**

**I am interested in visual things.**



Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(The colourful map)**

It was the most inviting part of the page because I didn't know enough Japanese to pick up on the text. Immediately, I wanted to see how I could generate more cute pages (by exploring).

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(The colourful map)**

**Briefly, I wanted to see it.**

See...see cute, **I wanted to see if there would be some cute Japanese characters behind.** Even though I know there wouldn't, I wanted to click on it and find out.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. Only have one menu.
2. Get rid of the scroll bar.
3. Make the points on the map clickable (without this I get disappointed).

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
0	2	0	1

Q10: Mood Board

A10: +2

Mainly, it is all about the weather.

When I went to the other sites, there were a lot of ideas for seeing different weather patterns from different countries, so the idea was about movement and about the landscape.

Basically, that thought was very flexible throughout the webpage; the mood board is made about the 'movement', also about the change of the weather. So my mood board means there are showing consistent movements, from the website, to the landscape, to the weather.

Turtle: you are getting slow, but its movement is going cross the big land.

Motorbike: Just the movement.

It must be very happy, a very cute "Carl".

I made the images and texts of the mood board mainly to present my thoughts.

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NVivo revision 2.0.163

Licensee: RGU

Project: 27 May 2005 2 User: Administrator Date: 2006/3/22 - 14:01:11:35

## DOCUMENT TEXT REPORT

**Document:** P09-RTF  
**Created:** 2005/2/28 - 14:02:18:14  
**Modified:** 2006/3/22 - 14:01:11:20  
**Document Text:**

\*\*\*\*\*The 1st day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?  
 A1: <http://www.rapidoffice.co.uk/>

Q2: Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the first day of the diary.  
 A2: Animation, Layout, Colour  
 This site is interactive. I like the animation. The colour is neat and clear. **It's easy to find the direction I want to go without feeling lost.** It's like hitting the target in archery.

Q3: What was the first visual element of your favourite home page which captured your attention?  
 A3: The moment (**Animation**).  
 The movement of the image seemed like a camera panning left to right across a peaceful scene. **The movement was constant and calming** (it wasn't fast).

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?  
 A4: **The moment the images appeared (Animation).**  
 It immediately attracted my eye. The clearness of the page, the use of white space, looks good and clear, fitting the images.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.  
 A5: I hate the use of the word "**online**" obviously it's online.  
**Get rid of the standard office plant**  
 Change the **background** colour from white.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
2	1	2	1

Q10: Mood Board

A10: +1

**Outside the window it is shiny. It let me see what I wanted to see. I felt like going up and having a quick interaction.**

**It's a nice colour, I was feeling good.**

**I felt secure and didn't feel lost. It's a friendly design.**

\*\*\*\*\*The 2nd day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: [http://www.monkey.com/lobby\\_flash.htm](http://www.monkey.com/lobby_flash.htm)

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the second day of the diary.

A2: **(Background music)**

If you go to the actual site, you can hear the sound; that way I found the "monkey". The sound made me feel happy and interested.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(Icon, Symbol-Shape)**

The arrangement of the five symbols, "Mentor", etc.

**I don't know why I liked it, I just did.**

**They are just funny.**

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **"Services"—Information.**

I was looking for some indication of the service that the company provided.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

**Pictorial examples of their work.**

**Simpler examples of what they did. I didn't know what the interface design meant, so I would like to see what it is. Bigger icons, because there is a lot of empty space.**

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
1	-1	2	1

Q10: Mood Board

A10: +2

The website made me feel like a kid having fun, just like in the picture of the kid (top-right). It's a famous **commercial**, that silly thing (the picture in the bottom-left). The musical picture of the "cow toy" signifies "cute" and it made some sound and I felt it was young and cute.

For the mood board: the feeling about this website was great because most websites are quite boring. I took a long time finding something I liked. If I need to represent my feelings for the whole search when looking for the "Google monkey", it must be depression. I spent ages finding something halfway interesting because most of them were boring (-2 is for the whole search).

\*\*\*\*\*The 3rd day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.infoplease.com/ce6/society/A0835506.html>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the third day of the diary.

A2: **Brainy.**

**I felt brainy because there was a lot of information—I did want to get more information and I**

**got this.** There were many pictures and a lot of information; **it is the textual quality that I liked.** It is not a visual thing; it is more about actual information. It's about 15<sup>th</sup> Century history.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(Picture-colour and Lines)**

**The hand icon attracted me to click it.** There were a few images that were good because they did not distract me from the information in the text. So **I preferred to click on the pictures first.**

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(Picture)**

There was little else to click on. It attracted my attention because it was **pictorial.**

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. More pictures.
2. Less use of white colour.
3. More detailed information.
4. Fewer ads.
5. Make learning appear to be fun.
6. Make the site feel less serious, otherwise women won't like it.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
-1	0	2	2

Q10: Mood Board

A10: -1

**I felt very bored. Seriously, not much colour.**

The others sites were very boring, I couldn't find anything interesting.

**\*\*\*\*\*The 4th day of the diary\*\*\*\*\***

Q1: Which home page design did you like best?

A1: <http://www.oratory.com/onebag/home.html>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the fourth day of the diary.

A2: **I made this because I liked that picture.** By looking at the picture I understood what the website was about. It's related to the "Travel Line". I don't mind. I like travelling; I don't like the stress, passports, luggage and all the rest. I much prefer to just be in my trousers and shoes and just go. I don't have to have a suitcase and so on. The picture spoke to me; I thought that if I was travelling, I wouldn't be like that because it still showed them bearing a lot of suitcases.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(Picture)**

The feet on the bed.

It related to the travel attitude, e.g. relaxed textures and colour and (a lack of) motion.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

**A4: (Information)**

I clicked on the “list of biggest travel mistakes”.

I was interested in the information.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. More icons for display.
2. Less use of grey
3. Make it feel “warmer” (using yellows, oranges, and reds).
4. More pictures.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
-2	-2	0	0

Q10: Mood Board

A10: +1

This mood board was my favourite one.

I felt relaxed and happy.

I used these pictures, which are about how people reacted and what they felt.

It seemed to be made by somebody who is interested in what they are doing.

**\*\*\*\*\*The 5th day of the diary\*\*\*\*\***

Q1: Which home page design did you like best?

A1: <http://www.w3.weather.com/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the fifth day of the diary.

A2: What I thought was that the weather was boring, but I felt happy. So I was singing in the rain.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(The map)**

The map of the USA—the colour, shape, and form.

The orange (warmer) has a different value from the blue (colder).

Showing the temperature through the use of colour was interesting.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(Information)**

I wanted to key in my country at the top of the page.

I wanted to know what kind of weather my county is having.

I also saw “UK” there, so I wanted to see something there as well.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. Icons for all countries.
2. Less use of grey and white.
3. **I prefer a different font.**
4. I have a negative association with the “Arial” font on websites—it looks cheap.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
2	2	2	2

---

Q10: Mood Board

A10: 0

I can't find any fitting pictures in the magazines.

I just drew “myself”; because my bald head is very sensitive to when the weather is going to rain and I need an umbrella. So the weather forecast site is like my bald head, as it tells me the weather forecast. I felt it was clear and trustable.

.....

NVivo revision 2.0.163

Licensee: RGU

Project: 27 May 2005 2 User: Administrator Date: 2006/3/22 - 11:14:55

## **DOCUMENT TEXT REPORT**

**Document:** P10-RTF  
**Created:** 2005/2/28 - 11:18:14  
**Modified:** 2006/3/22 - 11:13:19  
**Document Text:**

### \*\*\*\*\*The 1st day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.furniture.com/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the first day of the diary.

A2: **Colour, image**, meaning (concrete pictures, e.g. feminine, flowers for females, value for money, a bed to relax).

This website is about furniture, and I think furniture is related to **lifestyle**. **So I picked some pictures to indicate concrete visual stimulus from these images.**

If I go to buy furniture, I consider the value of the furniture and if the chair is comfortable or not.

Also, to think about the role furniture plays in life or what I feel about it, it's just about feelings. So why I selected these picture was because of the first impression, like when you are searching for something through the search engine on the Internet, you often select something through your first impression.

Whether I feel satisfied or not, it depends on **if the website is able to create comfortable feelings through its visual expressions when you are using it**. So for the colour tone, texture, and other visual elements, like the furniture, people would like to see the colour, texture, and so on. So I would like to know something about these points from the information on the website.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(Big Picture/Image, Scale, Colour)**

Pleasant colour.

And good sense of the living area. This information for the picture matches the colour of the background, the colour tone of the furniture and the arrangement of furniture, which is just to my liking.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(Monorail navigation bar)**

Information, text.

The information on this website was trying to tell users something and offer consumers advice on how to decorate their house by offering concrete advice with pictures or others things. Like many people, if they want to decorate their houses, they will buy magazines in order to get concrete ideas on how to design their houses.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. A webpage is better if it fits the window automatically (**liquid layout**).
2. It is a risk to use a specific picture that refers to **someone's taste**.
3. This item could provide actively moving **information**.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
2	2	2	2

Q10: Mood Board

A10: +1

**Colour, Texture, human action.**

Furniture could offer many kinds of meaning, e.g. decoration, swank, and so on.

**Humour**, for different users' sense of taste in furniture style. I suppose the feeling of comfort represented furniture that is very important because people can enjoy it anytime or anywhere. So I used some images regarding feeling comfortable or relaxed.

So **all the images are about feelings**. The picture with a man and an orang-utan laying on the blue sofa and waiting for something is very interesting. The main focus is the furniture, and it seems that the public furniture is allowed to be used by different users.

**\*\*\*\*\*The 2nd day of the diary\*\*\*\*\***

Q1: Which home page design did you like best?

A1: <http://hotwired.lycos.com/webmonkey/kids>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the second day of the diary.

A2: **Colour, image, icon.**

Funny.

**Vivid colour.**

“Monkey” for me is a concept, so I was going to find out something, which is related to the meaning of “Monkey”.

It is very funny and very interesting. So I picked this image (Dolly Girl perfume) with a **specific colour tone, just to represent the humour of it. This colour (pink) is very good at catching your attention.**

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: **(The graphic-Colour, Shape, Scale)**

Funny.

For kids.

For entertainment.

Interesting.

For fun.

I selected the “Monkey” icon because it looked funny and interesting, and it also came with a link to the next page.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(The button design)**

(Graphics first, and then the text on the icon)

In fact, there are four interesting icons; it was not easy to pick the most interesting one, so I selected them **depending on the information**, which I am more interested in. It seemed to provide a link through to **more interesting content**.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.



A5:

The **unrelated item placed in an important place** (in the top-level domain of the site).

It should have more **basic information** about the web-function.

The **entire bottom navigation area** is too small to use.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
2	1	2	2

Q10: Mood Board

A10: -1

(Colour (especially green), images)

I think the meaning of "Monkey" is related to humans. So I selected some pictures of people with special behaviour and facial expressions. A **"Human" is a very concrete image, but a "Monkey" is a very abstract concept**, I would like to find some concrete images of people to **show their different moods, attitudes, situations, and some strange lines to express the meaning of monkey in my mind.**

This website is **for children**, as it is **designed to be funny to children**. I think that **"Monkey" has something to do with entertainment for an Internet search**. Therefore, I selected some images that are interesting, funny, and entertaining. A monkey is a funny symbol to me; it is not something familiar in daily life. So I wanted to use some interesting conceptual images to show my thoughts about the "Monkey", like some people with very **odd make-up**, an **odd layout**, the picture being cut out by a **paper-cut silhouette of a human outline so that people can also see what it looks like**. The monkey has a lot of different meanings to me, like the picture shows: **even if you can't see a complete image, you can still see half of it and know what the other half looks like.**

\*\*\*\*\*The 3rd day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.new-year.co.uk/chinese/>

Q2: Draw a picture that best expresses how you feel about your favourite home page. Then, state how you feel about it in the diary in the third daily entry page.

A2: **Colour, image, oriental culture.**

The feeling of New Year means **"being together with the family"**, vivid colours from flowers.

For oriental people, **"New Year" means to "have a family reunion"**, so the meaning is related to **eating, happiness, and vivid colours.**

So, I selected some pictures to do with delicious food and the vivid colours of flowers, to represent a **"good atmosphere"**.

Q3: What was the first visual element of your favourite home page that captured your attention?

A3: **(Image)**

Cultural totem. The graphic I selected was because it is full of the Chinese New Year atmosphere.

The cultural implication of the graphics is strong enough.

Q4: Relating to your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: The button design. (Icon, information)

It is supposed that the information in this section should attract most attention. For people with different **cultural** backgrounds, they must be more interested in the content of this website. For me, I would like to understand how the website introduces the Chinese New Year.

Q5: Please, state your suggestions about how this home page could be made to feel more visually attractive to you.

A5:

1. More **language** for different readers.
2. The **font** is terrible.
3. There should be some interesting **images** to describe the information.

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
1	0	1	0

Q10: Mood Board

A10: +1

(Colour, life experience affected me a lot. (Especially red colour), images)

**The mood board is made from my experiences of searching through several websites and my life experiences and memories of the "New Year".**

**"New Year" is just a very colourful feeling, and oriental people like red as a colour, like a red door, a cute child and the red cloth, which indicates joyful feelings.** These images are not concrete meanings, but I would like to see those images as a complete picture to represent a rich and joyful effect. So I used a lot of vivid colours to represent the "New year". The mood board is related to a joyful atmosphere and a festive mood. **Based on my experience, when browsing on the web, my life habits affect my preferences. In the searching process, if the first impression is not good, you jump onto the next site.** I think the influence of my life experience affects me a lot. So when I needed to make a mood board from those magazines, **I used my intuition to select these concrete images and patterns, by changing some expressions and the graphic layout.**

\*\*\*\*\*The 4th day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.travel.yahoo.com>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the fourth day of the diary.

A2: (Picture, Size, Colour, Text, Price)

"Travel" means a "Holiday". For different generations it has different meanings. Generally speaking, I think that "holiday" means "luxury", which is related to "money". So I used a picture about scenery, to mean that there are a lot of promotions and half price holiday packages. It is very direct expression. There are many travel agencies and they often provide scenic photos that look great and very pleasant to help attract customers. Through those photos, people can imagine where they will go and what kind of environment they will stay in for several days during their travels. **So I selected an attractive picture, which represents a place I want to go.** Mainly, the photo is used for travelling, which always looks more positive and gorgeous, never cluttered. I put the image of the price cut and the word "holiday" to show my thoughts.

Q3. What was the first visual element of your favourite home page which captured your attention?

A3: (Icon, information)

Useful search functions and multi-information.

Because of my travel habits, I like to read these kinds of travel websites. They can offer you ideas on how to arrange your holiday plans and help you book tickets online. Therefore, I selected my favourite websites according to their functions. I think the functions of such websites are more important.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(Graphics, information)**

This map is good for you to easily locate the place where you wish to have a holiday. Through the link, you can see more information beyond the map, which can give you more travel information about the place.

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. **The information in this section had been limited to a few cities.**
2. **Too much cluttered information on the main page.**
3. **The colour was boring (through the whole website, the colour is so boring and has a less aesthetic sense than other travel websites). I selected it just because its functions have very useful travel information with a very complete structure and suggestions to the users, including eating, clothing, living and transport aspects of travelling.**

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
2	1	2	2

Q10: Mood Board

A10: +2

(Images, life experience)

“Holiday” means doing different activities, like a young man might like to go surfing or go to Africa. I wanted to express my feelings in my mood board. **So when I was selecting these images, I wanted to show many thoughts.** For example, “going to Africa” you associate with wild animals, such as a leopards, or a person dressing in khaki clothes, or driving a jeep in the jungle. Or other scenes, such as a villa, or dressing on a beach, or taking photos, as each picture is able to show a different type of holiday, such as “a surfing holiday on a beach”, or a “holiday in an African jungle”, a “holiday in a landscape” and a “holiday viewing the sunset” and a variety of activities related to those holidays.

\*\*\*\*\*The 5th day of the diary\*\*\*\*\*

Q1: Which home page design did you like best?

A1: <http://www.theweathernetwork.com/>

Q2. Draw a picture that best expresses how you feel about your favourite home page. Then state how you feel about it on the fifth day of the diary.

A2: **(Picture, Scale, Colour, Information, Placement)**

Professional and precise information.

Multi-function.

Clear information and good organisation.

A quick search bar.

Useful index functions.

In Britain, people are quite concerned with the topic of “weather”, so I see a lot of websites related to weather. I associate the weather with a **professional** weather broadcaster, weather analysis, or weather forecasts, so this topic gives me the first impression—it is a serious and professional field. So I found an image from the front page of CNN, which can show my feelings most directly. Then I added some notes to state my thoughts. I wanted to use different ways to express my feelings, and **the style is affected by the professional image and the precise information of the weather**

forecast website.

Q3: What was the first visual element of your favourite home page which captured your attention?

A3: **(The location of the image, information, link)**

This is a weather satellite image. No matter where it is, **it occupied a very attractive place to show its professional information. Because of this picture, the website looks so professional, with authoritative and precise information.** The picture in the left-top of the website looks more important and it simply emphasises its important information and the complete style of the image.

Q4: Regarding your favourite daily home page, which icon did you first click on because it attracted your attention?

A4: **(Information)**

The search links.

Functional items.

It quickly indicates the place where you need to go to find out about weather all over the world. The selection that attracted my attention mainly concerns the function. Generally speaking, most websites have been designed by **balancing colours and form**. However, the most dislikeable websites are where advertising occupies most of the page. **If it is too full of information, I leave the page immediately as it will blur my focus. Sometimes, if the colour of the ads is too strong or unpleasant, you don't feel good.**

Q5 Please give your suggestions how this home page could be made to feel more visually attractive to you.

A5:

1. **Active and moving forecasts.**
2. **Pictures too small.**
3. **The advertisements should be less numerous or smaller.**

Q6- navigation	Q7-visual personality	Q8-easy to use	Q9-easy to follow
1	2	1	2

Q10: Mood Board

A10: 0

**(Colour, images (regarding men))**

If it is a sunny day, I think of sun block, sunglasses, and something about the weather.

Weather forecasts are about being precise, so many readers would be concern about whether the news is precise or not and whether the information is clear enough and simplified enough for the public to understand, such as high atmospheric pressure. For the public rely on weather forecasts. For example, if it is sunny tomorrow, then they will need to prepare sunglasses and sun block.... So I used some items, whose relationships with the weather are easy to imagine. The images came from my intuition, and then I found some images from a magazine and picked something more relevant to make the collage. The top-right picture represents the fact that nowadays wireless Internet connections are very popular, so you can find out the weather forecast quickly.

## **Appendix 12—**

Background details of the three designers and their opinions about the application of “Emotional Probes”

(Section 5.4.3)

## Appendix 12– Background details for the three designers and their opinions about the application of “Emotional Probes” (Section 5.4.3)

The three experienced designers played important roles in evaluating the practicability of Emotional Probes in the design industry and further provide suggestions about how to apply EPs in design projects. A profile of each designer is given below, in Figure 12-1.

Interviewee	Name	Occupation
D1	Wen-Li Chang	Graphic designer and Web developer/ 9 years design experience/ limited programming knowledge
D1's opinions	<p><b>The advantage of applying the EPs-</b></p> <ul style="list-style-type: none"> <li>• To communicate with users' emotional experiences</li> <li>• To compensate for lack of quantitative data</li> <li>• To provide a design “toolkit” for designers</li> <li>• To inspire creativity in designers</li> <li>• To build a users' experience database</li> <li>• The application can collect user' perspectives to generate design ideas in the early stage of the design process and to gather users' emotional reactions to design outcomes in the final stage of the design evaluation.</li> </ul> <p><b>The disadvantage of applying the EPs-</b></p> <ul style="list-style-type: none"> <li>• Takes too long to collect and analyse information</li> <li>• Budget limitations influence the clients' willingness.</li> <li>• Time limitations</li> </ul>	
D2	Shin-Yi Lee	Web Interface and Visual Designer / 6 years design experience/ limited programming knowledge
D2's opinions	<p><b>The advantage of applying the EPs-</b></p> <ul style="list-style-type: none"> <li>• A creative way to crystallise users' experiences</li> <li>• To enhance designers' understanding of users' needs and satisfaction</li> <li>• To form a collaborative relation between users' experiences and designers' creativity</li> <li>• The application is useful for supplying the design industry with a better understanding of user experience.</li> </ul> <p><b>The disadvantage of applying the EPs-</b></p> <ul style="list-style-type: none"> <li>• Budget limitations</li> <li>• Time limitations</li> </ul>	

D3	Deborah Cumming	Graphic designer/13 years design experience/
D3's opinions	<p><b>The advantage of applying the EPs-</b></p> <ul style="list-style-type: none"> <li>• A creative way to crystallise users' experiences</li> <li>• To enhance designers' understanding of users' needs and satisfaction</li> <li>• To form a collaborative relation between users' experiences and designers' creativity</li> </ul> <p><b>The disadvantage of applying the EPs-</b></p> <ul style="list-style-type: none"> <li>• Users' willingness to participate.</li> <li>• Budget and time limitations</li> </ul>	

Figure 12-1: The background details for each designer and their opinions about applying the EPs.

## **Appendix 13—**

Drawings from the participants' first impressions of favourite  
websites



### Appendix 13– Drawings from the participants’ first impressions of favourite websites

Figure 13-1, 13-2, 13-3, 13-4, and 13-5 present each participant’s emotional associations with their daily website search.






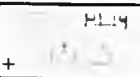




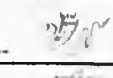


Participant	Association	Feeling	The main factor that generated the first impression
P1	Furniture		Navigation, Layout
P2	Furniture		Design style – picture and colour, navigation
P3	Branding		Branding image- Image, Colour
P4	Furniture		Colour, Picture, Content
P5	Furniture design and history		The background image, Content
P6	Furniture		Animation
P7	Furniture		Pictures
P8	Furniture		Interface style
P9	Furniture		Animation-Layout style & Interactivity, Colour
P10	House decoration		Colour, Image, Meaning

Figure 13-1: The first search task for the participants’ favourite website starts with the keyword “Furniture.” The symbol “+” means that the participant’s feeling was positive and the symbol “-” means that the participant’s feeling was negative.

Participant	Association	Feeling	The main factor of generating the first impression
P1	Festival		Navigation, Information
P2	Animal - monkey		Background music
P3	Funny Icon		Colour, Image, Icon








P4	Cartoon	+ 	Colour, Image, Icon
P5	Funny thing	+ 	Layout, Animation, Colour, Navigation
P6	Web monkey – the name of the website	+ 	Logo, Information
P7	Funny image	- 	Animation, Graphics
P8	Funny image	+ 	Big image
P9	Funny image	+ 	Background music
P10	Funny image	+ 	Colour, Image

Figure 13-2: The second search task for the participants' favourite website starts with the keyword "Monkey." The symbol "+" means that the participant's feeling was positive and the symbol "-" means that the participant's feeling was negative.











Participant	Association	Feeling	The main factor of generating the first impression
P1	Chinese New Year	+ 	Cultural and symbolic image
P2	Chinese New Year	+ 	Cultural colour, Layout
P3	New Year	+ 	360 degree panorama-Size and Colour
P4	Chinese New Year	+ 	Cultural colour, Image,
P5	New Year	+ 	Colour
P6	Happy New Year	+ 	Information, Layout
P7	New Year	+ 	Graphics, Text, Information
P8	New Year	+ 	Picture, Layout, Design style
P9	New Year	+ 	Information
P10	Chinese New Year	+ 	Colour, Image, Cultural atmosphere

Figure 13-3: The third search task for the participants' favourite website starts with the keyword

“New Year.” The symbol “+” means that the participant’s feeling was positive and the symbol “-” means that the participant’s feeling was negative.

















Participant	Association	Feeling	The main factor that generated the first impression
P1	Travelling Information	+ 	Layout, Information
P2	Travelling Information	+ 	Image, Shape
P3	Travelling Information	+ 	Branding, Information, Colour
P4	Travelling Information	+ 	Icon, Colour
P5	Travelling Information	+ 	Images
P6	Travelling Information	+ 	Information, Navigation, Icons
P7	News	+ 	Branding, Information
P8	News	+ 	Theme
P9	Travelling Information	+ 	Picture
P10	Travelling Information	+ 	Picture, Colour, Information

Figure 13-4: The fourth search task for the participants’ favourite website starts with the keyword “Travel.” The symbol “+” means that the participant’s feeling was positive and the symbol “-” means that the participant’s feeling was negative.

Participant	Association	Feeling	The main factor that generated the first impression
P1	Weather	- 	Information, Navigation
P2	Weather	+ 	The menu design and colour
P3	Weather	- 	Information
P4	Weather	- 	Branding (irrelative)
P5	Information searching	+ 	Graphic, Information
P6	Weather	+ 	Picture, Information





P7	News	+		Branding, Picture, Information
P8	Weathers	+		Colour
P9	Weather	+		Theme (irrelative)
P10	Weather	+		Branding, Information

Figure 13-5: The fifth search task for the participants' favourite website starts with the keyword "Weather." The symbol "+" means that the participant's feeling was positive and the symbol "-" means that the participant's feeling was negative.