Understanding users in context: an investigation into designers’ requirements

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UNDERSTANDING USERS IN CONTEXT: AN INVESTIGATION INTO DESIGNERS' REQUIREMENTS

by

Julian Clive Bowerman

Doctoral Thesis

submitted in partial fulfilment of the requirements for the award of
Doctor of Philosophy of Loughborough University

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I would like to express my thanks to my supervisors, Professor Tracy Bhamra, Dr Sam Porter and the late Professor Mark Porter, for their support, guidance and encouragement during this PhD.

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Abstract

In the future, as world markets become more diverse, designers will be increasingly asked to create products for people dissimilar to themselves. Human issues, such as product pleasure, will also become more important as advances in manufacturing (enabling companies to produce high quality goods more cheaply) will mean companies will look elsewhere to achieve a competitive edge. These changes will affect designers who presently work with little or no user information.

This thesis investigates the attributes designers need in resources that offer them an immediate yet broad understanding of users. The research presented in the thesis has a philosophical strand and a design strand. In the design strand, two mock-up resources and a prototype resource are developed. These creations are used in the philosophical strand: the mock-ups are used to provide focus while collecting opinions from participants and the prototype is evaluated at the end of the research as if it were a real resource.

The thesis starts with a literature review; this review reveals that designers need to understand users' physical, psychological and social needs as well as their environments if they are to design appropriate products for them. It explains that designers find much ergonomics information too technical and not visual enough and reveals that no tools or methods exist that offer a broad and instant understanding of users at the start of the design process. Following this, the results from a set of interviews and a focus group are presented. These studies reveal that designers want both personal and general user information that is reliable, video based, contextual and authentic. The results also show that designers want a fast, online resource that allows information to be easily tagged, compared and shared.

Next, the thesis describes the development of the prototype resource and its examination using a heuristic inspection. This resource is then evaluated by designers. The evaluation reveals that designers perceived that the resource would be of value to the design process and thought that the videos showing people going about their everyday lives and the virtual tours around people’s homes would be particularly useful.

The thesis concludes that designers want contextual user information presented as easily navigable video in an Internet based resource. In doing so, it provides an original contribution to knowledge.
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1.1 Context

It is probably fair to say that the world markets have never been so diverse. This diversity is bringing both business opportunities and design challenges. One challenge is that designers are now often designing products for people who are very different to themselves: not only in terms of anthropometric dimensions, cognitive and physical abilities but increasingly in terms of culture (Fulton Suri, 2000b). It could be argued that in the future it will be a matter of course that designers will be designing for people who are unlike themselves. The decline in economic weight of both the USA and the EU, population ageing, and the growing number of people with expendable incomes in the developing world are just a few trends which suggest that markets in the future will be more diverse than they are at present (Sachs, 2007; United Nations, 2006; Whitney and Kumar, 2003).

In design, ergonomics has traditionally focused on functional and performance related issues such as safety, usability and effectiveness (Fulton Suri and Marsh, 2000). However, users have come to expect products to perform well and be easy to use (Jordan, 2000). They are now looking for products that appeal on a more personal level. They want products that reflect their identities and enhance their quality of life (Watson and McDonagh, 2004). This is not to say that usability or technical competence has become less important to users, but that they additionally want products to both fit their lifestyles and bring emotional benefits. Effectively, users want products that offer more than just a utilitarian experience.

Many designers, ergonomists and researchers agree that product design is now less about the product and more about the user (Kelley, 2002; Watson and McDonagh, 2004). According to Kumar and Whitney (2007), this change has occurred because the
cost of high quality manufacturing has fallen so far that companies can no longer compete on price alone. As such, aspects such as product image, lifestyle fit and the emotional benefits a product brings are now crucial to a product’s success (Fulton Suri and Marsh, 2000). Arguably the best way to achieve an understanding of these issues is to spend long periods of time with users in their own environment: learning their needs, observing their actions, understanding what they find pleasing and so on. However, most designers never meet their users, let alone get to know them (Fulton Suri, 2000b; Keates and Clarkson, 2004; Van Veggel, 2005). One reason for this is that product lifecycles are getting shorter leaving little time for user research (Ball, 2009; Wichansky, 2000); as Norman (2001) states: “each product is a rushed job, and when it is nearing completion, well, the next ones are already underway”. Another reason is that many people who commission design seem to incorrectly assume that designers intuitively understand users (Cooper, 2000); moreover, they are often sceptical as to whether the rewards of user research will outweigh their investment (Storer and McDonagh, 2002). However, with little or no information about a user group, a designer is effectively guessing what is required. As Aykin et al. (2006) remark, guessing, however well meant, can often lead to design solutions as inappropriate as those which would have materialised if the user had been ignored from the start.

Regardless of the problems facing the adoption of ergonomics in some situations and by some clients, ergonomics is nonetheless being taken increasingly seriously within industry. The latter can be seen by the sharp increase in ergonomists employed in the field. Probably the main reason for this is that ergonomics is perceived to bring commercial benefits (Jordan, 2000). As Black (2007) elucidates, the most successful designs are those that come from a good understanding of users’ needs. Consequently as markets evolve to embrace new populations, the need for ergonomics information that takes designers beyond their own experiences and cultures is only likely to increase.

1.2 The need for new user research tools and methods

The following paragraphs outline the reasons why new user research tools and methods are needed.
1.2.1 Designers not taking ergonomics into consideration

Many designers do not consider using ergonomics information during the design process unless a human interaction issue arises. Porter and Porter (1999) state that the problem with this approach is that unexpected human interaction issues can surface late in the design process when they are expensive and difficult to remedy, or worse still, they can emerge after the product has actually been launched. However, in addition to being financially expedient, introducing ergonomics at the start of a project can also help maintain a good working environment in design teams. As the authors explain, this is because designers often become committed to the aesthetics of their designs early on in the design process and feel resentful if they are forced to change them.

One reason that designers do not make use of ergonomics information even when it would be prudent to do so is that they find it frustrating. A frequently reported grievance is that much ergonomics information only addresses physiological aspects (Darses and Wolff, 2006; Taylor et al., 2002). Another is that the majority of it is communicated in a written form whereas designers prefer to communicate visually (Feeney and Bobjer, 2000; Porter, 2002; Storer and McDonagh, 2002; Taylor et al., 2002).

1.2.2 Self modelling

Although mindful of the needs of their users, most professional designers often base their design decisions on their personal experiences (Bernard, 2006; Black, 2007; Cardoso et al., 2003; Crossley, 2004; Darses and Wolff, 2006). There are a number of reasons for this. Some designers are forbidden to contact intended users by their clients due to possible breaches of confidentiality (Norman, 1988), while others choose not to use available ergonomics data as they see it as irrelevant, hard to understand, or feel that it is presented in an inappropriate format (Nickpour and Dong, 2011).

However, many difficulties exist with the approach of self modelling. There is, for example, a natural tendency to view oneself as more akin to others than one actually is, and to see something as being straightforward just because it’s familiar (Nickerson, 1999). There is also a tendency to project one’s beliefs and rationalisations on others (Norman, 1988) and to assume, incorrectly, that people have the same experiences as you (Bonner, 1998). Furthermore, it has been found that people tend to look for information that supports their beliefs and concerns while disregarding information that contradicts them (Vicente, 2004).
Many students also have a tendency to design products as if they were for themselves or their peers (Coleman et al., 2003). One reason is that they often have had little extended contact with people that lead dissimilar lives to them, such as the elderly and disabled, and thus can find it difficult to empathise with these people (Coleman et al., 2003). Another reason is that most advertising targets the young and thus gives the impression that design should be youth orientated (Warburton, 2003).

1.2.3 Stereotyping

Stereotyping can be defined as the construction of a standardised mental image, which is then applied without differentiation to all members of a group (Weedon, 2004). Stereotyping is a natural phenomenon: the result of the mind simplifying and categorising complex feelings and attitudes (Lewis, 2006). It gives people a point of reference and helps them manage new situations. For example, if someone entered a retirement home unable to rely on stereotyping he/she would quickly become muddled with regards to who was a resident and who was not (Cuddy and Fiske, 2004).

Although some stereotypes have a degree of grounding in reality they can nevertheless mislead. In Britain, Asians are often stereotyped as being settled and reserved. This stereotype is misleading as it has arisen out of the Asian practice of extended kinship which conceals familial and inter-familial discord. In reality many divisions exist both in Asian families and in the Asian community. For example, strong disagreement often exists between Asian parents and their children with regards to the dangers of assimilation into British society (Parekh, 2000). Another example is the stereotype of ‘women’s intuition’: the belief that women are more accurate than men with regard to interpersonal perceptions. Although there is some evidence that shows that women can decode natural facial expressions better than men (i.e. facial expressions not intended to deceive), there seems to be little evidence that they are better than men in inferring the specific content of other people’s transient thoughts and feelings (Graham and Ickes, 1997). However perhaps the most dangerous form of stereotype, as far as design is concerned, is that constructed from false beliefs. Examples include the belief that all Africans are rhythmical (Weedon, 2004), and that most blind people read Braille (Slade, 2006).

Stereotypes are often used where there is a gap in cultural understanding. Roberts (2001) calls the results of this practice ‘ethnic food’ solutions. She offers the examples
of bright colours being habitually used in products for teenagers, and low-tech products being routinely proposed for developing nations. One problem with using stereotypes is that a designer may be unaware of how representative the stereotype is, if at all. Robert’s cites the success of the mobile phone in many developing nations as an example of a situation which questions the practice of designing in such a manner.

Stereotypes caricature user groups and, being generalisations applied to all, ignore the diversity that exists in these groups (Trompenaars and Hampden-Turner, 2012). For example, Chinese speaking cultures are often grouped together as if they were one culture. There is however a great deal of diversity between the Chinese speaking cultures (Rishel et al., 2000; Roberts, 2001).

1.3 Aim and objectives

The aim of this research is to provide an understanding of the attributes that professional designers require from a resource intended to give them a quick, but broad, overview of the people they are designing for.

In order to achieve this aim a number of objectives were identified, these were:

1. To review the literature that relates to:
   - The principle factors that shape people’s lives
   - People’s needs with respect to products
   - The challenges in industry with addressing people’s needs
   - The types of information available to designers
   - Designers’ user information needs during the design process
   - The various tools and methods used to enhance user understanding

2. To identify what information should be included in a resource that offers designers a clearer understanding of the people whom use their products, to establish how this information should be presented and how the resource should function.

3. To create a prototype of this resource.

4. To evaluate the prototype resource in terms of its functionality, usability, content presentation and value to the design process.
1.4 Definitions

As definitions often vary over time, and between individuals and disciplines, the author has defined a number of key terms used in this thesis below. Other terms are explained where appropriate.

1.4.1 Design and designer

In this thesis the term ‘design’ refers to product design and/or industrial design unless otherwise stated. Likewise, the term ‘designer’ refers to a product designer and/or industrial designer unless otherwise stated.

1.4.2 Ergonomics

The International Ergonomics Association (2007) defines ergonomics as: “The scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimise human well being and overall system performance.” It should be noted that the term ‘well being’ has traditionally referred to the avoidance of pain and discomfort rather than the elicitation of pleasure. However, the discipline has recently started to look at ‘softer’ issues such as how products can elicit emotions and reflect people’s identities (Helander and Tham, 2003; Hofvenschiold et al., 2003). With this shift, the author has chosen to define the term ‘ergonomics’ more broadly as: “any approach concerned with making products, systems and environments fit the physical and mental characteristics of those that use them”.

1.4.3 The user

Although the author agrees with Redström’s (2006, p.129) semantic argument that: “there cannot be users of objects that do not exist”, the term ‘user’ is used in this thesis to refer to a person whom either:

- uses an existing product/service
- has the potential to use an existing product/service
- cannot use, or does not have the potential to use, an existing product/service
  (for some reason such as a disability)
• has the potential to use an imagined product/service if it existed
• does not have the potential to use an imagined product/service if it existed (for some reason such as a disability)

The author decided on this definition as it describes the term as generally used in the design industry. It should be noted that the term ‘non user’ is not used in the thesis.

1.4.4 Culture

Culture is difficult to define as the concept means different things to different people (Trompenaars and Hampden-Turner, 2012). The term is widely used in Western societies to mean both the “refinement of the mind” and the artefacts produced that relate to this refinement (Hofstede et al., 2010, p.5). In sociology the term does not have the same meaning. The sociologist Hoult (1969, p.93) defines culture as: “the total, generally organized way of life, including values, norms, institutions, and artefacts, that is passed on from generation to generation by learning alone”.

In this thesis culture is defined as: “the learned behavioural patterns, traits, languages, norms, values and beliefs of a social, religious and/or racial group.” This definition has been created by the author. It is based on Hoult’s (1969) definition but differs to it in that it declares that culture does not necessarily have to be passed on from one generation to another. In other words, it maintains that a culture is shared by a group of people but is not necessarily transferred to others who do not belong to the same cohort. As such, people who are fans of short-lived pop groups or take part in crazes are, in this thesis, said to have their own cultures.

1.4.5 Tool and resource

The Oxford Dictionary Online (2013) defines a resource as “a source of help or information” and a tool as “a thing used to help to perform a job”. Following these definitions, the prototype described in this thesis was both a resource and a tool. However, while the earlier mock-ups were technically not resources, as their role was to collect information from designers rather than supply information to designers, they have been called resources in this thesis. This has been done because they were created to look like resources and participants in the study often referred to them as such.
1.5 Personal motivation

The author has always had a keen interest in designing and making things. He is also interested in travel; he is fascinated by other people’s daily lives, their customs and their artefacts, and how people shape their environments. These interests gradually came together to form a research project.

The author decided to study at Loughborough University after talking to Professor Mark Porter in the University’s Department of Design and Technology (now called Loughborough Design School). The author was keen to develop a resource to enable designers to understand people better. He wanted to create a resource that was practical and engaging and one that would genuinely benefit industry.

After much reading, it was apparent that little research had been undertaken in the area of empathic tools. The author started to explore the idea of a resource that would give designers a glimpse into people’s lives: a resource that would enable designers to identify with people whom were different from themselves.

1.6 Outline of thesis

The following paragraphs outline the research undertaken by the author and how it has been documented in this thesis.

Chapter 2: Review

This chapter has five parts. The first looks at what makes us who we are and, in doing so, explores a number of theories and models of human development. The second examines people’s needs with respect to products through an investigation of functionality, usability and pleasure. The third identifies and describes a number of issues that presently hinder the application of ergonomics in the design industry. The fourth investigates designers’ user information needs, the types of information available to them and how they use user information in the design process. The final part examines some of the tools and methods available to designers to enhance their understanding of users so they can create appropriate products for them.

Chapter 3: Methodology

Chapter three outlines and justifies the methodology employed in this research to determine the kind of attributes that professional designers require from a resource.
intended to give them a quick, but broad, overview of the people they are designing for. It explains that the research has a philosophical strand and a design strand and discusses issues of research quality and ethics.

Chapter 4: Interviews with design professionals
This chapter describes a set of interviews conducted with design professionals to discover the importance they place on understanding users, their thoughts on user research and the kind of information they would want a resource to provide to help them gain a broad understanding of their users.

Chapter 5: Focus group
This chapter reports on a focus group undertaken to ascertain how information in a resource intended to give designers a quick but broad understanding of their users should be presented and how the resource should function.

Chapter 6: Creation of the prototype resource
Chapter six of this thesis gives an account of the creation of the prototype resource. It describes each part of the resource and the main features that relate to it.

Chapter 7: Heuristic inspection
Chapter seven describes a heuristic inspection undertaken to identify usability issues with the prototype resource’s interface prior to testing with designers.

Chapter 8: Evaluation with design professionals
This chapter reports on the main evaluation of the prototype resource. It describes how the resource is evaluated for functionality, usability, content presentation and value to the design process.

Chapter 9: Discussion
This chapter discusses a number of topics and issues that relate to the research.

Chapter 10: Conclusions
The final chapter of the thesis brings together the main conclusions of the research and describes how the aim and each objective have been met. It presents the thesis’ contribution to knowledge and considers its limitations. Suggestions for further research are also given.
2.1 Introduction

This chapter reviews the literature that relates to this research. It begins by looking at what it is that makes people who they are and what their needs are in respect to products. Next it investigates the challenges and constraints the design industry faces in addressing these needs. It then examines the types of information available to designers, the characteristics of such information, how this information is gathered and at what point it is used in the design process.

Following this, the chapter examines various tools and methods available to designers to assist them in the understanding of users. It explores their strengths, weaknesses and limitations. The chapter concludes by defining a set of research questions to guide the enquiry.

2.2 Scope

Due to the open-ended nature of research, it was important to decide what literature to examine and what to exclude. With respect to understanding what makes people who they are, the author focused on two areas that related to human development. These were: how people are affected by their environments, since users don’t exist in isolation, and the lifespan perspective. Other literature relating to what makes us who we are was not examined because it was either deemed too specific for this research (e.g. psychopathology) or of limited value when thinking about people in a design context (e.g. Freud’s journey through the psychosexual stages).
The author also focused on literature relating to people’s needs with respect to products. This was considered important as the thesis was about people (i.e. users and designers). As much of the research in this area has been undertaken by the ergonomists and psychologists, the author reviewed journals, papers and books that related to the fields of ergonomics and psychology. Journals consulted included *Applied Ergonomics, Perception, Ergonomics, Psychophysiology* and *Ergonomics in Design*. The author also read the work of key researchers who have published on the subject such as Pieter Desmet, Patrick Jordan, Donald Norman, Jane Fulton-Suri, Neville Stanton and Stephen Pheasant. In the main, the author did not look at literature that was published before 1998 as he wanted to use that which was most up to date.

Various sources were referred to that discuss the challenges industry faces in addressing users’ needs. The sources included journal papers, conference papers and book chapters written by key design researchers. As these challenges are continually changing, the author, where possible, sought the most recent information he could find. Nonetheless, a number of the papers referred to may now be considered old. While most of these papers relate to issues that are always likely to be valid, for example, designers prefer to communicate visually, some do not. This should be seen as a limitation of the research.

In the last part of the review, the author looked at the categorisation of user information available to designers, together with the design process and the tools and methods used to understand users. As hundreds of different tools and methods exist (Goodman et al., 2007a, identified over 330), the author concentrated only on those that related directly to users. For example, while many traditional ergonomic methods test/measure the emergent property of usability (e.g. keystroke logging and layout analysis), these were not consulted as they were specific to particular products. Sources referred to included academic journals and websites run by established organisations such as the Design and Emotion Society and EDeAN.

Finally, it should also be noted that the author, being mono-lingual, searched only for material that was in English. The searches were conducted between October 2006 and June 2013.
2.3 People

In this section two system models of human development are introduced that show how individuals are immersed in and influenced by their environments. These are ‘Bronfenbrenner’s Ecological/Bio-ecological’ model and Comer’s ‘Children are immersed in their social networks’ model. An explanation of a model called ‘the life-span perspective’ is also given.

2.3.1 System models of human development

The two models that, arguably, have direct relevance when thinking about people in a design context are those created by Bronfenbrenner (1979; 1986) and Comer (2004). Both models consider people and the environments in which they live.

Bronfenbrenner (1979; 1986) maintained that everyone is influenced by five different environmental systems that are nested, dynamic and interconnected. Bronfenbrenner named his systems approach ‘the ecological model’. His five systems are described below using children as the subject of the examples:

- **Microsystems**: The environments in which children spend their time – such as their family, classroom, peer group and possibly religious institutions.

- **The mesosystem**: The interactions between the different microsystems. For example, family issues affecting children’s performance at school and vice versa.

- **The exosystem**: The networks that affect children but those in which they do not have an active role such as medical institutions, their parent’s work and their parent’s circle of friends.

- **The macrosystem**: The context in which the Microsystems, the mesosystem and the exosystem operate. Contexts include national customs, economic patterns and belief systems.

- **The chronosystem**: The passing of time. It includes the events and transitions that occur during someone’s life.

In his final years Bronfenbrenner started to acknowledge the importance of people’s biological aspects, for example, their genetic defects. This led him to include this information in his original model which he renamed: ‘the bio-ecological model’
Comer (2004) offers a similar systems model to Bronfenbrenner called: ‘Children are immersed in their social networks’. The model was the first in a set of four that illustrated the relationship of children’s development to their success in school and life. It showed a child standing on three ‘platforms’ of increasing size (see Figure 2.2).

The names of two of these platforms were altered at some point between 2004 and 2011 (see Comer, 2004 and 2010). The new names have been used in this thesis.

The three platforms are described below:

- **The primary social network**: This network consists of ‘caregivers’ that directly interact with the child. It includes the family, relatives, friends and religious institutions.
• The secondary or services network: The network consists of the organisations that provide support to the child. They include schools, recreational services and health services.

• The tertiary social network: This network consists of the policy makers and practice decision makers. It includes government officials, business people and those who work for powerful organisations.

Comer’s model differs to Bronfenbrenner’s (1979; 1986) in that it does not show the passing of time, although this is shown in the three other models that make up the illustration. Clearly the passing of time is important from a product design perspective as a product may be used by people at different stages of their life.

Criticisms have been made of both Bronfenbrenner’s (1979; 1986) and Comer’s (2004) models. Sigelman and Rider (2003) argue that they do not show that aspects of human development are shared across humanity. This could mislead designers by suggesting, for example, that shared traits, such as the age at which a child learns how to walk, differ from nation to nation. A further criticism, offered by the author of this thesis, is
that neither model shows the impact of technology on individuals. Arguably, this omission somewhat limits the models’ value for designers, since technology is now such an important factor within the design industry.

Nonetheless, in trying to understand what designers require in a resource that offers them a quick, but broad, understanding of users, the models may be seen to be useful since they highlight the importance of people’s environments. Indeed, there are many comments in the literature that suggest this is overlooked, for example, Kelley and Littman (2001) claim that American-style nappies failed in Japan as designers did not take into account the environment in which they would be used, therefore failing to understand the amount of storage space they would need. The Japanese typically live in small homes with little room. The nappies created were particularly bulky.

The models are also useful because they highlight the fact that most people do not control many aspects of their environments, such as the law, societal values, the family they are born into and the climate. This is important as designers need to be aware of what people can and cannot change in their lives; without this information it difficult to for designers to create appropriate products for people.

### 2.3.2 Life-span perspective

Unlike the system models described above that concentrate on environments, the life-span perspective is an approach to human development that focuses on the passage of life. It emphasises the fact that change occurs throughout the whole life-span and that even constant traits, such as gender, have different implications at different stages of life (Berger, 2005). It recognises that while no one has the same genes as anyone else\(^\text{1}\) or lives exactly the same life, some life experiences, such as adolescence and old age, are shared.

Baltes (1987) discussed the life-span perspective and identified several key characteristics that pertain to it. Baltes was inconsistent in the naming of his characteristics; therefore the author of this thesis has used the names offered by Sugarman (2001).

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\(^1\) Although many people in the non-scientific community believe that monozygotic twins (i.e. identical twins) share the same genes, research has proved that they do not (see Bruder et al., 2008).
The characteristics are listed below:

- **Life-span development is a multidisciplinary field of study** that requires the contribution of many disciplines e.g. biology, anthropology, chemistry, sociology, history and psychology.

- **Development is a lifelong process** that extends over the whole life span and may involve processes of change that do not originate at birth.

- **Development is the outcome of interaction between the individual and the environment**: An individual is shaped both by his/her biology and the environment in which he/she lives.

- **Development is culturally and historically embedded**. It occurs in a specific setting shaped by numerous external factors such as familial obligations, location, lifestyle and economic pressures.

- **Development is multidimensional and multidirectional** which takes the form of biological, cognitive and/or socio-emotional changes. Changes typically do not follow a ‘straight line’ path.

- **Development involves both gains and losses**: Acquiring one capacity may result in a loss of, or a decline in, another. For example, acquiring the capacity for logical thought may result in the loss of the capacity for fanciful thought (Sigelman and Rider, 2003).

- **Development shows plasticity**: A developmental path can change in response to an experience, gesture or remark.

Since designers often develop products that are used by people, it is clearly advantageous for them to have a good understanding of the key developmental stages that people experience in their lives. In fact, understanding the kind of changes that people experience in the later stages of their lives will become crucial in the future as most populations continue to age. Any resource that aids recognition and helps designers relate to these changes will be of benefit to industry. Indeed, industry itself will need to adapt too, as in the future an increasing number of people will be working later in life as retirement ages rise (Reuters, 2010). This means that companies that provide products for their own employees will have to accommodate a wider range of ages and abilities that they do now.
It is evident from the literature that many companies are designing products that do not address the needs of older consumers even though there are financial rewards for those that do (Coleman et al., 2007; Waller et al., 2013). For example, many retirees are now replacing products they purchased in their early retirement as they are living longer while others are buying products that they deem will be easy-to-use when they are very old (Metz and Underwood, 2005).

2.4 Users’ needs with respect to products

In addition to understanding people’s environments and the developmental changes that occur in people’s lives, it is necessary for designers to have an understanding of users’ needs if they are to create appropriate products for them.

Several authors have developed hierarchies of user needs with respect to products (e.g. Bonapace, 2002; Coelho and Dahlman, 2002; Hancock et al., 2005; Lidwell et al., 2010). This thesis focuses on the ‘Hierarchy of users’ needs’ developed by Jordan (2000). Jordan’s hierarchy, which is an adaptation of Maslow’s ‘Hierarchy of needs’ (1970, pp.15-22), shows three needs arranged as a pyramid with the most basic need at the bottom and the least basic need at the top. In ascending order the needs are: functionality, usability and pleasure (see Figure 2.3). The names of these needs form the sub-headings of this section.

Jordan’s hierarchy has been chosen as it is both comprehensive and concise. However, it is clear that the model should not be interpreted rigidly. Jordan places pleasure above usability and functionality suggesting that users will only seek pleasure from a product once the needs of usability and functionality have been met. However, it could be argued that the fact that many women own a pair of favourite shoes that are both difficult to walk in and uncomfortable suggest that some users seek pleasure in products even when needs that Jordan prioritises are not fulfilled.
2.4.1 Functionality

The most basic need from a product is functionality: it must have the right functions necessary to perform the task for which it is intended (Jordan, 2000). A common approach in industry to make products seem more desirable and useful is to keep adding functions, an approach is known as ‘feature creep’ (Helander, 2006; Page, 2009). However, although additional functions often excite designers, they are not always appreciated (or noticed) by users (Lidwell et al., 2010). Instead, they often just increase complexity and costs (see Lee et al., 2006).

The fact that designers keep adding unwanted and unnecessary functions suggests that they are not being supplied with enough detail as to what tasks users want to perform and the context in which they want to perform them. Designers need this information as, in most cases, ensuring a product has the right level of functionality is crucial to a product’s success. As Jordan’s (2000) hierarchy suggests, without this foundation users are rarely interested in a product’s usability or how much it elicits pleasure. Clearly, one way this information could be provided would be through video showing people performing real tasks in real contexts.

2.4.2 Usability

This thesis uses the term ‘usability’ as defined by the International Organization for Standardization in ISO 9241-11 (1998, p.6). It defines usability as: “[the] extent to
which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use”.

Jordan (2000) explains that while users in the past viewed good usability as a bonus, they now expect it. It is thus clear that creating products with good usability is sagacious in today’s competitive marketplace.

**2.4.2.1 Physical characteristics**

Anthropometry is the study of measurements that relate to humankind, especially those that relate to body size, strength and working capacity (Pheasant, 1996). Good quality anthropometric measurements, if used correctly and early in the design process, can help designers create products that are more usable and ones that require fewer dimensional changes later, so reducing costs (Robinette and Hudson, 2006).

However, numerous authors raise concerns about the anthropometric data available to designers, many of these are shared by the author. Bolstad et al. (2001) question the data’s accuracy as the measurements are often estimated and old and Wilkinson and Štrkalj (2005, p.121) query the use of small sample sizes: 50 people to represent “billions of people” in one study.

However, perhaps the issue that provokes most discussion in design research relates to the way in which data are presented. Many are presented in tables that express dimensions for a population only in terms of their 5th, 50th and 95th percentile values. This encourages designers to design for 5th to 95th percentile dimensions and ignore dimensions outside this range (Gyi et al. 2004). The tables are also open to misinterpretation as they do not allow designers to see what measurements relate to what individual. This seems to result in some designers believing that if an individual is 95th percentile in stature, his/her other body dimensions will be 95th percentile as well. (Porter et al., 2004). However, this assumption is incorrect: a ‘95th percentile person’ neither exists nor is a mathematical possibility (see McConville, 1978).

Clearly there is a need to move on from the somewhat dry data available in traditional anthropometric tables, to give such information a personal element, to make it more attractive through using visual material and more relevant to designers through combining it with human and lifestyle stories.
2.4.2.2 Cognitive characteristics

One reason why so many products have a low level of usability is that designers often believe that they are like their users. However, this is rarely the case even when designers are users of the products they create. Often, designers become so well-acquainted with products during development that they operate them easily and almost exclusively using the information in their heads. In comparison typical users tend to operate them using experiential knowledge (Blackler, 2008; Langdon et al., 2010; Norman, 1988). However, this knowledge can differ greatly between users. For example, in Britain a switch is normally flicked up to turn something off and down to turn something on, the reverse is true in the USA (Jordan, 1998). A designer who is unaware of such population stereotypes can inadvertently engineer-in problems. These problems may cause mild inconvenience to the user, but in some instances they could result in the product not being fit for purpose.

Some aspects of how a user thinks can be very difficult to address. For example, many older people still believe that they need to pre-wash their crockery before they place it in the dishwasher. This is the case even though newer machines made this practice unnecessary a long time ago (Kelley and Littman, 2001). Clearly any visual database that allows designers to discover such actions, and then determine whether they are unique to an individual or not, would be helpful to designers. The reasons behind such actions could then be discovered through further research.

2.4.2.3 Safety

A key criterion of all usable products is that they are safe. This, however, is often a challenge for designers as the products they design are frequently used by people of different ages with different skill levels, motivations and so on. Risk is also perceived differently by different people (Stranks, 2007).

Kanis et al. (2002) remark that designers are often surprised to discover that people do not use products in the way they expect. Often they pick them up differently, accidentally activate features or by-pass features those they do not understand, such as pictorial instructions (Kanis, 1998).

Only by understanding how users use, abuse and misuse products can designers make sure products are safe (Beran et al., 2007). Van Duijune et al. (2002) suggest
that this could be done by presenting designers with videos showing users interacting with products that they can watch while consulting accident statistics.

2.4.2.4 Inclusive Design

Inclusive Design, or Design for All as it is called in Europe (Metz and Underwood, 2005), is defined by the British Standards Institution (2005, p.4) as the: “design of mainstream products and/or services that are accessible to, and usable by, people with the widest range of abilities within the widest range of situations without the need for special adaptation or design”. In the USA and Japan the term Universal Design is used to describe the same approach (Dong et al., 2004). The premise of inclusive design is about accommodating all users except for those intentionally excluded by design.

One of the reasons that many designs are not inclusive is that designers, who are mostly young and able-bodied, generally design for themselves (Cardoso et al., 2003). As such, they often create products and features that are inappropriate for older users and those with disabilities. One way designers could be encouraged to think more inclusively would be to provide them with empathic material about older users and users with disabilities (Porter et al., 2004; Warburton, 2003). However, as Keates and Clarkson (2004) explain, it is not just a matter of providing designers with lots of data in which, somewhere, the information they need is buried, as it is likely they will put this aside and not consider it. Instead, the data need to be distilled and tailored to suit designers’ needs.

2.4.3 Pleasure

Pleasure is complex. So complex in fact that the research community have yet to even agree what it is. Some researchers, for example, view it as an emotion while others do not (see Desmet and Hekkert, 2002). In addition to being difficult to define, the literature seems to suggest that pleasure is also a challenge to study. This is because it behaves, or seems to behave, erratically. For example, a product can elicit pleasure one moment and not the next, and/or can elicit pleasure in one user and not another. It can even elicit pleasure and displeasure at the same time (Desmet and Hekkert, 2002; Norman, 2003). Despite this complexity, many researchers seem confident that product pleasure can be understood and that predictive tools that relate to pleasure will be developed (Desmet, 2004; Helander and Khalid, 2006).
2.4.3.1 The growing interest in product pleasure by industry

One community that is becoming increasingly interested in pleasure is industry. Words such as: ‘emotion’, ‘personal meaning’ and ‘user experience’ have started to appear in briefs, and the phrase: ‘delight your customers’ seems to be the new mantra of business (Burns and Evans, 2000; Formosa, 2005; Fulton Suri, 2004; Kumar and Whitney, 2007). This has arisen principally because the opportunity to make competitive gains through ‘traditional’ routes has been eroded by reducing manufacturing costs (Kumar and Whitney, 2007). However, it is also recognised that as well as fostering customer loyalty, pleasurable products can also command a premium in the marketplace (Evans and Burns, 2007; Jordan et al., 2003), even putting a ‘smile’ on an ice cream has been found to increase profits (Skinner, 2007).

2.4.3.2 Sensation and perception

In order to better understand how products elicit pleasure, it is necessary to look at how people perceive products using their senses.

Penfield and Rasmussen (1952) offer a 2D illustration showing where sensorial information from each body part is processed in the cerebral cortex (see Figure 2.4, left). In the illustration each body part is shown next to, and in proportion to, the area it innervates. A 3D model derived from this illustration is displayed in the National History Museum (see Figure 2.4, right).

However, while it might be assumed that the size of each element in the illustration relates to its importance, it does not. For example, although the eye in the illustration is comparatively small, it is the most highly developed sense organ in humans (Geldard, 1972). Nonetheless, the illustration does, due to its seemingly disproportional body parts, draw attention to senses designers often neglect (e.g. touch). And, as indicated by Macdonald (2001), it suggests that there are opportunities for designers to create more pleasing products by considering these senses in addition to those which they typically design for.
While the senses detect a stimulus, the brain is responsible for perceiving information. The way in which the brain does this is not fully understood, but experimental findings indicate that it is complex. Gestaltists assert that the brain has an innate tendency to bring elements together according to their similarity, proximity and continuation\(^2\) (Behrens, 1998). They also declare that the brain perceives an object in its entirety before perceiving its separate parts, in other words they believe that: “the whole differs from the sum of its parts” (Goldstein, 2010, p.413).

Gestaltism is just one of many approaches to the study of perception. However, it is arguably one of the most appropriate approaches as far as design is concerned. This is because it both offers an explanation on how the brain organises information and, perhaps more importantly, can offer guidance as to how design elements can be placed to ensure usability and elicit pleasure. A remote control for example, should, according to the Gestalt principles of proximity and similarity, have buttons that serve related functions both grouped together and of a similar appearance and touch. As this should make the remote easy-to-use and elicit pleasure through minimising incorrect button usage (Lidwell et al., 2010).

\(^2\) Continuation is the tendency to perceive a straight line, or a smooth curve, as continuing in its established direction.
Perhaps the two other approaches that are most relevant to the design are direct perception (also known as ecological theory) and constructivist approach. The aspect of direct perception that is most relevant to designers is that of ‘affordances’. Affordances are action possibilities that exist naturally in the environment which can be exploited “for good or ill” by users providing they recognise their existence and are capable of interacting with them (Gibson, 1979. p.127). By understanding how users interpret and relate to affordances, designers can create products that are likely to elicit pleasure. This understanding can be achieved through watching users interacting with products in their environments.

The constructivist approach proposes that perception is a mental construction comprising of the stimulus and cognitive strategies such as biases, motives, expectations and so on (Schiffman, 2000). It differs from direct perception in that inner processing is professed to play a key role in perception, and differs to Gestalt psychology in that past experience is professed to play more than just a minor role in perception (Todorovic, 2008). An example of a product that requires inner processing and prior knowledge to elicit pleasure is the bendy Yoga straw shown in Figure 2.5.

![Bendy straw for Y-Plus Yoga](image)

**Figure 2.5 Bendy straw for Y-Plus Yoga**
Designed by Leo Burnett, China (Samuel, 2005)

Since the constructivist approach relies on past experience a designer needs to be aware of the lives that users lead and the worlds in which they live. For example, while the yoga straw shown in Figure 2.5 might be found to elicit pleasure in cultures where yoga is known, where it is not it has no meaning.
2.4.3.3 Structuring thoughts about product pleasure

A number of frameworks have been developed to help designers structure their thoughts about product pleasure. This thesis focuses the four pleasures and the basic model of product emotions as these as they are often considered amongst the most relevant.

The four pleasures
[a psychological approach that focuses on users’ pleasure needs]

‘The four pleasures’ is a framework offered by Jordan (2000) to help designers organise their thoughts when thinking about product pleasure. The framework, based on Tiger’s ‘four easy pleasures’ (1992), has four different pleasure types: physio-pleasure, socio-pleasure, psycho-pleasure and ideo-pleasure.

- **Physio-pleasure** is the pleasure derived from the senses. In the context of products, it includes the pleasure elicited from touching tactile surfaces and smelling agreeable fragrances.

- **Socio-pleasure** has to do with relationships, such as the pleasure of communication and the enjoyment of owning pets. It also includes societal relationships such as status and the satisfaction of belonging to a particular social group.

- **Psycho-pleasure** is the enjoyment derived from achievement, usability and creativity. It relates to the pleasure of doing things well, finding things interesting and the satisfaction of feeling safe and secure. A home security system that is reliable would elicit a higher level of psycho-pleasure than a temperamental one.

- **Ideo-pleasure** is about moral values, aspirations and personal tastes. It covers the pleasures derived from books, music and art, as well as the enjoyment of owning products that embody personal beliefs.

While Jordan’s pleasure framework can help designers understand the different types of pleasure a product can elicit, it is limited in that it does not show them what users find pleasurable. Knowing this is important if designers are to create products for
people unlike themselves as what designers and users find pleasurable may not be the same.

**The basic model of product emotions**

[an appraisal-based approach that focuses on the process that underlies emotions]

‘The basic model of product emotions’ is an appraisal based approach that describes the process behind emotional responses experienced from perceiving products (Desmet, 2003). Although the model was not designed as a ‘pleasure framework’, it can be used to structure thoughts around pleasant emotional experiences (Desmet and Hekkert, 2002). Desmet (2004) states that the model shows that designers can influence the emotions elicited by the products they design.

Underlying the model is the presumption that all emotions are the result of an appraisal process in which objects are assessed as to whether they will benefit or harm a user’s concerns. An example of a concern is the desire to look stylish. If in the appraisal an object is assessed to be beneficial, a positive emotion is elicited; if an object is assessed to be harmful a negative emotion is elicited. Objects assessed to be neither beneficial nor harmful do not elicit emotions. An illustration of the model is shown in Figure 2.6. It has four interplaying parts: concern, object, appraisal and emotions.

![Figure 2.6 The basic model of product emotions](image adapted from Desmet, 2008, p.389)

The first part of the model is concerns. Concerns, as described above, are users’ dispositional preferences. They exist in three forms: goals, standards and attitudes (Ortony et al., 1988). Goals are the things users want to see happen; standards are the conventions/beliefs they hold as to how things should be (many of which are culturally...
learned); and attitudes are the things users like and dislike. The second part of the model is objects. Objects are the things being appraised. All emotions have an object but the object is not necessarily the stimulus of the appraisal. For example, supermarkets sometimes artificially introduce the smell of freshly baked bread (a stimulus) into their stores to elicit pleasant feelings from their customers who tend to misattribute it to the bread on sale (the object) (Desmet, 2008).

The third part of the model is appraisal. It is here that the object is evaluated as to how likely it is to be a benefit or a threat to a users’ concerns; if it is considered to be either of these the significance of its impact is also calculated. This calculation dictates the intensity of the emotion, with the most significant impacts eliciting the most intense emotions (Frijda, 1988; Ortony et al., 1988). The fourth and final part of the model is emotion. The emotion elicited often differs from user to user as users appraise objects differently depending on their concerns (Desmet, 2008). For example, a syringe needle may elicit a pleasant emotion in a diabetic adult but fear in a healthy child (Desmet, 2003). Mixed emotions occur when a user’s goals, standards and/or attitudes contradict each other. For example, a user buying a sports car is likely to experience mixed emotions if he/she has both a concern for status and a concern to be green.

Clearly the model suggests that if designers are to create products that elicit positive emotions they need to be fully aware of and understand users’ concerns. Otherwise they may even end up creating products that either elicit no emotion, or worse still, negative emotions.

2.5 Addressing people’s needs in industry

This section looks at the challenges industry faces with addressing users’ needs. It has two parts. The first part describes how industrial constraints often determine the manner in which ergonomics solutions are implemented. The second part explains the problems ergonomists have communicating ergonomics data to designers.

2.5.1 Industrial constraints

Although few designers are likely dispute the notion that good ergonomics is important, achieving the optimal ergonomic solution in industry is often impractical. There are several reasons for this: the design process is always quick and there is little time for
in-depth user research (Ball, 2009; Jenson, 2002), design solutions usually have to satisfy other constraints, such as price, size and so on (McDonagh et al., 2002; Wichansky, 2000) and, in the case of concurrent engineering projects, constraints frequently change (see Burns and Vicente, 2000). This makes continuously altering designs to ensure a good ergonomic fit difficult to justify financially.

In industry every activity needs to demonstrate that it will generate more profit than an alternative activity or doing nothing at all (Feeney and Bobjer, 2000). Typically this means that high levels of accuracy are not needed as the benefits of obtaining quick ‘good enough’ answers often outweigh those of slow precise answers (Norman, 1999; 2001). According to many authors, much ergonomics literature fails to provide fast answers. The problem seems to lie in the fact that much of the data are fragmented and overly technical and thus take too long to review (Ball, 2009; Bradtmiller, 2000). Furthermore, it is often the case that time-wasting adjustments need to be made before ergonomics data can be put to use. For example, although most people typically wear clothes when they perform most tasks, many ergonomics resources only contain data for individuals measured in their underwear or light clothing (e.g. Smith et al., 2000). This means adjustments nearly always have to be made to the data before use.

### 2.5.2 Communicating ergonomics data

Much literature discusses the fact that ergonomists and designers do not intercommunicate well (e.g. Fulton Suri, 2000a; Macdonald, 2000; Porter, 2002). Stanton (1998) suggests that this is primarily due to their disciplines not sharing a common background: ergonomics having come from the sciences and design from the arts/crafts.

Perhaps one of the biggest communication issues is that designers, unlike ergonomists, generally prefer to use visual information (Porter, 2002). They have little time for the traditional written explanations and the thorough verbal arguments that ergonomists are accustomed to; instead they just want to grasp the key points quickly and move on (Fulton Suri, 2000a). Many papers emphasize designers’ preference for visual material and suggest that ergonomists could convey information more effectively if they presented it in such a form (Ball, 2009; Fulton Suri, 2000a; Macdonald and Jordan, 1998; Porter, 2002).
Part of the role of being an ergonomist is to promote methods that effectively integrate human factors information into the design process (Darses and Wolff, 2006). However, arguably, this task is often undermined by designers as many see the inclusion of an ergonomist on their team as unnecessary intrusion into their professional territory (Feeney and Bobjør, 2000). One possible reason for this is that ergonomics by itself does not usually lead to design solutions (Fulton Suri and Marsh, 2000). Another reason could be that designers and ergonomists have incompatible working practices.

Designers tend to be generalists who often work with multiple unknowns; whereas, ergonomists tend to be specialists who like to base their decisions on evidence (Macdonald, 2000). Fulton Suri (2000b) believes that these differences form a barrier between the two professions and that ergonomists must move more towards the designer’s way of working if they are to be of true value to the design process.

Two of the principle outputs of ergonomics are written checklists and guidelines. However, Noyes (2001) believes that often they are a waste of time as many designers choose not to use them. One reason for this, according to Keates and Clarkson (2004), is that designers find them dry and uninspiring. However, another reason may be that the rationales behind recommendations are not often given and neither are the limits of the recommendations (Ankrum, 2001; Porter and Porter, 2001). For example, the Center for Universal Design publishes a poster listing seven principles for inclusive design (see Center for Universal Design, 2011). However, on this poster there are no details on the circumstances in which these recommendations should be implemented, even though following the principles would disadvantage people with some conditions. For instance, some people with dementia would be disadvantaged by up to five of the principles if they were implemented (Calkins et al., 2001).

It is evident from the literature that what designers need from ergonomists are not uninspiring guidelines, calculations and bell curves but material that helps them empathise with the people they are designing for (Fulton Suri, 2000b and Porter et al., 2004). Such material should be presented in a way that it brings users to life gives designers a richer understanding of people’s lives.
2.6 Designers’ user information needs

Designers frequently require information in the design process. While the amount needed frequently varies according to the product being designed, the ability to obtain and implement it is often crucial to ensure a product is a success (Wallace et al., 2005).

2.6.1 Defining ‘information’

Wilson (2006), states that one problem that arises when discussing ‘information’ is that the word means different things to different people. Wodehouse and Ion (2010, p.54) agree and offer their own definition of information as: “[that] inferred from data, containing descriptions of how data can be used”. However, as many authors in the literature use the word ‘information’ to describe what, arguably, is ‘data’ (e.g. Goodman et al., 2007b), a broader definition has been used in this thesis. This definition, adapted from a frequently cited paper by Fabistoff and Ely (1974, p.2), is: “that which reduces uncertainty and assists in decision making”.

2.6.2 Types of user information

Many different types of user information are used in the design process. In this section the different types are categorised and the characteristics of each are introduced. The categorisation system used in this thesis is loosely based on Goodman et al.’s (2007b) categorisation system of design information. (The tools and methods designers use to collect user information are discussed in Section 2.7).

In this thesis the term ‘ergonomics’ is defined as: “any approach concerned with making products, systems and environments fit the physical and mental characteristics of those that use them” (See Section 1.4.2). Thus, by extension, all user information, regardless of type, is considered ergonomics information in this thesis. Furthermore, in this thesis the term ‘culture’ is defined as: “the learned behavioural patterns, traits, languages, norms, values and beliefs of a social, religious and/or racial group.” (See Section 1.4.4). As such, interests, beliefs and professions are all considered cultures in this thesis providing that they are shared. This definition, as well as being broad, allows a person to be a member of many different cultures. Because of this, the term ‘cultural information’ is not defined (or used) in this thesis. However, it should be noted that the term ‘background information’ has been defined and includes much of the information that is customarily considered to be cultural, such as a person’s ethnicity. The characteristics of different types of user information are given in Table 2.1.
<table>
<thead>
<tr>
<th>Type of information</th>
<th>Characteristic</th>
<th>Typical format(s)</th>
<th>Information examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthropometric</td>
<td>Numerical, relates to body measurements.</td>
<td>Tabular format, numbers mapped onto human figures</td>
<td>Pheasant (1996)</td>
</tr>
<tr>
<td>Experience</td>
<td>First hand insights gained by participating in an activity, a real event or a simulation</td>
<td>Personal encounter</td>
<td>Going sailing to experience what it is like to be at sea</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Wearing frosted glasses to simulate sight loss</td>
</tr>
<tr>
<td>Stories</td>
<td>Accounts: real or fictitious.</td>
<td>Verbal, text, videos, photos, sketches</td>
<td>Narratives gathered through focus groups</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Observations</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Information gathered through using personas</td>
</tr>
<tr>
<td>Opinion</td>
<td>Appraisal: based on people’s beliefs</td>
<td>Verbal, text, video</td>
<td>Feedback from users, experts and work colleagues</td>
</tr>
<tr>
<td>Guidance</td>
<td>Offers recommendations or instructions</td>
<td>Verbal, text</td>
<td>Instructions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Usability guidelines</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>British Standards</td>
</tr>
<tr>
<td>Emotional</td>
<td>Reveals an affective state of consciousness.</td>
<td>Verbal, text, video</td>
<td>Video showing visual physiological changes and manifestations such as love, anger and fear</td>
</tr>
<tr>
<td>Lifestyle</td>
<td>Shows a way of life</td>
<td>Verbal, text, photos, videos</td>
<td>Information on habits of consumption, recreation and dress</td>
</tr>
<tr>
<td>Background</td>
<td>Provides a setting</td>
<td>Verbal, text, videos, photos</td>
<td>Information on living space, ethnicity and education</td>
</tr>
<tr>
<td>Intangible</td>
<td>Cannot be seen directly (but often revealed through words, actions and symbols)</td>
<td>Verbal, text, video</td>
<td>Information on values, ethics, morals and brand loyalty</td>
</tr>
<tr>
<td>General</td>
<td>Pertains to broad user issues that typically relate to a large number of people</td>
<td>Text, tables, diagrams</td>
<td>Information on population ageing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Information on illnesses</td>
</tr>
<tr>
<td>Human issues</td>
<td>Relates to traditional human factors (excluding anthropometrics)</td>
<td>Text, photos</td>
<td>Cognitive issues, behavioural issues, safety and the affects of environmental conditions on people (e.g. pressure)</td>
</tr>
<tr>
<td>Marketing</td>
<td>Statistics and demographics about markets and consumers (principally created to support marketing decisions)</td>
<td>Text, numbers, graphs, tables, diagrams</td>
<td>Information on market segments and size</td>
</tr>
</tbody>
</table>

Table 2.1 Categories of user information
2.6.3 The design process

In order to understand how and when the different types of information described in Table 2.1 are used in the act of designing, it is necessary to look at the design process. Considerable variation exists in the way different organisations develop and design products in industry: some organisations employ a well-defined and regimented development process, while others use a more informal approach (Ulrich and Eppinger, 2011). Despite this, all design processes are linear: they have a start, a number of intermediate stages and an end. That said, the process often involves designers returning to previous steps as the product is refined and evaluated (Pugh, 1991).

A number of authors offer models of the design process (e.g. Cross, 2008; Jackson, 2009; Keinonen and Takala, 2006; Ulrich and Eppinger, 2011). One of the more complex models is ‘Total Design’ (see Figure 2.7) offered by Pugh (1991). It shows the design process as having six stages that are nested within a framework of planning and organisation.

The stages in Pugh’s model are: market, specification, concept design, detail design, manufacture and sell. While Pugh’s model is more than twenty years old, it is still considered applicable by researchers and is often referred to (e.g. Snider et al., 2013). The reason for this is that although the way in which design is practised has changed since the 1990s, these changes principally relate to the techniques and technologies that support the design process while the core design activities have remained the same.
Fey and Rivin (2005) and Crawford and Di Benedetto (2008) offer simpler models to Pugh’s model but they still show a similar design flow. Their models show the design process starting with an exploratory stage, after which a number of concepts are generated and evaluated against various criteria. After this, the most promising concepts are refined and transformed into a product that can be manufactured. Both models are shown in Figure 2.8.
Arguably, one of the limitations of many of the models published in the literature is that they describe the design process solely in terms of idea generation and problem solving. In reality, the design process is far more complex than this. It involves a much broader range of activities and is shaped by decisions beyond those that directly relate to design, such as company politics and staffing levels (see Eckert et al, 2005). These factors can have large influence on what types of user information designers can obtain and use. For example, some designers do not have the opportunity to meet users firsthand as management does not believe it is necessary (Bruseberg and McDonagh-Philp, 2002).

One of the simplest models of the design process is offered by Laseau (2001). Laseau’s model explains how the design process changes from being a free-thinking and opportunity-seeking activity to a controlled decision-making activity (see Figure 2.9). This change has a great significance on the types of user information that designers need at different points in the design process. At the beginning designers need information that helps them generate ideas and understand who they are designing for; whereas from mid point onwards they need information that helps them to validate ideas and confirm decisions through feedback.
2.6.4 User information in the design process

Designers use a variety of user information while designing. However, as stated above, the type of information they use differs depending on the stage that they are in the design process. The paragraphs below illustrate, with the aid of examples, how these types of information are frequently collected and used.

2.6.4.1 At the outset

As can be seen in Figure 2.8 the design process usually starts with the identification of a need or a new marketing opportunity. This typically occurs through analysis of the marketplace by marketing/sales teams and leads to the creation of a brief (Eckert and Clarkson, 2005). Goodman et al. (2007b) found that the type of information used in a brief varies considerably. Some briefs offer information on what needs to be done (i.e. guidance information) while others are more focused on offering inspiration through videos and quotes of users (e.g. emotional information, lifestyle information, opinions and stories). A brief often also contains anthropometric information and marketing information (Goodman et al., 2007b; McGinley and Dong, 2011). However, while anthropometric information gives designers an understanding of the dimensional ranges of those that need to be accommodated by a product, the literature reveals that designers often find this type of information cold and uninspiring (see McGinley et al., 2011). Likewise, while market information typically gives designers an understanding of the demographic profile of those who the product is intended, designers often find this information too abstract, detailed and long-winded to be stimulating (see Bruseberg and McDonagh-Philp, 2002; Dong et al., 2013; Sleeswijk Visser and Kouprie, 2008).
2.6.4.2 The early stages

The user information in the early stages tends to focus on building up an understanding of the user and his/her needs; this information is then used in ideation and product innovation. Dong et al. (2013) describe the research activities of PearsonLoyd Design who designed an on-ward commode in conjunction with Kirton Healthcare (UK manufacturers) in 2008. The design team, which had limited prior knowledge of such products, collected various types of user information to build up a picture of the product’s use and the needs of both patients and hospital staff.

First, the designers interviewed patients and staff about their experiences with commodes and watched a commode being used. This was done to collect stories, opinions and emotional data. This information helped designers understand the needs of those who used and maintained the commode. The design team then turned their attention to the locale, and through both ethnography (comprising interviews, photographs and videos) and shadowing staff they collected stories, lifestyle information, emotional information and background information about the ward environment. This information helped designers create a broader understanding as to how the commode fitted in to the hospital environment and how it had an impact on people other than those who used and maintained it. Following this, the designers created personas incorporating the information they had collected and generated stories to help them understand certain issues (details as to what these issues were are not given by the authors).

Finally, away from the hospital, a mock ward was created. This environment was used by designers to act out scenarios and participate in role play with patients and hospital staff. The environment was used to collect experience information, stories and emotional information. These information types helped designers form a richer picture of the role that the commode had to play and the needs it had to fulfil. They also gave designers a personal insight as to what it was like to use the commode both physically and emotionally.

2.6.4.3 From the mid point onwards

From the mid point of the design process onwards, designers need more specific insights. They typically want to know how usable their potential product is likely to be
and whether it has any aesthetic appeal (Guo et al., 2011). These questions are often answered by designers creating prototypes and testing them with users.

An example of this is offered by Lyons and Hitchcock (2011); the researchers describe the development of a new supermarket checkout for Tesco by Renfrew Associates (designers). The project, which started in 2000 and took two years to complete, involved the creation of concept sketches, a series of MDF (medium density fibreboard) prototypes and a number of fully-operational checkouts.

The sketches were used to collect comments on perceived usability and desirability (i.e. opinions and emotional information) from checkout operators and Tesco’s in-house retail design team. This information helped Renfrew Associates, in conjunction with Tesco’s management, to decide which concepts to focus on and which to abandon. The MDF prototypes were used in fitting trials with checkout operators to collect anthropometric information and information on human issues. This information was used by Renfrew Associates to locate the precise place for the equipment in the checkout, so that the operator could maintain a healthy posture and work efficiently. The functional prototypes were used with checkout operators and customers to collect experience information, emotional information, opinions, human issues relating to customers’ understanding of goods-flow through the checkout, and intangible information about the Tesco brand. This information was used by Renfrew Associates, in conjunction with Tesco’s management, to ensure that the final design was appropriate for its intended use before it was produced in large numbers and installed nationwide.

2.6.4.4 Delivering information at an appropriate point in an accessible and quick manner

It is evident from the models of the design process and the examples above that the most appropriate point in the design process to introduce a resource that offers designers a broad overview of who they are designing for is at the beginning. Indeed, it is clear that designers need to be consulting user information as soon as they get the brief as they tend start thinking creatively immediately (Crossley, 2004).

However, while the above examples might suggest that information is thoroughly sought in all design projects, this is not always the case. An example of this was
offered by Mival (2004) who, when interviewing designers at PDD, a design innovation consultancy, found that designers often did not even consult the company’s ergonomists (who were based upstairs) because it was too much of an effort. Neither did they email them because they wanted an instant reply. Instead they chose to continue working even though they did not have the user information they needed. All this suggests that there is a need for an instantly accessible resource that offers designers a broad understanding of users. Mival (2004) suggested that there is a need for a tool that delivers user information with the ease and speed equal to that of turning around and talking to a colleague.

2.7 Tools and methods

To collect user information, designers employ design ‘tools’ and ‘methods’. In the past many of these tools and methods were acquired from disciplines outside design; focus groups for example were acquired from marketing, and questionnaires from psychology (Jordan, 1998). However, recently a number of tools and methods have emerged that have been specifically developed for the design process; examples include HADRIAN, RealPeople and cultural probes (all discussed below).

This section examines a range of tools and methods available for use by designers in the early stages of the design process. It does not address tools and methods that are used later on as these are principally used to evaluate/validate concepts rather than help designers reach a deeper understanding of users.

The tools and methods outlined in this section have been selected because they all relate to user research and collectively provide a representation of the choice available to designers. The list is by no means exhaustive; many other tools and methods exist as well as numerous variations of those discussed. In addition there are a vast number of ‘nested’ tools and methods, a number of which can be found in the lists below. For example, ‘ethnography’ uses ‘interviews’. However, although there are many other tools and methods available, the author feels that including them would not appreciably add to the understanding of what is available, particularly as the principle tools and methods are described.

It should also be noted that many ‘web tools’ exist that are comparable to those shown in this thesis. For example, ‘SurveyMonkey’ (see Section 2.7.5) is just one of many
online tools that can be used to conduct web-based surveys (for others, see Wright, 2005). These tools often have different limitations and features. Accordingly, the comments relating to the web tools in this thesis might not be applicable to other tools online. All the web tools listed were accessed and available for use in June 2013.

For convenience, the word ‘designer’ has been used throughout this section to describe the person using the tool or method. In practice however, some companies employ research specialists, such as anthropologists, ergonomists and professional mediators, to undertake research.

To facilitate reading, the tools and methods presented have been divided into five categories. These categories are: ‘user absent’, ‘co-research’, ‘user led’, ‘software and databases’ and ‘web tools’. For each category, the tools and methods are reviewed individually then summarised in a table. In each table, the type of information offered by each tool/method is given together with its typical formats.

2.7.1 ‘User absent’ research tools and methods

User absent research tools and methods are those that do not involve the user. They do not require designers to leave their studio or interact with real people. Unlike web tools they are not online.

**Anthropometric data tables**

Anthropometric data tables contain data that relate to body measurements such as body size, strength and shape. Measurements for various populations are usually presented as percentiles (e.g. Pheasant’s ‘Bodyspace’, 1996). These tables are widely available and, for the most part, inexpensive. Arguably, one problem with anthropometric data tables is that they look easier to use than they really are. In reality, numerous allowances often need to be made to the data before using them. For example, it is sometimes necessary to estimate missing data and make adjustments for the data’s age. It is arguable, considering comments made in the literature, whether many designers know how to perform these tasks correctly. For example, Vasu et al. (2000) claim that many designers assume that all anthropometric dimensions are normally distributed.
Empathic modelling
Empathic modelling is an umbrella term used to describe any method which employs equipment to simulate physical or psychological conditions. Equipment used can range from simple, inexpensive devices, such as a hat pulled over the eyes to emulate blindness, to expensive, sophisticated suits that mimic the experience of a physical disability such as osteoarthritis (Cook, 2005; Keates and Clarkson, 2004). However, while empathic modelling can be fun and informative for designers, it is possible to mislead. One way they can do this is by not simulating emotional issues. For example, wearing an empathy device for short periods of time does not tell designers what it is like emotionally to live with a functional impairment (Keates and Clarkson, 2004). Another way is by not reproducing a condition accurately enough due to the technical limitations of the empathy device (see Cardoso and Clarkson, 2012).

Immersive experience
Immersive experience is a method in which designers immerse themselves in the lifestyle or experiences of users (Moore, 2001). For example, a designer may spend the day as a checkout operator to appreciate what it is like to work in a supermarket, or give blood to understand the issues involved. However, in many instances, doing or experiencing something for a short time is clearly not the same as doing or experiencing something for a considerable length of time or a lifetime. In addition, immersive experiences such as Moore’s three year experiment masquerading as an elderly woman (see Coleman et al., 2003) are seldom financially feasible within the context of professional design. Another limitation is that certain experiences, such as giving birth, are impossible for some people to experience.

Role play
Role play is a method in which designers take on character roles, often based on real people, and act out storylines. The method is similar to immersive experience in that it offers first hand experiences but it differs in that it always involves more than one designer and always involves acting. Furthermore, unlike immersive experiences, everyone involved is always aware that acting is taking place (Burns, 1999). Role play brings designers ‘into the moment’ and, unlike methods such as personas, allows designers to use their whole bodies to explore ideas and situations. The method, as well as being able generate insights about present user issues, can be used to

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3 Moore (2001) says they are the same.
envisage the future and help designers explore situations that do not yet exist (Simsarian, 2003).

**Personas**

Personas are fictional people created to help designers focus on their users. Personas ‘put faces’ to users, increase user empathy and bring realism and effectiveness to other methods such as role play and scenarios (Pruitt and Adlin, 2006). However, although organisations use personas, Chapman and Milham (2006) argue that there is very little evidence to support that they actually work. The authors also state that as personas are fictitious it is difficult, or impossible, to verify that they accurately represent a user group. Other authors, however, believe that they do work and support their use. Two such authors are Pruitt and Adlin (2006). They argue that personas work when they are carefully managed. They also add that everyone in an organisation needs adopt them to be effective. This usually means that a fundamental change in the way an organisation undertakes design needs to be taken.

**Guidelines**

Guidelines describe any resource that imparts advice and/or instructions and helps direct the design process (Lidwell et al., 2010). Examples include British Standards and written rules. Though many researchers have created guidelines for designers (e.g. Kim and Cho, 2013), many authors suggest that they should be used judiciously as they tend to relate to specific circumstances, making their use invalid in other contexts (Porter and Porter, 2001). One drawback with guidelines is that they do not foster empathy. This requirement is considered important by many authors, many of whom believe that ergonomics data will always be of limited value to designers if they do not provide this kind of connection (e.g. Fulton Suri, 2000a; Porter et al., 2004).

**Marketing data**

Marketing data relates to any material generated during the marketing research process; these data are used to identify marketing opportunities, establish price points and monitor market performance. The data are usually gathered by marketing and sales teams or bought from specialist research firms and typically presented as a report. Such reports generally cover aspects such as users' buying behaviours, shopping patterns, demographic details and attitudes towards similar products. However, while these reports contain user information it tends to be offered in a written form and not the visual, rich, textured information that inspires design (Gilmore, 2002).
<table>
<thead>
<tr>
<th>Tool/method</th>
<th>Type(s) of information and format(s)</th>
<th>Strengths</th>
<th>Weaknesses and limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anthropometric data tables</td>
<td>Type: Anthropometric Format: Tables</td>
<td>Gives an understanding of the range of sizes in a population Easily obtainable</td>
<td>Often only 5th, 50th and 95th percentile values given Data often old Data often only expressed in static terms</td>
</tr>
<tr>
<td>Empathic modelling</td>
<td>Type: Experience Format: Direct insight</td>
<td>Offers first hand experience of user problems Information generated can be very engaging for designers</td>
<td>Hard to simulate cognitive difficulties Many empathy devices do not allow wearers to experience different levels of disability Some empathy devices are extremely expensive</td>
</tr>
<tr>
<td>Immersive experience</td>
<td>Type: Experience Format: Direct insight</td>
<td>Gives first hand experience of user issues Information generated can be very engaging for designers</td>
<td>Designers may see things, and prioritise issues, differently to the user If the designer is disguised ethical issues can arise</td>
</tr>
<tr>
<td>Role play</td>
<td>Types: Experience Stories Format: Direct insight Verbal</td>
<td>Gives an understanding of the issues that face users Gives context to the issues that face users</td>
<td>Acting often results in behaviour that is unnatural Some aspects of users, such as their ethnic culture, can be difficult for an actor to accurately assume</td>
</tr>
<tr>
<td>Personas</td>
<td>Type: Stories Typical formats: Text Photos</td>
<td>Can help designers empathise with a user Can help in the creation of realistic scenarios</td>
<td>It is difficult to know how many people a persona genuinely represents Due to the long time they take to create, there can be a temptation to re-use personas on other projects</td>
</tr>
<tr>
<td>Guidelines</td>
<td>Type: Guidance Typical format: Text</td>
<td>Offers design guidance</td>
<td>Limitations of guidelines often not given Guidelines can conflict with each other</td>
</tr>
<tr>
<td>Marketing data</td>
<td>Type: Marketing Typical formats: Text Diagrams Tables</td>
<td>Offers insights with respect to demographics and market sizes</td>
<td>Data are market focused rather than user focused Data tend to be dry and uninspiring</td>
</tr>
</tbody>
</table>

Table 2.2 Summary of ‘user absent’ research tools and methods
2.7.2 ‘Co-research’ research tools and methods

Co-research research tools and methods are those that involve designers interacting with users.

**Focus group**
A focus group is an informal meeting usually involving around six to eight members and the designer. The designer asks open ended questions on a particular topic and guides the proceedings. To aid participants express themselves, the meetings sometimes involve activities such as drawing (Langford and McDonagh, 2003). However, while a focus group is one of the most direct methods to obtain information about users, it can be problematic. For instance, it is not uncommon for one group member to dominate discussions and persuade other members to say things they disagree with. The method is also not very effective at collecting information on sensitive topics as many people find it difficult to openly voice their feelings publicly (Langford and McDonagh, 2003).

**Interview**
An interview is where a number of questions are posed verbally to an individual. The individual questioned is usually selected on the grounds that he/she fits a predefined set of criteria. While an individual may voice an opinion that is more moderate than that held, for fear that their real opinions might be considered too extreme (Jordan, 2000), an interview has several benefits. It allows questions to be rephrased to ensure comprehension, unlike questionnaires, while ambiguous answers can be queried to ensure correct understanding. The method is also good for discussing sensitive issues as it can be conducted in private.

**Ethnography**
Ethnography, which derives from anthropology, is an emerging field of user research in design. The method involves a designer immersing himself/herself in a user’s environment and capturing information on the user’s beliefs, desires and everyday activities (Taylor et al., 2002; Ylirisku and Buur, 2007). Ethnography has the advantage over many research methods (e.g. focus groups and interviews) in that it captures real events as they happen in context. It can also reveal users’ latent/unmet needs and give designers a detailed understanding of users’ lifestyles (Kumar, 2004a). In design, the medium used to capture this information is usually video (Brun-Cottan, 1999; Taylor et
Two drawbacks with ethnography are that it is expensive and time consuming to conduct.

**Observation**
Observation is the act of watching users performing activities. Activities observed are either set tasks or ‘natural’ activities that the user would carry out if the observer was not present. To maintain a high level of ecological validity, observation ideally takes place in an environment where an activity would normally be performed. The method usually involves filming and/or note taking and sometimes involves the person being observed explaining what they are doing (Kahmann and Henze, 2003). While this can add an extra layer of information to the observation, it can also distract and encourage people to try and rationalise their actions (Jordan, 1998). Observation has the advantage over focus groups and interviews in that it shows designers what users actually do rather than what they say they do (Kanis et al., 2002).

**Participatory design**
Participatory design involves users and designers getting together on an equal footing to discuss the design of a new product; users typically suggest possible features for a product and often sketch their design solutions (Lindgaard and Caple, 2001). However, while bringing users into the design process might sound appealing, it does have a number of recognised drawbacks. Perhaps the main one is that most members of the public are not good designers because they are often not consciously aware why they do things and can be so accustomed to their ‘work arounds’ that they do not consider looking for a better solution (Leonard and Rayport, 1997; Norman, 2005).
<table>
<thead>
<tr>
<th>Tool/method</th>
<th>Type(s) of information and format(s)</th>
<th>Strengths</th>
<th>Weaknesses and limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus group</td>
<td>Type: Stories, Opinion, Emotional, Lifestyle, Intangible&lt;br&gt;Format: Verbal</td>
<td>Unanticipated issues often arise during discussions&lt;br&gt;Information can be obtained relatively quickly</td>
<td>Time consuming to conduct, especially if many people need to be interviewed&lt;br&gt;Often more expensive than a questionnaire that asks the same questions&lt;br&gt;Interviewees, in a bid not to appear unreasonable, often hide strong views&lt;br&gt;Needs a skilled moderator</td>
</tr>
<tr>
<td>Interview</td>
<td>Type: Stories, Opinion, Emotional, Lifestyle, Intangible&lt;br&gt;Format: Verbal</td>
<td>Issues can be investigated as and when they arise&lt;br&gt;Suitable for discussions of a sensitive nature&lt;br&gt;Allows for the re-phrasing of questions and the clarification of ambiguous answers</td>
<td>Time consuming to conduct, especially if many people need to be interviewed&lt;br&gt;Often more expensive than a questionnaire that asks the same questions&lt;br&gt;Interviewees, in a bid not to appear unreasonable, often hide strong views&lt;br&gt;Needs a skilled interviewer</td>
</tr>
<tr>
<td>Ethnography</td>
<td>Type: Stories, Opinions, Emotional, Lifestyle, Background, Intangible, Human Issues&lt;br&gt;Typical formats: Text, Video, Photos, Audio/Verbal</td>
<td>Can access users’ latent needs&lt;br&gt;Reveals what users actually do (not what they say they do)&lt;br&gt;Can provide a real life account of users’ beliefs and values</td>
<td>Video footage can be time consuming to shoot and edit&lt;br&gt;Can be expensive, especially if a long study is undertaken&lt;br&gt;Studies do not always lead to product ideas/solutions&lt;br&gt;Investigator needs to be skilled in ethnography</td>
</tr>
<tr>
<td>Observation</td>
<td>Type: Stories, Emotional, Lifestyle&lt;br&gt;Format: Direct insight</td>
<td>Gives ‘real-life’ insights into people-product interaction&lt;br&gt;Can be used to identify differences in the way people carry out tasks</td>
<td>The Hawthorne effect can affect results&lt;br&gt;If observation is covert, ethical issues arise&lt;br&gt;The type and number of people observed can bias results&lt;br&gt;Data analysis can be complex</td>
</tr>
<tr>
<td>Participatory design</td>
<td>Type: Opinion&lt;br&gt;Format: Verbal</td>
<td>Users are often very aware of the positive and negative features of a current design</td>
<td>Users do not necessarily make good designers&lt;br&gt;Group agreement can be difficult to attain</td>
</tr>
</tbody>
</table>

Table 2.3 Summary of ‘co-research’ research tools and methods
2.7.3 ‘User led’ research tools and methods

User led research tools and methods are those that require users to complete tasks and return information based on those tasks to the design team.

**Questionnaire**

Questionnaires are documents used to pose the same questions usually to a large number of individuals (Gillham, 2008). While they can be quick and inexpensive to implement, they can only be effectively administered to literate populations. One issue with questionnaires is that it is impossible to know, without using another method, whether the person filling out the questionnaire properly understood the questions.

**Cultural Probes**

Cultural probes are items such as disposable cameras, diaries and postcards. The items are given to users to self record various data (e.g. their feelings towards a particular topic). After the data are recorded, the user returns the probes usually by post. However, while they have been used successfully on a number of projects (e.g. Mattelmäki and Battarbee, 2002), they rely on users being motivated and capturing the kind of insights that designers are interested in.

<table>
<thead>
<tr>
<th>Tool/Method</th>
<th>Type(s) of information and format(s)</th>
<th>Strengths</th>
<th>Weaknesses and limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questionnaire</td>
<td>Types: Opinion, Emotional, Lifestyle, Background, Intangible</td>
<td>Multiple choice allows statistical analysis to be easily performed, Suitable for large studies, Geographically unrestricted, Investigator effect free</td>
<td>Return rates can be low, Can be difficult for people with impairments to complete, Respondents must be literate, Multiple choice/Likert scales can invite blind decision making</td>
</tr>
<tr>
<td></td>
<td>Format: Text</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural Probes</td>
<td>Types: Stories, Emotional, Lifestyle, Background, Intangible</td>
<td>Minimal investigator presence, People generally respond well to the use of probes, Suitable for sensitive topics</td>
<td>Problems recipients have with using the probes can remain unnoticed for long periods of time, Relies on recipients completing tasks properly and returning the probes</td>
</tr>
<tr>
<td></td>
<td>Typical formats: Text, Video, Photos</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Table 2.4 Summary of ‘user led’ research tools and methods*
2.7.4 Software and databases

Software and databases are electronic tools that have been created specifically for the design process.

**SAMMIE**

*(System for Aiding Man Machine Interaction Evaluation)*

SAMMIE is a digital human modelling system that allows a designer to manipulate 3D computer manikins and create/import CAD models. The system allows equipment and workplaces to be assessed in a virtual environment to see whether they physically fit the user (Summerskill and Marshall, 2011). However, while SAMMIE has been used successfully by ergonomists on a broad range of projects (see SAMMIE CAD, 2011), much of its success relies on the operator having a good understanding of ergonomics as without this it is easy to create solutions that are inferior to those that would have been devised without the use of such software. This is problematic, as many companies undertaking design do not have trained ergonomists on their staff. Instead they internally appoint an individual to oversee ergonomics issues: an individual, who like most people untrained in ergonomics, has little or no understanding of human factors engineering (Porter et al., 2004).

**HADRIAN**

*(Human Anthropometric Data Requirements Investigation and ANalysis)*

HADRIAN is a computer based tool that works in conjunction with SAMMIE (discussed above). It contains videos of mainly older and/or disabled people performing tasks and computer manikins based on the anthropometric, joint constraint and reach ranges of these people. The computer manikins can be programmed to perform tasks and thus can demonstrate what the individuals on the tool can or cannot do (Porter et al., 2004). HADRIAN helps designers empathise with users and learn the ‘coping strategies’ that some older and/or disabled individuals use to get things done.

**RealPeople**

RealPeople is a resource, published on DVD, developed to inspire and inform designers of product characteristics that evoke delight. The resource contains videos of people talking about their favourite possessions and statistical data on product pleasure. All the people on the resource are from the United Kingdom. This, as the creator acknowledges, makes the resource of limited value to designers developing
products for populations outside the United Kingdom (Chhibber, 2007). The resource is principally video based.

**Design Aid**

Design Aid is a design resource, published on CD ROM, about disabled people as consumers. It presents information on a variety of topics including medical conditions, disabled users’ perspectives towards disability products, and specialist equipment available to disabled people. Five distinct consumer groups are identified and statistical data is given on the lifestyles and views of the people in these groups (Design Aid, 1998). However, it could be argued that some of the information in the resource is of limited value due to its brevity. For example, each of the factors that relate to the consumer groups’ attitudes, such as their values, aspirations and so on, are summarised in fewer than ten words. Furthermore, despite the fact that designers prefer visual material (Ball, 2009), much of the information in the resource is text based.

**[product & emotion] navigator**

The [product & emotion] navigator is a tool used to aid inspiration and encourage discussion within a design team. The tool contains 350 different products that designers can browse. Accompanying each product are comments made by users describing the range of emotions it elicits (Desmet and Hekkert, 2002). The tool does not, however, contain much information on these users (Chhibber, 2007). As such, the tool is of limited value to designers trying to determine which emotions are elicited by which products with respect to a particular user group.
<table>
<thead>
<tr>
<th>Tool/Method</th>
<th>Type(s) of information and format(s)</th>
<th>Strengths</th>
<th>Weaknesses and limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAMMIE⁴</td>
<td>Type: Anthropometric</td>
<td>Offers multivariate analysis</td>
<td>Requires expertise to use effectively</td>
</tr>
<tr>
<td></td>
<td>Format: Animation</td>
<td>Data presented visually (a format liked by designers)</td>
<td>Cannot simulate certain medical conditions such as tremor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Allows designers to make faster decisions compared to traditional pen and paper methods</td>
<td>Manikins do not have fine motor dexterity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Manikins do not react to certain stimuli (e.g. vibration). They do not have emotions and they do not tire</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Designers must have a good understanding of ergonomics to use the software effectively</td>
</tr>
<tr>
<td>HADRIAN⁵</td>
<td>Types: Anthropometric Emotional</td>
<td>Simpler to use than SAMMIE</td>
<td>Cannot predict novel coping strategies</td>
</tr>
<tr>
<td></td>
<td>Format: Animation Video</td>
<td>Designers can ‘put faces’ to data</td>
<td>Presently only 100 individuals in database</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Offers data on emotions</td>
<td>Does not provide data on how long tasks will actually take a real user to complete</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Automatically tells designers of the people whom cannot perform certain tasks</td>
<td>Data only relates to adults</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gives information on the coping strategies of disabled and older people</td>
<td></td>
</tr>
<tr>
<td>RealPeople</td>
<td>Type: Emotional</td>
<td>Tells designers which product characteristics users find pleasurable</td>
<td>Does not offer design recommendations</td>
</tr>
<tr>
<td></td>
<td>Format: Text Video Photos</td>
<td>Data presented visually (a format liked by designers)</td>
<td>Information may become dated</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Some designers might only focus on individuals in the resource they agree with</td>
</tr>
</tbody>
</table>

Table 2.5 Summary of software and databases
(table continues on next page)

⁴ It should be noted that the strengths, weaknesses and limitations that relate to SAMMIE do not necessarily relate to all digital human modelling systems.

⁵ HADRIAN works in conjunction with SAMMIE. Thus SAMMIE’s strengths, weaknesses and limitations also apply to HADRIAN.
<table>
<thead>
<tr>
<th>Tool/Method</th>
<th>Type(s) of information and format(s)</th>
<th>Strengths</th>
<th>Weaknesses and limitations</th>
</tr>
</thead>
</table>
| Design Aid          | *Types:* Lifestyle, Background, Intangible, General, Human issues, Marketing  
                       | *Formats:* Text, Photos                                           | Helps designers understand the needs and lifestyles of disabled people  
                                                                   | Offers information on disabilities and medical conditions                              | Does not offer design recommendations or examples of good design                        |
|                     |                                                                  |                                                                          | Information limited in both depth and breadth                                             | Consumer data now old (the information was collected during the mid 1990s)            |
|                     |                                                                  |                                                                          | Interface might be considered awkward to use by some designers                            |                                                                                     |
| [product & emotion] | *Type:* Emotional  
                       | *Format:* Text, Photos                                           | Enables designers to see which products elicit emotions and tells them which emotions these are | Does not offer design recommendations                                                 | Presently only 250 products in the database                                             |

**Table 2.5 Summary of software and databases**  
*(table continued from previous page)*

### 2.7.5 Web tools

Web tools provide designers with online user information. While most of these tools are quick to use, many have not been specifically created for the design process.

**Alexander Street Press** ([www.alexanderstreetpress.com](http://www.alexanderstreetpress.com))

Alexander Street Press is a publisher of online material in the humanities and social sciences for research, teaching and learning purposes. It was established in May 2000. The company’s catalogue includes videos, audio and text on topics as diverse as dentistry, rehabilitation therapy and the Catholic Reformation. However, perhaps the most useful material to designers is that offered in the Ethnographic Video Online collection. This collection includes material on race, religion, personality, material culture, status and caste systems. All material can be searched, annotated and shared via embedded links. Subscription is available only to libraries and educational institutions; in other words, practising designers need to leave their desks in order to view the material they are interested in ([Alexander Street Press, 2013](http://www.alexanderstreetpress.com)).
Wikipedia (en.wikipedia.org)
Wikipedia is a free online encyclopaedia founded in 2001 which anyone can add to, read and edit. As of 2013, it contained over 4 million articles written in English (Wikipedia, 2013). To navigate around the encyclopaedia people either conduct a search or use embedded links to other pages. However, while the website has information on a broad range of topics, this information is sometimes vandalised by non-scrupulous individuals, the results of which have been known to go unnoticed for months (Seigenthaler, 2005). Another issue that relates to wikis in general is that many designers do not trust them. In a survey of 70 designers, Vroom et al. (2010) found that nearly two thirds of designers doubted the reliability of information in wikis.

YouTube (www.youtube.com)
YouTube is a video sharing website where users can both upload and watch users’ video clips. The website was created in 2005, and while it does not advertise the number of videos it hosts, it does offer an indication of its size in its claim that 100 hours of video are uploaded to its servers every minute (YouTube, 2013b). However, although the website contains a great deal of content, much of it has been created for entertainment or instructional purposes. As such, videos rarely show people doing the mundane things that designers are often interested in, such as washing up. Additionally, the website does not give information on those who upload videos or explain their motives behind wanting to distribute their work. Arguably, this limits the website’s use as a research tool as designers have to make assumptions about factors that relate to the content.

Flickr (www.flickr.com)
Flickr is a photo and video sharing website created in 2004. The website is used by various groups of individuals, from professional photographers to bloggers, to store and display visual content. Flickr asks its contributors to tag each piece of content to allow others to find what they are looking for using the website’s search engine (Flickr, 2013). However, while the website is visually driven, a format liked by designers, much of its content is slick, composed images. Arguably, this limits the website’s use for user research as images do not portray the ‘real’ world. In addition, like YouTube, little information is given about those who upload content to the website.

Amazon (www.amazon.co.uk)
Amazon, established in 1998, is the largest online retailer in the world selling everything from bread to car parts (North, 2013; O’Connor, 2013). However, while the
company was set up to sell products, it does offer designers insights into people’s lives, buying behaviours, preferences, choices and values through its websites’ customer reviews that accompany each product it sells. Nonetheless, like many websites, the backgrounds and motivations of the individuals who post these comments are neither given nor discoverable as their comments are posted using pseudonyms. This, in the context of user research, limits their use as they cannot be confidently attributed to a particular user group. A further limitation is that the company only has retail websites in ten countries and therefore only provide insights relating to a small segment of the world’s population.

**AnthroTools 1.1** ([www.openlab.psu.edu/mobile/anthrotools.htm](http://www.openlab.psu.edu/mobile/anthrotools.htm))

AnthroTools 1.1 is a suite of online tools developed by The Open Design Lab at Penn State. The suite of tools, which was launched as an update in 2013, comprises a multivariate accommodation calculator, a proportionality calculator and a NHANES (National Health and Nutrition Examination Survey, USA) database explorer. The suite allows designers to interact, in real time, with multivariate anthropometric data and to scale body dimensions with respect to stature. It also allows designers to explore the stature, mass and body mass index for certain defined populations with respect to NHANES data (Open Design Lab, 2013). The tools are simple and quick to use; however, all the data are based on American adults (predominately soldiers). Furthermore, no instructions are given as how to use the tools correctly or information on their limitations.

**Eye disease simulations** ([www.nei.nih.gov/health/examples](http://www.nei.nih.gov/health/examples))

The National Eye Institute (NEI) is a United States government agency that was formed in 1968 to protect and prolong the sight of American citizens. Its website offers visitors the opportunity to experience different eye conditions using its eye disease simulations. The simulations show the same scene as if it were viewed by someone with myopia, glaucoma, cataracts and so on (National Eye Institute, 2013). However, while the simulations can offer designers an understanding of what it is like to have certain eye conditions, they do not, unlike wearable empathy devices, allow designers to experience life in the ‘real world’ with these conditions. Nor, like wearable empathy devices, do they offer designers an understanding of what it is like to live with a condition long term.
**SurveyMonkey** (www.surveymonkey.com)

SurveyMonkey is a web-based survey company established in 1999. It offers a designer the opportunity to quickly create surveys that can be distributed online via email, embedded links and/or by using a Facebook application. Collected data are returned in real time to one location and can be interrogated using inbuilt analysis tools or exported to a third party software package. If a designer does not have contacts in a targeted audience, a group of respondents can defined and purchased (SurveyMonkey, 2013). Although SurveyMonkey can be used to collect large amount of data rapidly and allows a designer to work on other projects while these data are being collected, their surveys, obviously, can only be distributed to people who have access to the Internet and are literate. Furthermore, there is no guarantee that if a population is bought that it properly reflects the target market, nor whether they will complete the survey conscientiously.

**DfA Education and Training Resource** (www.education.edean.org)

The DfA (Design for All) Education and Training Resource was originally developed by the Royal Society of Arts in 2004. It is now maintained by the European Design for All e-Accessibility Network (EDeAN). It is a resource that offers designers support on how to design inclusively. Amongst other things, the resource contains a list of user research tools and methods, examples showing inclusive design in action, and contacts relating organisations that specialise in inclusive design (European Design for All e-Accessibility Network, 2013). However, while the website contains information that could be useful to designers, most of it needs to be downloaded before it can be read. This may cause designers not to view important information because they find downloading it frustrating. Furthermore, there is no use of video even though it is likely that this would enable designers to empathise with users.

**Skype meetings** (www.skype.com)

Skype was established in 2003. It is an application that allows users to communicate in real time using speech, video and instant messaging (Skype, 2013). The application can be used by designers to conduct focus groups and interviews remotely (see Section 2.7.2 for accounts on these methods). This has logistical benefits and saves on travel costs. It also allows participants to set their speakers at a volume they feel comfortable with. This can be beneficial for people with hearing impairments as they can participate in focus groups without the fear of being stigmatised about their disability. Unfortunately, much of the literature that relates to Skype as a research tool focuses on the practicalities of the medium rather than the quality of the data it
generates. Nonetheless, most authors see a future for online meetings which suggests that they produce data of a reasonable quality (e.g. Bertrand and Bourdeau, 2010; Hanna, 2012).

**Internet forums and chat rooms** (e.g. www.4chan.org and www.icq.com)

An Internet forum is a site on the Internet where people can discuss various topics by posting messages and questions. While it is difficult to say when they first materialised, basic forms, such as Usenet, were in use in the 1980s (Pfaffenberger, 2002). Most Internet forums are dedicated to a specific interest such as anime, bodybuilding, travel, aviation and so on. Posted messages are stored, at least for a limited time, allowing designers to browse and read them to learn about people’s feelings towards these interests and to hear of their stories. Requests for information can also be posted by designers allowing them to explore the exact issues that they are interested in and to ask respondents follow-up questions. Research has found that the anonymity of Internet forums stimulate respondents to be more open about sensitive issues that they might normally be apprehensive discussing (Seale et al., 2010). However, anonymity might also make some respondents more likely to fabricate stories and untruths (Wiszniewski and Coyne, 2002). Chat rooms are similar to Internet forums except communication is in real time and data are not saved.

**Social networks** (e.g. www.facebook.com and www.myspace.com)

Social networks are communities in which members communicate with each other and share information. They differ from Internet forums and chat rooms because their purpose is to build and maintain personal/professional relationships rather than to ask questions and debate topics. The first social network was Community Memory, set up in 1973. It comprised a small number of users in the Berkley and San Francisco area (Cellan-Jones, 2011). Since then online social networks have become immensely popular. Facebook, for example, presently has in excess of a billion users worldwide (Zuckerberg, 2012). Social networks offer designers a rich source of user information. However, it is often difficult to determine the authenticity, reliability and accuracy of this information. Research has found that many people tailor their online profiles and communications to create desirable impressions. For example, members of LinkedIn (www.LinkedIn.com) have been found to list leisure pursuits and hobbies which they do not undertake because they make them sound more interesting (Guillory and Hancock, 2012).
**Blogs** (e.g. http://blog.sina.com.cn/xujinglei)

Blogs (or weblogs) are websites in which one or more writers regularly post their thoughts. Postings are archived and links are often provided to other websites that contain related material. Readers can typically leave feedback; however, they cannot alter the writer’s content. Blogs can be a useful source of information for designers. That said, they tend to have a narrow focus; as such, they rarely offer a comprehensive view of the writer. Writers also usually want to attain and keep readers; consequently, it is often difficult to know whether a report in a blog is an accurate account or not (Bortree, 2005; Jones and Alony, 2008). One problem with blogs, as far as design is concerned, is that most writers write in their own language. In other words, if a designer wishes to read a Japanese blog he/she needs to be able to read Japanese. While it is difficult to pinpoint when blogs first appeared, the term ‘weblog’ was in use by 1997 (Blood, 2004).

**Academic journals** (e.g. www.journals.elsevier.com)

Academic journals are peer-reviewed periodicals in which scholarly articles are published. This content usually relates to the most recent research findings but they also typically include book reviews, review articles and letters to the editor. Journals of interest to designers undertaking user research might include titles such as Ergonomics in Design, Applied Ergonomics and Interactions. However, while these journals offer the most accurate and reliable information available to designers, they do not present it in a manner that is appropriate to the design process: it is not visual and it is too detailed (see Goodman et al., 2007b). Many academic studies relate to detecting subtle differences. From a business point of view, this is often of limited interest since there is often little commercial value (Norman, 2001).
<table>
<thead>
<tr>
<th>Tool/method</th>
<th>Types of information and format(s)</th>
<th>Strengths</th>
<th>Weaknesses and limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alexander Street Press (Ethnographic Video Online collection)</td>
<td>Types: Stories Emotional Lifestyle Background Intangible</td>
<td>Diverse range of topics Videos can be annotated and shared Information given on the ethnographers who created the material</td>
<td>Not openly available (access through libraries and educational institutions only) Some footage over 40 years old Many videos have catchy titles such as “Divided loyalties”, “Every day is not a feast day” and “Fit surroundings”. This, arguably, makes it difficult to work out what each video is about without clicking on each one</td>
</tr>
<tr>
<td>Wikipedia</td>
<td>Types: Lifestyle Background General Human issues</td>
<td>Free Over 22,000,000 articles in 285 languages (Wikipedia, 2013) Information updated constantly and new information published quickly References and links often given enabling further investigation into a topic to be easily undertaken</td>
<td>Open to vandalism Many articles contain detail unlikely to help user research (e.g. details on ancient wars) New publications can waver between different viewpoints (until an accepted viewpoint is reached) Many designers distrust information on wikis No information given on the contributors or their reasons for contributing</td>
</tr>
<tr>
<td>YouTube</td>
<td>Types: Stories Opinion Guidance Emotional Lifestyle Background Intangible General</td>
<td>Free Large collection of videos on many topics Video allows phenomena to be watched over and over again Straightforward to use</td>
<td>Often no information given on those who contribute or their reasons for contributing To search for videos effectively a designer might have to input keywords in a language other than his/her own Videos might be in a language that the designer does not understand Many videos are staged and thus do not show users behaving naturally Videos often do not show the mundane things that designers are often interested in</td>
</tr>
<tr>
<td>Tool</td>
<td>Types:</td>
<td>Formats:</td>
<td>Free to browse</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------------------</td>
<td>----------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Stories, Opinion, Emotional,</td>
<td>Video, Photos</td>
<td>Comments associated with photos offer insights into people's lives</td>
</tr>
<tr>
<td></td>
<td>Lifestyle, Intangible</td>
<td></td>
<td>Material related to a specific location can be easily searched using a world map</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Designers can easily find material relating to a particular theme using 'Flickr groups'</td>
</tr>
<tr>
<td>Flickr</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amazon</td>
<td>Stories, Opinion, Emotional,</td>
<td>Text</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td>Lifestyle, Intangible, Human issues</td>
<td></td>
<td>Reviews on products and services offer an insight into people's lives</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>All feedback has a timestamp stating when it was left</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AnthroTools 1.1</td>
<td>Anthropometric</td>
<td>Diagrams</td>
<td>Free, quick and simple to use</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Offers a helpline contact address</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Offers information on the anthropometry databases it uses</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A basic version is also available as a smartphone application</td>
</tr>
<tr>
<td>Eye disease simulations (NEI)</td>
<td>Experience</td>
<td>Photos</td>
<td>Free</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Gives an idea of what it like to see with different eye conditions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **SurveyMonkey** | **Types:**  
| Opinion  
| Emotional  
| Lifestyle  
| Background  
| Intangible  
| **Formats:**  
| Text  
| **Free for basic small scale surveys**  
| Multiple distribution options, including email and embedded links  
| Inbuilt analysis tools  
| Data returned the instant a survey is completed  
| If needed, target user groups can defined and bought  
| **Can only be distributed to those who are literate, can use computers and have Internet connection**  
| Difficult to ask follow-up questions  
| A designer has no idea whether the survey questions have been understood properly  
| Some respondents may fill out the survey in a nonchalant manner  
| Some spam filters may block emails from SurveyMonkey  
| **DfA Education and Training Resource**  
| **European Design for All e-Accessibility Network** | **Types:**  
| Stories  
| Opinion  
| Guidance  
| Emotional  
| Lifestyle  
| Background  
| General  
| Human issues  
| **Formats:**  
| Text  
| Photos  
| **Offers examples of good inclusive design**  
| Offers a list of design tools and methods to help designers understand users  
| Offers links to other websites offering material on inclusive design  
| **Much of the information needs to be downloaded before it can be read**  
| Little information on designing for people of different nationalities  
| **Skype meetings** | **Types:**  
| Stories  
| Opinion  
| Emotional  
| Lifestyle  
| Intangible  
| **Formats:**  
| Text  
| Video  
| Verbal  
| **Audio-only meetings are suitable for sensitive topics**  
| Saves on travel costs  
| Participants can be geographically dispersed  
| Easy to record  
| Participants can set their microphones and speakers to suit their needs  
| **Skype is blocked by some countries (see The Telegraph, 2010)**  
| May be time-lags in communication  
| Not suitable for technophobes  
| The technology can fail  
| Participants must have Internet connection  
| Body language can be difficult to see  
| **Internet forums and chat rooms** | **Portals to the following types:**  
| Stories  
| Opinion  
| Emotional  
| Lifestyle  
| Background  
| Intangible  
| **Typical formats:**  
| Text  
| Photos  
| Verbal  
| **People can be targeted by interest**  
| Information often already available to read  
| Anonymity can help collect views on sensitive topics  
| **Ethical issues can arise around gaining consent from those who contribute to Internet forums**  
| Anonymity might encourage some contributors to exaggerate stories  
| Typically no information given on those who contribute to Internet forums or their reasons for contributing  
| **58**
Table 2.6 Summary of web tools

<table>
<thead>
<tr>
<th>Academic journals</th>
<th>Portals to the following types:</th>
<th>Most recent findings</th>
<th>Often not free</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Anthropometric Stories</td>
<td>Information has been peer reviewed</td>
<td>Often too detailed and written in an overly scientific manner for designers' user research needs</td>
</tr>
<tr>
<td></td>
<td>Opinion Guidance Emotional Lifestyle Background Intangible General Human issues</td>
<td></td>
<td>Typically uninspirational</td>
</tr>
<tr>
<td>Typical formats:</td>
<td>Text Photos Diagrams Tables</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social networks</th>
<th>Types: Stories Opinion Emotional Lifestyle Background Intangible General Human issues</th>
<th>Many networks offer insights into different cultures</th>
<th>Processing data can be time consuming</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Data free from investigator effects</td>
<td>Difficult to establish the authenticity of the data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pages can be created solely for the purpose of research</td>
<td>Data only relates to people who believe in social networking</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Members who remove material (or desert the network) leave orphaned responses and can cause links to no longer work</td>
</tr>
<tr>
<td>Typical formats:</td>
<td>Text Photos</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blogs</th>
<th>Typical types: Stories Opinion Emotional Lifestyle Background Intangible General Human issues</th>
<th>Cover a wide range of topics</th>
<th>Unstructured information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Information is immediately available</td>
<td>Topics tend to have a narrow focus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Often provide deep, rich accounts of people’s lives</td>
<td>Technophobes poorly represented</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Writing can be poor and contain ramblings that are of limited use to design</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Attaining exposure can lead some writers to sensationalise their experiences and create fictitious stories</td>
</tr>
<tr>
<td>Typical formats:</td>
<td>Text Photos</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.7.6 Assessment of the tools/methods and the information they offer

It is evident that there are many tools and methods that help designers understand users. However, much of the information they provide often relates to single dimension of users' lives, such as their preferences or measurements. It is also evident that there
are few tools or methods that allow designers to explore a user’s culture. Questionnaires, interviews and focus groups allow designers to learn about culture but the information imparted in them is always considered and based on what participants think is important and on what they are consciously aware of. Also they do not show people’s environments or the way they do things.

No tools or methods were found that offer designers an immediate and broad insight into the lives of users. Perhaps ethnography using video is the method that gives the clearest insight; but one of its limitations is that it is time consuming and expensive to organise, conduct and analyse. One tool that offers off-the-shelf ethnographic material is Alexander Street Press. However the company’s videos are not commercially available, meaning that a designer needs to visit a library to view them. Furthermore, many of the videos are on highly specific topics such as selecting bark to make a traditional Ojibwe canoe.

It is clear that there are certain areas of information where designers are well catered for if they want to learn more about users. Guidance, human issues and marketing information is all readily available and easily accessible. There is also considerable anthropometric information, found in the form of tables, digital human modelling systems and web tools. However, the formats in which much of this information is presented are not ideal. Guidance, human issues and marketing information is often supplied as text, a format disliked by designers; and anthropometric information is often presented as percentile measurements for different body dimensions. This format hides the users from which these measurements were taken and thus does not foster empathy. It also requires designers to have a good understanding of ergonomics to use them effectively.

In other areas designers seem to be less catered for. This includes good quality experience information. The literature highlights that many wearable empathy devices and simulations do not have the sophistication to allow designers to experience a disability at different levels of capability loss. These inadequacies might lead designers to make decisions based on experiences that do not satisfactorily reflect reality. Nonetheless, it is evident that many researchers are exploring such issues and constantly improving simulators to deliver more accurate experience information (e.g. Cardoso and Clarkson, 2012).
Other information types that are less well catered for include those that show users in real life contexts; in other words, visual forms of stories, emotional information and lifestyle information. This context is crucial in helping designers understand users since people do not live in isolation: they are shaped by their environments and their environments shape them (Bronfenbrenner, 1986; Comer, 2004).

There also appears to be a paucity of intangible information. This is the case even though many decisions made by users are based on their values and beliefs (Desmet, 2008). Without this information designers need to speculate and even guess what is important to users. It seems inevitable that in the future this type of information will become increasingly central to the design process as more and more users demand that the products they buy and use elicit pleasure.

What is important is not only the provision of information but the relevance of it and the way in which it is presented. What is lacking is information that provides an instant overview of a user in a format that is ready-to-use, accessible and can be interpreted without the need for much expertise. Admittedly information is available online, but much of this is not design specific so designers have to undertake a considerable amount of searching to discover or drill down to the information they need. Even then, the information found is often too technical, fragmented and/or in a format that is inappropriate for designers, such as overly detailed text. Moreover, a large proportion of this information, such as that found on Wikipedia and Amazon, is not necessarily trustworthy. There is no indication of its accuracy or its reliability; neither is there information on the people who supplied it or their motivations.

### 2.8 Conclusion

This chapter reviewed literature relating to people, their needs and the challenges that industry faces in addressing them. It also examined different types of user information and the tools and methods that are available to designers.

From the literature, it is possible to see that everyone is unique: no one has the same life as anyone else. This suggests that to understand users properly, designers need to have information on a large number of individuals since no single person can truly represent a cohort. It is also clear that people are continually developing and that the
designers who understand people’s physical, mental and social needs at different life stages will be able to create products that elicit pleasure and offer good usability.

This chapter also identified and reviewed the various types of information available to designers who want to learn more about their users. It demonstrated that some of the information available appears not to address their needs; for example, it is not design specific, rarely instantly available, often too technical and presented in a format that demands ergonomic expertise. This suggests that there is a lack of understanding of what designers want.

The review suggests that there is a ‘gap’ for a tool that offers designers an instant but broad overview of users at the start of the design process. It revealed that convenience is important to designers and suggests that a tool that has multiple information types in one place would help designers use user information in their work. That said, the literature indicates that designers primarily need to have more stories, emotional information, lifestyle information, background information and intangible information in a visual format (where possible). This is because these kinds of information place users into context and help designers empathise with those they are designing for. The former is important as users are affected by their surroundings and vice versa (Bronfenbrenner, 1986; Comer, 2004). Presently, there is a scarcity of such information that is both immediately available and reliable.

The literature also suggests that designers need to be provided with other types of information to give them a rounded view of their users. For example, anthropometric information, in a visual form, needs to be provided as many problems users have with products relate to their dimensions. Clearly, a tool that does not provide this information would be limited.

To determine a more detailed understanding of the nature of information designers need and the way in which they want it presented, empirical studies are required. These need to focus on how designers work and what kind of tools and methods they require to understand their users quickly.

The findings in this chapter have led to the development of research questions:

1) Given the numerous methods and tools available to designers which do they presently tend to use and what are their opinions of them?
2) What information do designers require in order to obtain a broad and immediate understanding of users – what information is missing?

3) How do designers want such information presented?
3.1 Introduction

The literature reviewed in the preceding chapter revealed that while today’s users expect products to be easy to use, they also increasingly want them to offer emotional benefits in addition to functional ones. It also indicated that to understand users properly, it is necessary to relate to the environment in which they live, appreciate how they do things, learn of their concerns and be aware of their physical and cognitive abilities/disabilities. However, although the literature highlighted the importance of addressing user issues, it offered comparatively little information as to the methods and tools designers tend to use and their opinions of them. There was also limited information explaining what designers want from tools and methods that help them in this area, even though many of these tools and methods are described.

In order to investigate such issues and to ensure that the aim was met and the research objectives fulfilled, a methodology was devised. This chapter describes the methodology. It explains the purpose of the research, the strategy chosen and the approaches used to collect and analyse data.

3.2 Purpose and research questions

There are generally three different purposes as to why research is conducted in the social sciences: to describe, to explain or to explore (Robson, 2011). Research conducted to describe requires extensive knowledge of a topic and attempts to answer ‘what’, ‘when’, ‘where’ and/or ‘how’ questions. It is unlike that conducted to explain which typically involves testing prior hypotheses and focusing on ‘why’ questions.
Research conducted to explore is concerned with tackling new problems, finding out what is happening and seeking new insights into a topic.

Clearly the purpose of a study is closely related to the research problem to be investigated. Chapter 1 introduced the research problem that relates to this thesis. It explained that while users in world markets are becoming more and more diverse, due to factors such as population ageing and the growing economic power of developing nations, many designers are designing with little or no user information. Instead they are making design decisions based on self modelling and stereotyping. This is often due to a lack of time and funds to undertake proper user research. Chapter 1 went on to say that the problem with this approach is that users are increasingly demanding more from their products: they want products not only to deliver practical benefits but to reflect their personalities and elicit pleasure. In recognition of this, the purpose of this research was to investigate the kind of resource that designers need to gain a quick, but broad overview of the people they are designing for. As this research was to break new ground and to be investigatory, its purpose was exploratory.

Having established the purpose of the research, a literature review was conducted (see Chapter 2). This review looked at five key areas. First, it examined what it is that makes people who they are. Second, it looked at people’s needs in respect to products. Third, it investigated the challenges and constraints the design industry faces in addressing people’s needs. Forth, it explored the types of information available to designers to help them better understand their users in the design process. Finally, it looked at what tools and methods are available to designers to assist them in the understanding of users. The review led to the development of three research questions to guide the enquiry:

1) Given the numerous methods and tools available to designers which do they presently tend to use and what are their opinions of them?

2) What information do designers require in order to obtain a broad and immediate understanding of users – what information is missing?

3) How do designers want such information presented?
3.3 The research design strategy

The next stage in the research design was to choose a research design strategy. Robson (2011) presents three possible strategies: fixed, flexible and multi-strategy. A fixed strategy is one that largely specifies at the outset of the research project what needs to be done and how it should be done. Data collected are typically in the form of numbers that are statistically analysed. Because of this, the strategy is often referred to as quantitative.

By contrast, a flexible strategy is one that evolves as the research process proceeds. It typically collects data in the form of words, or less commonly images, video or other artefacts (Crouch and Pearce, 2012). Because of this it is often referred to as qualitative. As the name suggests, a multi-strategy strategy is one that has elements of both fixed and flexible strategies. In studies that use this strategy, substantial amounts of the data collected are quantitative and substantial amounts are qualitative.

Certain questions can suggest the strategy to be used in a research project. For example, questions such as "How many?", "How much?", "Who?" and "Where?" suggest the use of a non-experimental fixed strategy such as a questionnaire; while questions such as "How?", "Why?", "What is going on here?" suggest a flexible strategy, such as a focus group or an interview (Robson, 2011). As the questions posed in this study involved capturing rich descriptions (i.e. they more closely resembled the latter set of questions), they suggested that a flexible strategy would be appropriate.

Another criterion that can help to choose a suitable strategy is concerns. A fixed (quantitative) strategy revolves around the concerns of the investigator. Conversely, a flexible (qualitative) strategy revolves around the concerns of the participants: it is the participants concerns that are considered important and noteworthy (Bryman, 2012).

Taking into consideration the kind of questions that the author wanted to answer and the type of concerns that the author was interested in, a flexible strategy was chosen. This strategy allowed the research design to be altered if findings suggested different avenues for enquiry, enabled richer descriptions to be captured and allowed participants' opinions to be explored in more depth.
3.3.1 Research approach

A large number of approaches are available to researchers undertaking flexible research. (See Creswell, 2013, pp.8-10, for a list of authors that describe different approaches). Each approach has its own features and some approaches are emphasised more by certain disciplines than others. Three frequently used approaches in design research, as identified by the author of this thesis, are grounded theory, ethnography and case studies. The characteristics of each of these approaches are presented in Table 3.1 together with examples of researchers who have used them.

However, while these approaches have been used successfully in many research projects, they were not used by the author. Grounded theory, although particularly useful in exploring new areas, was considered inappropriate because it requires researchers to enter the field without, as far as possible, pre-existing theoretical ideas (Glaser, 1978; Strauss and Corbin, 1998). This requirement was problematic as the author wanted to conduct a review at the outset of his research: his research was being conducted as part of a PhD, and so he could neither replicate work already undertaken nor use methods that were known to be inappropriate.

Although ethnography generates rich data in natural settings, it was also deemed inappropriate. This was because the approach requires the researcher to immerse himself/herself in the culture to be studied for long periods of time in order to properly understand it (Fetterman, 2010). The author, having worked in design prior to starting his PhD, saw this as problematic, as gaining access to design studios even for brief periods of time can be extremely difficult due to the confidentiality of projects being carried out. Indeed, the author has worked at several companies that forbid, and in some cases prevent (by controlled access), non-design staff entering the design studios.

Case studies were also seen as unsuitable as they require a similar level of access as ethnography. Indeed, many case studies use ethnography as a data collection method (Yin, 2009). Case studies also require the researcher to be well-accustomed in research techniques as the approach uses multiple methods; this was seen as problematic as since the author was conducting research for his first time, he had limited experience. It was also envisaged that, to ensure conclusions were consistent, multiple case studies would need to be conducted: designers tend to work in different ways (see Section 2.6.3) and thus data collected from a single case study was likely to
be of limited value. Conducting multiple case studies, however, was considered impractical due to the time this would take.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Grounded theory</th>
<th>Ethnography</th>
<th>Case study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus</td>
<td>Developing a theory grounded in data from the field</td>
<td>Describing and interpreting a culture-sharing group</td>
<td>Developing an in-depth description and analysis of a case or multiple cases</td>
</tr>
<tr>
<td>Type of problem best suited for design</td>
<td>Grounding a theory in the views of participants</td>
<td>Describing and interpreting the shared patterns of culture of a group</td>
<td>Providing an in-depth understanding of a case or cases</td>
</tr>
<tr>
<td>Unit of analysis</td>
<td>Studying a process, an action, or an interaction involving many individuals</td>
<td>Studying a group that shares the same culture</td>
<td>Studying an event, a programme, an activity, or more than one individual</td>
</tr>
<tr>
<td>Data collection forms</td>
<td>Using primarily interviews with between 20 to 60 individuals</td>
<td>Using primarily observations and interviews, but perhaps collecting other sources during extended time in the field</td>
<td>Using multiple sources, such as interviews, observations, documents and artefacts</td>
</tr>
<tr>
<td>Data analysis strategies</td>
<td>Analysing data through open coding, axial coding and selective coding</td>
<td>Analysing data through description of the culture-sharing group and themes about the group</td>
<td>Analysing data through description of the case and themes of the case as well as cross-case themes</td>
</tr>
<tr>
<td>Written reports</td>
<td>Generating a theory illustrated in a figure</td>
<td>Describing how a culture-sharing group works</td>
<td>Developing a detailed analysis of one or more cases</td>
</tr>
</tbody>
</table>

**Table 3.1 The characteristics of grounded theory, ethnography and case study**
(adapted from Creswell, 2013, pp.104-105)

After much consideration, the author decided that instead of using one of the many traditional approaches he would construct a tailored approach of his own. He deemed that this route would be the best way to answer the research questions effectively in a reasonable amount of time. The following sections describe this approach and explain the methods it used and why they were chosen.
3.3.2 Methods

Methods are what Robson (2011; p.76) calls “the tactics of enquiry”. Below is an explanation of methods that are frequently used in qualitative design together with other methods that either could have been used or were used by the author to generate data. The methods which were finally employed are given in Section 3.4 along with rationales as to why they were chosen.

3.3.2.1 Observation

Observation is a method that does not rely on what people say they do; it is, as Chadwick et al. (1984) remark, a method that is principally independent of the ability or desire of a subject to account for his or her behaviour. There are two principal types: structured observation (also known as systematic observation) and participant observation.

One issue with observation is that the act of observing is itself not straightforward. Witnesses do not acknowledge everything they see (see Simons and Chabris, 1999) and they habitually forget things while remembering others (Denscombe, 2007). Familiarly, past experiences and even moods all impact on the way in which people perceive and interpret events they have witnessed (Denscombe, 2007).

Structured observation tries to minimise these impacts by providing a framework in which to conduct observation. The approach uses multiple observers who record (and in the case of quantitative research, measure) events in a systematic way; findings are then checked to ensure a high level of agreement. While not exclusively used in fixed designs, structured observation is highly associated with them (Leitch, 2007).

Participant observation involves the researcher participating in the lives of those that he/she is observing. Observation is either covert or overt. Covert observation, while maintaining the naturalness of the situation, gives rise to ethical problems as those being observed obviously do not give their consent prior to being studied. Conversely, overt observation, while enabling consent to be obtained in advance, often results in those being observed behaving differently to how they would unobserved. This behavioural change is known as the Hawthorne Effect (see Landsberger, 1958).
One problem with observation is that the method requires access. As discussed in Section 3.3.1, this can be problematic in a design environment as creative work is often confidential. Another problem is that it is expensive and time consuming to organise. Furthermore, designers often do not work in a linear fashion (Wynn and Clarkson, 2005), they regularly explore one idea, only to reject it and explore another. This means their information needs continually change. It was thus recognised that if observation were used, the author might spend much time waiting to capture the data he needed.

### 3.3.2.2 Interviews and focus groups

Interviews involve a researcher posing questions to one or more participants in the hope of gaining answers. Robson (2011) asserts that there are three types: fully structured, semi-structured and unstructured. He defines fully structured interviews as those that use mainly closed questions, asked in the same order for everyone. He defines semi-structured interviews as those that follow a list of questions but allow for topical deviation and describes unstructured interviews as those that are characteristically similar to a conversation. The method can be used to collect a range of data from straightforward factual information to opinions and feelings. One-to-one interviews have the advantage that they are easier to arrange than group interviews, as only two people need to be free; however, they have the disadvantage that they limit the number of opinions that can be gathered in one session.

A focus group is a meeting where individuals gather to discuss a topic. It differs from a group interview in that the interviewer (known as the ‘moderator’) plays less of a central role in generating data. Instead, data are principally generated through the group members interacting and feeding off each other’s comments (Denscombe, 2007).

While interviews and focus groups have the advantage that they generate detailed data, these data can be more difficult to analyse than that gathered using other methods, such as a questionnaire, due to the ‘non-standard’ answers given. They are also susceptible to interviewer/moderator effects and social desirability bias. Nonetheless, interviews and focus groups offer the possibility of following up interesting responses and thus are highly appropriate for exploratory studies, such as the one the author was carrying out. Furthermore, unlike questionnaires in which questions are structured around what the researcher believes is important, interviews and focus
groups gather data based on what the participants identify is important. It is the participants' concerns, values and priorities that are voiced (Denscombe, 2007). This factor made using interviews and focus groups an attractive proposition to the author.

Another advantage of interviews and focus groups is that they do not require access. That said, it was recognised that if focus groups were used it would likely be difficult to persuade professional designers to voluntarily leave their workplace. Furthermore, while conducting a focus group on the Internet might seem more successful (provided the designers download the software) they would still all need to be available at the same time. It was thus clear that if focus groups were used, compromises would need to be made with regard to the members.

3.3.2.3 Using documents

Documents can provide a valuable source of information for the researcher. They come in many different forms including letters, memos, academic journals, webpages, photographs and films (Denscombe, 2007). The advantage of using documents for research is that a vast amount of information is kept in this form. Furthermore, many documents, such as academic journals and official statistics, are examined by experts before they are published to ensure that the information they contain is accurate; this means that they do not need to be exhaustively checked before use. One disadvantage of documents is that they do not always contain the specific information needed by those who view them. It is thus often necessary for additional methods to be used to generate these missing data.

Using documents can be a quick and cost-effective means of investigation. Because of this the author chose to conduct a review of documents at the start of his research (see Chapter 2). Amongst other things, he used the documents to gain an understanding of the work done in user research and to identify the contribution his research would make.

3.3.2.4 Testing methods

Testing methods are used widely in research. Three testing methods used to assess the usability of websites are the group walkthrough, the heuristic inspection and user testing. The group walkthrough involves a group of inspectors jointly examining the
interface while undertaking tasks that can be expected to be performed by most web users (Brinck et al., 2002). The inspectors often include users, website developers and ergonomists. After a group walkthrough, any problems that are found are rated for their severity and possible solutions to them are discussed.

The heuristic inspection involves a group of practised inspectors individually examining an interface by going through it, page by page, to judge its compliance with a number of recognised usability principles taken from published lists (Nielsen, 2012). In line with group walkthroughs, any problems that are found are rated for their severity and possible solutions to them are discussed. User testing involves observing users performing specific tasks on a website (Lazar, 2006). Users attempt these tasks on their own but may ask for help if they become stuck. Ideally, these tests employ many users, take place over a long period of time and are conducted in the users’ natural environments to ensure ecological validity.

Questionnaires are also often used in usability assessments. While it is possible for a researcher to design his/her own, many ‘off-the-shelf’ questionnaires exist. These questionnaires have the advantage that they have been thoroughly tested to ensure that they are reliable. Shneiderman et al. (2009) offer information on six different ‘off-the-shelf’ usability questionnaires. Some of these are sophisticated and generate their own comprehensive digital reports while others are basic and just offer a value that indicates how usable a website is.

### 3.3.2.5 Creative methods to generate data

While methods such as those mentioned above are popular in research studies, creative approaches to elicit data are sometimes also used. For example, Robinson (2012) supplied designers with personal digital assistants (PDAs) so that they could record what they did at specific times during their day and how they felt at these times. With respect to this research, these creative approaches could include instructing designers to sketch what they thought an ideal user information resource would look like and to write a list of the kinds of user information it should contain. These sketches and lists could then be studied to understand designers’ user information needs.

Another hands-on approach could be to ask designers to create personas relating to different user types. Again, these creations could be examined to see what user information designers wanted. Another approach could be to show designers a
example of a resource that contained user information about real people and then ask them to comment on the relevance and usefulness of the information it contained.

Cards with words written on them that relate to different user related topics (e.g. disabilities, dimensions, hobbies and so on) could also be used. These cards could be shown to designers to trigger discussions and to find out what user information they considered important and what user information was missing from the design process. A further method could be to issue designers diaries in which they could record their user research activities. Designers could log details about the user information they sought, when it sought it, how long it took to find and so on. Such diaries could provide valuable insights into the user information needs of designers.

One advantage of many creative methods is that they involve activities that designers typically enjoy, such as sketching, modelling, brainstorming, and so on. As such, they have the potential for being more enjoyable for designers. However, because many are fairly new and/or not often used, they have not been subjected to the same amount of academic scrutiny as traditional methods. As a result, their advantages, disadvantages and limitations are, arguably, less understood. Furthermore as they are employed less often than traditional methods, participants are less familiar with them (see Dong et al., 2013; Robinson, 2012). The methods thus take longer to explain to participants than traditional methods, which often require little or no introduction at all.

### 3.3.3 Sampling

Samples are frequently used in research as it is often not possible, due to a lack of resources, to collect data on all subjects of interest in a study; there are two kinds: probability sampling and non-probability sampling.

In probability sampling every unit (e.g. person, event) in a population has an equal chance of being included in the sample. Because the sample is representative of the whole population, it can, providing it is big enough, allow for reliable statistical inferences to be made. It is the kind of sampling that is typically used in fixed (quantitative) research. In non-probability sampling, units are selected non-randomly. The technique, which is usually employed in flexible (quantitative) research, is especially useful for exploratory studies as it allows issues to be looked at in a quick
and inexpensive way. Because of this, the author chose to use non-probability sampling in this research.

Four types of non-probability sampling designs are frequently used in social research; these are: quota sampling, convenience sampling, snowball sampling and purposive sampling (Denscombe, 2007; Henry, 1990; Robson, 2011).

In quota sampling, units are selected to proportionally reflect those in the population of interest. The technique is often used in situations when probability sampling is not feasible, for example, in research projects that have tight budgets and when time is limited (Robson, 2011). However, since the author was more interested in approaching people who were willing to offer their opinions, rather than trying to create a sample that proportionally reflected the characteristics of a population, he did not use this technique.

With convenience sampling, units are selected because they are the easiest to access. The technique has the advantages of being simple, quick and inexpensive (Denscombe, 2007). However, despite these advantages it was not used as it was felt that the easiest people to enrol in the study (i.e. students without professional design experience) were not the people who would offer the most useful and relevant information as far as the research study was concerned.

With snowball sampling, the researcher identifies a small number of participants in the population. These participants then suggest other potential participants, who in turn suggest further potential participants, and so on. It is an effective technique for building a reasonable-sized sample quickly (Denscombe, 2007). Nonetheless, this type of sampling was not used by the author as he felt that the end result might be a sample that only reflected a small portion of the population he was interested in. He thought that this might occur as people would only identify those that they knew would feel comfortable being recommended, in other words, their closest acquaintances. As people tend to form the strongest bonds with those that are similar to themselves (Fowler et al., 2011), it follows that they would recommend people who were similar to them.

In purposive sampling, units are hand-picked by the researcher to fulfil the specific needs of a project. It has the advantage that it allows the researcher to focus his/her attention on those units likely produce the most valuable data (Denscombe, 2007). As
the aim of the research was to generating insights with respect to designers understanding users, rather than creating measurable and generalisable data, and resources were limited, this type of sampling was used throughout the research.

### 3.3.4 Data collection and analysis

The data collection involved several visits to the field. Although, due to financial and time constraints, these visits did not continue until ‘theoretical saturation’ (the point at which no more new/relevant information emerges) was reached, sufficient visits were undertaken for the author to learn of the key issues that he was interested in. After each visit to the field the data collected were analysed.

Robson (2011) claims that there are three main non-specialist approaches to analysing qualitative data: the grounded theory approach, the quasi-statistical approach and thematic coding. The grounded theory approach, as the name suggests, is particular to grounded theory; it is a highly structured approach that uses three kinds of coding: open coding, axial coding and selective coding. As the author was not conducting grounded theory this approach was not used. The quasi-statistical approach, of which there are many variations, relies largely on converting qualitative data into a quantitative form usually so it can be statistically analysed. The approach, which is typified by content analysis (see Schreier, 2012), involves counting word/phrase frequencies and intercorrelations to determine the relative importance of concepts. As the author was interested not in hard data, but in rich descriptions, this approach was not used. Thematic coding is a generic approach. It is flexible, well established and used extensively in qualitative research. For these reasons this approach was used by the author.

#### 3.3.4.1 The coding process

The coding process started with the author immersing himself in the data until he was very familiar with them. He did this by transcribing the recordings of meetings and by making notes and memos on anything said or done by the participants that was of interest. Next, using provisional coding frames, ‘a priori’ codes were assigned to the transcripts. These codes related to the questions that the author had asked in the meetings and to the topics explored in the literature. Following this, the data were
‘interrogated’ again and any additional issues and patterns that had emerged from the data were assigned ‘in vivo’ codes.

The next stage involved reviewing all the codes and identifying themes using standard techniques described by Robson (2011, p.482). These techniques included looking for linguistic connectors that indicate conditional relationships and identifying similarities/differences/repetitions in what the participants said or did. It should be noted that in some cases a single comment was assigned a theme if the author considered that it was particularly pertinent to the research topic being explored.

Despite the fact that a number of computer programs are available for analysing qualitative data, the author chose to code by hand. He decided to use this approach as it is not necessarily any less rigorous than coding by computer (Barbour, 2008) and he felt that that there was little benefit in spending time learning such programs considering the small amounts of data that needed to be analysed.

**3.4 The research process**

The research process had two strands. The first strand was the philosophical strand in which the attributes that designers require from a resource intended to give them a quick, but broad, overview of the people they are designing for were explored. This strand had four phases comprising three data generating phases and a test phase. The second strand was the design process. Here the mock-up resources were developed and the prototype resource was built and tested.

The two strands were interlinked so that the outcome of the first phase of the philosophical strand informed the first mock-up to be built. This mock-up, in turn, was used to elicit data from designers in the second phase of the philosophical strand which, in turn, led to the creation of the second mock-up and so on (see Figure 3.1).

It should be noted that, apart from the mock-ups and the prototype resource, no creative methods were used to elicit information from designers. This was because these methods were either considered to generate data that were hard to analyse, provided the same focus as the mock-ups and prototype or, in the case of diaries, relied too heavily on designers remembering to collect the data themselves.
The following paragraphs outline the research process. They describe the four phases of the philosophical strand of enquiry and the methods and sampling strategies associated with them. They also describe the design strand, the mock-ups and the prototype.

Figure 3.1 The philosophical strand of enquiry and the design process
3.4.1 The philosophical strand

3.4.1.1 Phase 1

The first phase of the enquiry was to find out what work had already been conducted in the field of user research and identify a gap for a resource. It involved finding out the relevant concepts/theories related to the topic, exploring discrepancies, and discovering what methods and research strategies have been used successfully by other researchers studying user research.

The method employed

The method employed was a review as it is both quick and economical. The review involved looking at books, journal papers, conference papers and trustworthy websites. The review revealed that a great number of tools and methods are available to designers to help them understand users. However, while many authors described these tools and methods at length, few offered details as to what designers’ thought of them and which were frequently used in design practice. The review identified a gap for a resource that offers designers a quick, but broad, understanding of users.

3.4.1.2 Phase 2

Phase 2 aimed to address the information gaps found in the review by exploring professional designers’ thoughts and working practices with respect to user research tools and methods. It also aimed to discover what user information designers consider is missing from the design process.

Method selection

According to Chadwick et al. (1984) three different methods might have been suitable for this phase of the research process: observation, questionnaires and interviews.

Observation has the advantage over the other methods in that it does not rely on what people say they do. However, while this aspect of the method suggests that it might be appropriate for collecting information on designers’ needs and working practices (but clearly not their thoughts), this method was not used. There were several reasons for this. One reason, as explained in both Section 3.3.1 and Section 3.3.2.1, is that
companies generally do not allow outsiders to access their design studios as the work
done in them is usually confidential. Another reason was that it was felt that it would be
too easy for the person doing the observing (i.e. the author) to miss things, misinterpret
actions or fail to realise the significance of certain events. The final reason was that
although observations create rich data, these data are known to be awkward to analyse
and collate (Chadwick et al., 1984).

Questionnaires are a quick and financially economical method of obtaining information
from people (Bryman, 2012; Chadwick et al., 1984). However, they are of limited use in
studies in which meaning and understanding are important because they largely suit
the use of closed questions and thus do not yield the rich information needed to
understand topics in depth (Gillham, 2000). Furthermore, they are often only suitable
for collecting a limited range of information as most people dislike having to complete
them (Chadwick et al., 1984). Because of this, this method was not used.

Interviews enable misunderstandings to be clarified as and when they arise. They also
yield detailed information. It was these factors that made the interview process the
method of choice for the author. Of the three types of interview defined by Robson
(2011), (i.e. fully structured, semi-structured and unstructured), the author thought that
semi-structured was the most appropriate. This was because such interviews offered
him the chance to explore topics he was interested in, as well as the opportunity to
hear of additional issues that those being questioned thought were important.

Once it had been decided that the research should use semi-structured interviews, it
was necessary to decide how these interviews should be conducted. Although
telephone interviews are less expensive to perform than face-to-face interviews and
are often more convenient than making personal visits, telephone interviews were not
used. This was because such interviews limit the amount of information that can be
collected, as people generally tire of being interviewed on the telephone after about 15
to 20 minutes (Chadwick et al., 1984). Instead, the author chose to use face-to-face
interviews as they typically run for longer and thus tend to generate more information.
They also allowed for the mock-up to be easily used.

**Sampling strategy and limitations**
The sample consisted of ten design professionals: nine worked at design consultancies
and one worked at Loughborough University. The professional who worked at
Loughborough University was a tutor of ergonomics who had recently left industry but still worked on commercial projects. In order to collect a range of opinions, the sample included a mixture of ages and levels of design experience. (For more information on the sample, such as their ages, the number of years they had worked in design and so on, see Section 4.3.1 and Appendix A).

The reason why designers from consultancies were targeted in preference to designers that worked in other businesses was because they often work on different projects and thus have to learn about new users on a regular basis. It was therefore considered likely that they would be more aware of the kind of user information missing from design briefs. However, as it is possible that some in-house designers might have different user information needs to designers who work in consultancies (as they might understand certain aspects of their users already), the omission of in-house designers from the sample should be seen as a possible limitation of the study.

The consultancies were selected from an online list called the Directory of Design Consultants (European Design Innovations, 2007). This list was chosen as it was up-to-date and lists both large and small design consultancies as well as freelance designers. However, while all the freelance designers on the list were all contacted (there were three of them who worked in product/industrial design), none were interviewed. Two stated that were too busy and the other did not reply to the author’s requests. The fact that no freelance designers were interviewed should be seen as a limitation of the study.

It should be noted that for practical reasons (e.g. cost) all the interviewees were based in the United Kingdom. Clearly, because of this, opinions relating only to this group were captured.

3.4.1.3 Phase 3

Having collected information from designers, it was necessary to learn how this information should be packaged in order to suit designers’ needs. The aim of Phase 3 therefore was to gather opinions as to how the information collected in Phase 2 (some of which was informed by the review) should be presented in the resource and how the resource itself should function.
Method selection

Two methods were considered suitable to address the aim: focus groups and one-to-one interviews. Focus groups have the advantage over one-to-one interviews in that they allow for participants to build on other participant’s thoughts and comment on another participant’s point of view (Kitzinger, 1994; Langford and McDonagh, 2003). But they have the disadvantage in that they are more difficult to arrange and are often subject to time restraints which means the interviewer has less time to ask the questions he/she would like to ask (Moore, 2006). As the author was more interested in generating and discussing ideas than collecting numerous individual opinions, he chose to use a focus group.

Having chosen to use a focus group, it was then necessary to decide on what type of focus group to use. Traditional focus groups have between ten and twelve members; however, there is a growing trend towards using smaller groups (Barbour, 2007; Fern, 2001; Krueger and Casey, 2009). Mini focus groups consist of four to six members (Krueger and Casey, 2009; Litosseliti, 2003). Langford and McDonagh (2003) suggest that these smaller groups are better for design research as members have more opportunities to speak and more time to discuss issues and ideas. In addition to being arguably better for design research, they also have the added benefit of being generally easier to run, and thus more accommodating towards inexperienced moderators (such as the author), compared with more traditionally sized focus groups (Barbour, 2007; Fern, 2001). Due to these reasons a mini focus group was used.

The sampling strategy and its limitations

The focus group employed five participants. It should be noted that while purposive sampling was used to select these individuals, an element of convenience was also employed. Ideally, practising designers would have been used in the focus group as these people would have likely understood the most current issues better than anyone else. However, it was clear that persuading such people to give up their time and travel to a central location for the meeting was unrealistic. The author thus carefully selected the closest substitutes he could find. These people were staff and postgraduate students from Loughborough University all of whom had worked as designers in industry. As it had been decided that the resource should be web-based, everyone in the sample had experience of using the Internet.
While a range of ages were represented in the sample, the sample did not include anyone in their early twenties. This should be seen as a limitation of the study as it is possible that such people might have had different views as to how the resource should function as they would have grown up exclusively in the digital age. People born after 1984, often referred to as ‘digital natives’ (see Manafy and Gautschi, 2011), have been found to work differently to people who are older; Palfrey and Gasser (2008), for example, explain that people who have been immersed in technology all their lives multitask more than people who are older. Two other limitations are that the focus group members were all involved in design research and that they had all been away from industry for a number of years. It is thus possible that their views, priorities and thinking processes differed somewhat to practising designers in industry.

The group was chosen to be homogeneous but to have enough variation among participants to allow for different opinions (Krueger and Casey, 2009). The reason for this decision was that homogenous groups typically produce a wider range of ideas and have more inter-member interaction than heterogeneous groups (Fern, 2001). To ensure that power imbalances did not trigger silence in lower status individuals, care was taken to ensure that none of the postgraduates were students of the academic staff (Fern, 2001; Krueger and Casey, 2009; Litosseliti, 2003).

Further details relating to the sample, such as the participants’ ages, the number of years they had worked in design and so on, can be found in Section 5.3.1 and Appendix E.

3.4.1.4 Phase 4

The final phase of the research was to test the prototype resource to ensure it addressed designers’ needs. This phase had two parts. The first was an interface inspection; the second was an evaluation. The methods and samples used in each part of the test are described below.

3.4.1.4.1 Part 1: Inspection

Although, time wise, it would have been preferable not to have conducted the interface inspection, it was considered necessary for two reasons. First, it was recognised that any unidentified coding errors might severely disrupt or even curtail the evaluations with design professionals. Second, it seemed only proper to inspect the prototype
resource for obvious mistakes and oversights prior to showing it to design professionals as they were offering their time free of charge.

Method selection
Two methods were considered to be suitable for the inspection. These were the group walkthrough and the heuristic inspection (both discussed in Section 3.3.2.4). Of these methods the heuristic inspection was considered the more suitable as it could guarantee that all the elements, features and pages in the resource would be inspected. This was not the case with the group walkthrough, as it was clearly not possible to devise a set of realistic tasks that could be completed in a reasonable time and involve everything in the resource being visited and used.

The sampling strategy and its limitations
The sample comprised of five research students taken from the Loughborough Design School. These individuals were selected as they had all participated in one or more heuristic inspections before, either as inspectors or as administrators. While this experience was considered important, as the success of a heuristic inspection is highly dependent on the skills of the inspectors and their familiarity with the inspection process (Stone et al., 2005), the students clearly did not have the same level of experience as professional inspectors. It is possible, therefore, that more usability issues may have been found if professional inspectors had been employed. The reason why research students were employed as opposed to professional inspectors was due to budget limitations. (For more information on the sample see Appendix I).

3.4.1.4.2 Part 2: Evaluation
The second part of the test involved a set of evaluations in which the prototype resource was assessed for its functionality, usability, content presentation and value to the design process. The evaluations were conducted face-to-face. This approach was taken as the resource could not be tested remotely due to its limited functionality.

Methods selection
The evaluation employed three methods. In order of implementation, these methods were a user-based usability test, a usability questionnaire and an interview. These methods were selected because when they are used together they allow each
evaluation to take place in one sitting. This made it convenient for the designers. It also kept costs down.

**The user-based usability test**

This test was used to help designers assess the resource’s functionality and usability. The test took the form of a ‘scavenger hunt’ in which a web user navigates around a site performing simple tasks and collecting information (Lazar, 2006). This kind of usability test was chosen because it offered a level of control as to what designers could see and do. While this made the test somewhat artificial compared with other kinds of usability tests, such as field observations and co-discovery, it was necessary because the resource contained only a small number of pages and did not fully function. These limitations were due to budgetary and time constraints (see Section 6.2.1).

**The usability questionnaire**

The questionnaire was used to gain a rough indication of the resource’s possible usability. It should be noted that the terms ‘rough’ and ‘possible’ have been used here as the resource being evaluated was not a fully functioning system but a partially functioning one. Thus the designers answered the questions based on what they thought the final resource would be like, rather than on what the prototype was actually like.

The questionnaire used was a standard ‘off the shelf’ usability questionnaire called the System Usability Scale (see Appendix P). This questionnaire was chosen because it gives more consistent results with smaller sample sizes compared with many other questionnaires (e.g. the Questionnaire for User Interaction Satisfaction); it is also extremely quick to administer (see Tullis and Stetson, 2004). This was considered important as it was recognised that time would be at a premium in the evaluation.

Thought was given to asking the designers to complete the usability questionnaire after the evaluation had finished (i.e. once the author had departed) as it was felt that this would help to minimise social desirability bias (Nancarrow and Brace, 2000). However, as it was felt that some of the designers might never complete or return the usability questionnaires, this approach was not followed. Instead the author asked the design professionals to fill out the usability questionnaire during the evaluation and told them that he would not look at it until after he had left.
The Interview
The interview was used to collect opinions on the resource’s functionality, usability, content presentation and value to the design process. An interview was chosen above other methods, such as another questionnaire, as it allowed the author to investigate interesting responses in an in-depth way and clarify any ambiguities if they arose. The type of interview selected was a semi-structured interview as it offered the author the opportunity to ask a set of standard questions while, at the same time, not denying designers to chance to answer them however they chose (see Chadwick et al., 1984). This type of interview thus ensured that the author addressed all the aspects of the resource that needed to be evaluated. It also allowed the collection of additional information which the designers considered important.

The sampling strategy and its limitations
Ten design professionals evaluated the resource. Although arguably fewer participants could have been used, this number was decided upon for two main reasons. First, it allowed each participant to examine a smaller section of the resource’s content than they would have done if fewer participants had been used, thus each section was looked at more thoroughly by each participant in the time available. Second, it meant the author could choose professionals from a variety of design backgrounds. Furthermore, although Nielsen (2000b) would argue that the usability part of the evaluation could have been conducted using just five participants, many other authors deem this number to be too small (e.g. Spool and Schroeder, 2001; Tan et al., 2009). Thus by using ten participants in this part of the evaluation a greater degree of confidence could be attributed to the findings.

The ten design professionals varied in age, sex and design experience. They included design consultants and in-house designers. The reason why such designers were targeted was because they were considered to be the kind of people who would most likely use the resource in industry. Their opinions were thus considered important. It should be noted that the design professionals were all based in the United Kingdom. This should be seen as a limitation of the study. Design professionals from other nations might want the resource to contain different user information and have a different presentation format as their needs and preferences might not be the same as those involved in the study. Furthermore, while the sample comprised designers from a variety of industries, many industries that employ designers were not represented. It is possible that some of these industries might want a different balance of user
information; for example, some might want more lifestyle information and less emotional information. The fact that the number of industries represented was small should thus be seen as a limitation of the study.

Ideally, the author would have liked to have used some form of random (i.e. probabilistic) sampling when evaluating the prototype resource, as this would have made the findings more scientifically defensible. However, as the resource did not fully function and had a limited number of pages this was not done, as it was felt that little would be gained by following this route.

For further information on the sample used in the evaluation see Section 8.3.1 and Appendix N.

3.4.2 The design process

The second strand of the research process involved the creation of two mock-up resources and a prototype resource (see Figure 3.1). These creations were used to stimulate and provide focus for discussions and to elicit comments and opinions from designers in the philosophical strand of enquiry.

It should be noted that while the second mock-up and the prototype were informed by what participants' said, participants were not involved as equal partners in their development. In other words, co-design was not used. The main reason for this was that to do so would have required a high level of commitment from the design professionals (see Reich et al., 1996 and Scariot et al, 2012). This was deemed impracticable (as they were unpaid). However, it was also felt that designers might overly focus on issues that were of secondary importance to the author, such as intricate technical details, costs and how the resource could be marketed and protected intellectually, as they tend to concentrate on such issues in industry. As co-design fosters co-ownership (Scariot et al, 2012), it was recognised that this might cause tension, as the author, due to time and budgetary restrictions, would have to discard ideas considered important by designers if they had no academic benefit.

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6 The first mock-up was informed by the findings of the literature review (see Figure 3.1).
The last activity in the design process was a test phase. It was here that the prototype resource was assessed to ensure it addressed designers’ needs. This phase was also part of the philosophical strand; as such, it is discussed in Section 3.4.1.4 above.

3.4.2.1 The first mock-up

The first mock-up was used during Phase 2 of the philosophical strand to help the author identify the user information needs and requirements of designers and promote discussion. It was presented as an A3 poster and took the form of a storyboard illustration. The poster, which was sent to designers prior to their interviews in an information pack (see Appendix B), showed a designer using a computer based resource to learn of the lives and worlds of his users. The information shown in the resource reflected what the literature suggested designers needed. It included information on users’ environments, lifestyles, artefacts, aspirations, beliefs, concerns and values. The information was organised under six category headings: details, living space, interests, possessions, (human) dimensions and tasks & abilities. Where possible, it was shown visually; for example, anthropometric information was shown in the form of annotated photographs. In the case of anthropometric information, this presentation format also helped to keep the measurements of each user together.

Although the mock-up resource was created on a computer, it was given an unrefined look and presented on paper as people are more likely to be open about major design changes with unrefined paper mock-ups than polished digital mock-ups (Brinck et al., 2002).

3.4.2.2 The second mock-up

The second mock-up was informed by the findings of Phase 2 of the philosophical strand. It was created on a computer and shown to participants in a Microsoft PowerPoint presentation during Phase 3. The mock-up was used to help participants quickly understand what was being discussed and to act as a focal point in discussions. It also served as a benchmark to which participants could compare and evaluate things. For further information on the mock-up see Chapter 5.
3.4.2.3 The prototype

The prototype took the form of a website. The website was informed by the findings of Phase 3 and was assessed in Phase 4 for its functionality, usability, content presentation and value to the design process.

3.5 Ensuring quality

Yin (2009) describes four aspects that determine the quality of a qualitative study. These are construct validity, internal validity, external validity and reliability.

3.5.1 Construct validity

Construct validity refers to whether a devised measure actually measures what it is supposed to measure (Yin, 2009). Although this was not a major concern in this study, as it was mainly qualitative, it was nevertheless considered when the author designed the evaluation. In the evaluation, designers performed a number of different tasks. Although the time participants took to carry out the tasks could have been measured in order to assess the product's efficiency, this approach was not followed. The reason for this was because the author requested participants to explain their thought process out loud, so he could better understand what they were thinking. While this aided the author's understanding, it may well have affected the overall time participants took to carry out the task. In some cases they may even have carried out their tasks quicker, since thinking through a task can help participants focus more clearly on what they have been asked to do (Tullis and Albert, 2008).

3.5.2 Internal validity

Internal validity relates to causal relationships and, more broadly, to the act of making inferences (Yin, 2009). It was not a large concern in this study as this study was mainly exploratory. However, it was a concern when the usability test was designed, as it was recognised that unless designers could communicate their thoughts as to why they were interacting with the prototype resource in the way they were, inferences would have to be made. To remove this conjecture and strengthen internal validity, designers were asked to 'think aloud'.
3.5.3 External validity

External validity refers to the extent to which research results can be generalised beyond the specific boundaries of a study (Bryman, 2012). Threats to this form of validity come in many forms and include errors, bias and investigator effects. To counteract these threats multiple strategies were used. These included audio taping discussions to ensure that transcripts were complete and accurate, using data triangulation to verify findings, not asking leading questions to lessen the chance of response bias and keeping an open mind to alternative explanations (King and Horrocks, 2010; Robson, 2011). In addition, the author took an uninterested position during the research to minimise social desirability bias and took care when selecting participants to ensure that they reflected, as much as possible, the populations that the author was interested in (Bryman, 2012; Robson, 2011). Other strategies used to strengthen external validity are also mentioned in the thesis when appropriate.

3.5.4 Reliability

Reliability is to do with repeatability; in other words, if the research could be conducted again, in the same context, with the same people and with the same methods, the same results would be obtained (Shenton, 2004). To strengthen reliability the author followed Mason’s (2002) instructions and insured that he was careful, honest, accurate and thorough with his data collection and analysis. He also followed Easton et al.’s (2000) guidance, and tested all sound recording equipment before use. In addition he conducted meetings, whenever possible, in quiet rooms away from other people and took care not to make errors when transcribing recorded conversations.

3.6 Ethical considerations

When involving people in research it is crucial to ensure that their interests are protected and that they are neither misled nor misrepresented; it is also essential that they have given their informed consent (Denscombe, 2007).

All participants involved in the research were told in advance about the purpose of the author’s research, the tasks that they would be expected to perform and their right to withdraw at any time without the need for explanation. They were also given the author’s contact details and informed that any information that they offered would be
confidential and used only for research purposes. Everyone involved in the research signed a consent form which was dated and counter signed by the author (see Appendix B for an example).

The interviews (see Chapter 4), the focus group (see Chapter 5) and the evaluation (see Chapter 8) were tape-recorded. Permission to record these meetings was sought in advance and in each meeting the tape-recorder was placed next to the participant(s) so that him/her(they) could pause the recording at any point. This practice is suggested by Oliver (2003).

The Taiwanese participants who offered to be individuals on the prototype resource were also sent a video. The video showed the kind of information that the author wanted to capture (see the attached DVD, Appendix S). The individuals were told that the captured information was to be made into a resource that was to be tested and evaluated offline by students and design professionals. They were told that any personal details that they did not want to reveal could be fabricated.

3.7 Chapter summary

In order to meet the aim and objectives of this research a methodology was devised. This methodology used a flexible strategy. It employed interviews, a focus group, a heuristic inspection, a usability test and a questionnaire. The research process had two interlinked strands: a philosophical strand and a strand in which two mock-up resources and a prototype resource were developed. Both strands culminated in a test. Here the prototype resource was assessed to ensure it addressed designers’ needs. Most of the information collected in the research was qualitative and was analysed using coding and clustering. The research employed participants selected using purposive sampling. It used a number of strategies (e.g. data triangulation) to ensure validity and reliability.

3.8 Summing up and looking ahead

The review (see Chapter 2) revealed that designers need to have a broad understanding of users and an appreciation of their environments in order to develop appropriate products for them. It concluded with three research questions. This chapter then outlined the methodological approach taken to conduct the research in this thesis.
In the next chapter, two of the three research questions will be addressed. These are: ‘Given the numerous methods and tools available to designers which do they presently tend to use and what are their opinions of them?’ and ‘What information do designers require in order to obtain a broad and immediate understanding of users – what information is missing?’ The chapter also touches on the third research question: ‘How do designers want such information presented?’ However, it should be noted, that this final question is addressed more thoroughly in Chapter 5.
4.1 Introduction

The literature reviewed at the outset of this thesis suggests that designers can expect to be increasingly designing for people who are different from themselves. It also suggests that while many user research tools and methods are available to designers, few can be used to gain a quick and broad understanding of a target user group. However, the literature does not make clear which tools and methods are in widespread use in industry.

In order to understand which tools and methods are used in professional design and to assess the level of importance the design industry places on understanding users, a series of interviews were conducted on user research. The interviews, which involved professional designers, user researchers and an ergonomist, were also used to discover what user information designers considered missing from the design process. The interviews took place between December 2007 and February 2008.

4.2 Aim

The aim of the interviews was to learn of designers’ thoughts with regards to both user understanding and user research techniques, and to discover what user information designers considered missing from the design process.
4.3 Method

4.3.1 Participants

Ten participants were interviewed. All, apart from one, were drawn from design consultancies that appear on an online list called the Directory of Design Consultants (European Design Innovations, 2007). The exception was an ergonomist who had recently moved into academia after spending several years in industry. The participants were selected from a broad range of design specialisations including consumer product design, medical device design and automotive design. They included company directors, managers and employees. All participants worked in the United Kingdom and were aged from 21 to over 51. Nine of the participants were male; one was female. (For more information on the participants, see Appendix A). The participants were approached by email and those who agreed to participate were sent a pre-interview information pack (see Section 4.3.2 below). All interviews took place at the participant’s place of work.

4.3.2 The pre-interview information pack

Prior to being interviewed, each participant was sent a pre-interview information pack (see Figure 4.1 and Appendix B). The pack contained a number of items. The first was a covering letter; this was included to inform the design professionals of the purpose of the research and to explain to them how the information they offered would be used and when any personal details would be destroyed. The second was a business card. This card displayed the author’s telephone number, fax number and email address. It was included to ensure that the design professionals had multiple ways in which they could contact the author if they had any questions or concerns. The business card also showed the address of the university at which the author was a student. This gave the design professionals a point of contact if they were unhappy with the way in which their interviews were conducted.

The pack also included a consent form and a personal details form. The former was included to ensure that the design professionals understood, and were comfortable with, what was being asked of them. The form explained that their participation was voluntary and that they could withdraw at any time without giving a reason. The form was also used to confirm that the design professionals had given their permission for the author to audio-tape the interviews. This permission was sought for ethical reasons
and to ensure the integrity of the research community was upheld. The personal details form was included to collect background information on the interviewees. Only details directly relevant to the study were collected. These details included each interviewee’s name, age (defined by age group), sex, job title, work experience (in years) and specialism and the name and size of the company where he/she worked.

![Figure 4.1 The pre-interview information pack](image)

A3 leaflet (folded) and interview postcards

Five postcards were also enclosed in the pre-interview information pack. Each postcard showed a cartoon of a user on one side (to inject a bit of fun into the pack) and a question that was to be asked in the interview on the other. Postcards were used as, in addition to being robust, they are small and portable. This allows them to be slipped into a bag or to be easily looked at while travelling on public transport. Questions were provided in advance of interviews so the design professionals knew what topics would be covered at the meeting. This gave them time to prepare their thoughts, or to contact the author if they felt uncomfortable discussing such matters and did not want to be interviewed.

In addition, the pack contained an A3 poster in the style of a storyboard, created as a focus point to encourage discussion in the interviews (this poster is mentioned in Section 3.4.2.1). The storyboard showed a designer using the resource (which was depicted as a website) to search for information on users. After inputting a number of keywords into the resource the designer was presented with various details about his
target user. A copy of the poster can be found in Appendix B. The poster was included in the pack to give the design professionals a rough idea of what a ‘user resource’ might be like and to give them something to think about prior to their interviews.

Finally, the pack contained a jigsaw puzzle. It was included to arouse the designers’ interest and to act as a visual metaphor for the research topic. The jigsaw could be assembled in two ways: one using an extra piece than the other. When assembled, the two arrangements showed pictures of different people. The jigsaw was sent to the interviewees in the arrangement that used the fewer pieces. The extra piece was enclosed in the pack together with the words: ‘An extra piece of information can entirely change one’s view of the user’. (See Appendix B for a picture of the two arrangements).

It should be emphasised that the pack was created to inform and to allow designers time to think about the topics that would be discussed in their interviews. It was not created to collect data, apart from the interviewees’ personal details. As such, no pens, note paper, diaries, cameras or audio recording devices were enclosed.

The pack produced by the author was well received. It was observed that everyone had opened the pack prior to their interview and several participants had written notes on the materials provided, although there was no request to do so.

4.3.3 The interview process and questions

The author, having worked in design and design-related fields, was aware that the amount of user research undertaken by designers varied greatly between consultancies. To accommodate this, the interview questions were constructed so that they could be answered by all interviewees regardless of the amount of user research they usually carried out.

The interviews were conducted in an informal manner; they were all at least 45 minutes long. Participants were encouraged to elaborate on their answers and were asked to give examples where appropriate. To ensure each interview progressed logically, an ‘interview outline’ (Andrews, 2005) was followed (see Appendix C).
Before the interviews took place, the intended questions were piloted with two practising designers. This was done to make sure that the questions were clear and easy to understand. A number of minor changes were made to the original questions to ease comprehension.

The final questions used in the interviews (see Appendix C) were created with a certain amount of overlap because questions structured in this manner tend to facilitate broad discussions. Participants can fully discuss topics and deviate somewhat from the original question as the interviewer can both easily and naturally revisit the question if important issues have been missed. This technique is used at Microsoft and is explained in more detail by Andrews (2005). The questions covered five areas.

The first question looked at the importance the participants placed on understanding users. This was explored as it was recognised that if designers considered that understanding users was of limited importance, then supplying them with more user information might not, at this time, be an effective way to help them improve products for people. The question was also used by the author to find out how much user information, if any, the participants received from their clients and whether they thought that this information was satisfactory in quality and quantity.

The second question focused on the participants' thoughts with regards to the user research tools and methods presently available to them. This area was investigated as the author wanted to find out whether the participants believed that these tools and methods brought benefits to the design process. In addition, the author wanted to find out what the participants thought the strengths and weakness of these tools and methods were, as it was felt that this information would be valuable when creating the resource.

The third question was aimed at discovering how the participants ensured that their designs addressed the needs and desires of users. This area was explored as the author wanted to ascertain which tools and methods, if any, were actually used in industry and why these tools and methods were chosen above others. This information was considered important to guide the development of the resource.

The fourth question asked participants what user information they thought was missing from the design process. This question was asked as the author wanted to know what additional user information designers wanted. The author also wanted to know the
extent of the shortfall in existing user information that as this could have a bearing on
the shape of the resource.

The final question asked participants whether they would welcome a tool that would
enable them to see into the lives and worlds of their users. This question was asked as
the author wanted to find out whether a resource containing a broad range of
information about users, if created, would be appreciated by designers. When this
question was asked a copy of the A3 poster that came with the pre-interview
information pack was shown. Participants were told that the resource illustrated in the
poster had been created solely to stimulate discussion and that every aspect of it,
including its format, could be changed. That said, the resource did show information
that the literature suggested might be potentially useful to designers, so the author
asked designers whether this was the case.

4.4 Results and discussion

In this section the findings of the interviews are discussed. It should be noted that in
these discussions the terms ‘large consultancy’ and ‘small consultancy’ have been
used. The term ‘large consultancy’ has been used to refer to the consultancies that had
15 members of staff or more and the term ‘small consultancy’ has been used to refer to
the consultancies that 14 members of staff or less. These terms have been created by
the author.

4.4.1 The importance placed on understanding users

Apart from one participant, all those interviewed commented that it was essential to
have a good understanding of users. A typical comment was:

“It’s very important, essential for most products as they [users] are the ones who are
going to interact with them.”

Participant 10

The participant who did not think that it was essential to have a good understanding of
users was Participant 3. He thought that often only a basic understanding was
required, although he did add that it was easy for designers to make incorrect
assumptions if users were not fully understood. However, while there was a near
unanimous agreement that a good understanding of users was important, some participants indicated that they often worked with very little user information. When one participant from a small consultancy was asked to remark on the information provided by his clients, he stated:

“I’ve had some awful briefs, many said over the phone in about two minutes.”

Participant 7

The participants who commented that they often worked with very little, or no, user information all worked in small consultancies. Generally their clients provided the majority of information used in the design process; if user information was not provided, they either designed without it or undertook a ‘quick and dirty’ user study themselves, such as glancing at users on Flickr or YouTube. Most participants indicated that they would not choose to work in such a manner but did so because their clients were unwilling to invest in user research. They commented that clients were either sceptical of the benefits of user research or deemed it too time-consuming and expensive.

When questioned as to whether it was possible to design intuitively, most participants that it was, but that it was undesirable. It was generally agreed that intuition had a place in the design process but that user information should also be used to ensure the design process remained user-focused. Participant 6 remarked:

“The problem with trying to design using intuition alone is that you end up designing for yourself or the small group around you: your friends, relations and the workforce.”

Participant 6

4.4.2 Participants’ thoughts on user research tools and methods

All those interviewed believed that user research brought benefits to the design process. One participant, who worked in a consultancy that specialised in the design of medical devices, asserted:

“I think that they [user research tools and methods] are not just beneficial but are important and crucial. In the medical device sector user-centred design isn’t something that you can consider, you must do it.”

Participant 8
The participants who worked in large consultancies remarked that some clients spent considerable time and money on user research. They stated that sometimes such research spanned several years and cost tens of thousands of pounds. Meanwhile, participants who worked in small constancies typically claimed that the majority of their clients did not have the time or budget for user research. A characteristic statement was:

“Deadlines are very tight; you’ll get a client calling you on Wednesday wanting a series of design concepts by the end of the week. This is happening more and more.”

Participant 7

Nevertheless all participants, regardless of the size of consultancy they worked for, considered user research beneficial and stated that they wanted to employ it more. Furthermore, although some participants of small consultancies indicated that many of their clients were more interested in market research than user research, comments were made that suggested this was changing:

“Research is something we are trying to do more of. The market has been changing in the last few years. When I talk to potential new clients, more and more ask what our user research capabilities are.”

Participant 3

While participants saw user research as beneficial, some did mention that certain user research tools and methods had weaknesses. Perhaps the most censured were focus groups which were criticised for not necessarily yielding reliable information on what users thought or actually did. Participant 1 recalled a focus group at which he was present. He stated that the focus group was going well until the alpha male of the group gave his opinion whereupon both the atmosphere and direction of the discussions changed. He said:

“People changed their opinions so radically that you had to question how reliable the information was.”

Participant 1

Another participant, Participant 2, also criticised focus groups. Discussing focus groups set up to discuss new product ideas, he explained that most people without a design background found it hard to imagine something that did not exist and, as a
consequence, talked about products they were familiar with instead of envisioning something new.

4.4.3 Techniques used to ensure users’ needs and desires are addressed

The interview findings suggest that large consultancies are undertaking more user research than small consultancies and they are placing a greater emphasis on user knowledge in the design process. Indeed, of the large consultancies contacted, all had research teams that collected user information firsthand; whereas the small consultancies chiefly relied on user information supplied by the client and/or whatever resources happened to be available such as online information and literature.

Anthropometric data were found to be in use in all consultancies; and so was visiting websites such as YouTube, Flickr, Wikipedia and Amazon to learn about users and to read reviews about products. Self testing and using colleagues/friends for usability trials was also popular, especially in smaller consultancies. However, it was evident that such approaches were often employed informally and without scientific rigour. For example, Participant 7 stated that he used anthropometric data but was neither sure of its origins nor how old it was and Participant 5 acknowledged that he often self assessed products for fit but was unaware of how anthropometrically representative he was.

Other tools and methods used to ensure designs met the needs and desires of users included immersive experiences, props, brainstorming, focus groups and the production of prototypes to elicit user feedback. However, it should be noted that focus groups received so many negative comments that the author feels the technique was probably in decline or could soon be in decline.

Observation and interviews were also used. However, both methods were only routinely used in the large consultancies. In the small consultancies the methods were seldom used, if at all. The reasons participants gave for this was either a lack of resources in terms of time and money or a lack of belief by clients that the methods brought commercial benefits. A further method used in large consultancies was video ethnography. Participant 1 was a strong advocate of this, believing it yielded rich data and offered an engaging visual format. Discussing the benefits of video he stated:
“Whenever I do anything that I present to designers, the stuff they are most interested in is video”… “Everyone gets really excited by video; everyone sees different things in the same three minutes. I think video is a really powerful tool.”

Participant 1

Participant 9 concurred saying:

“Video is always going to be better as a stimulus to design than written stuff… once you have seen something you can’t really deny that you have seen it.”

Participant 9

The main tool used by some participants for research was the Internet. They used it because it allowed them to conduct research swiftly and economically and contained a wide range of information, much of which was up to date. However, several participants mentioned that using the Internet for user information had shortcomings. Participant 1, for example, stated that it can be difficult to know what information is reliable and Participant 9 pointed out that it was not always easy to find relevant information.

4.4.4 Additional information wanted in the design process

When the participants were asked what additional user information they would like while designing, they offered a variety responses ranging from an increase in easily accessible and understandable anthropometric data to information on users’ latent needs. This variety indicated that some user information which designers would like to have is difficult to obtain, unavailable, incomplete or provided in the wrong format.

Many participants responded that they desired more information on users' lifestyles. Participant 1 said:

“Our clients come to us with ages, regions and demographics but nothing lifestyle orientated.”

Participant 1

The participants who developed medical products and products for people with disabilities stated that they would like more information on medical conditions, treatment regimes and the way progressive conditions change over time. Participant 10, an ergonomist who specialised in inclusive design, also asked for
statistical information with regard to proportion of different populations affected by major disabilities.

Statistical information was also requested by Participant 4; however, he was more interested in market related information than user related information. He said:

“I think I would like to have access to statistical data on market sizes. How many users are there out there? What’s the market size? How many units are you likely to sell to these people? This sort of information dictates manufacturing processes, the financial risk. That’s the bottom line.”

Participant 4

Also considered desirable were emotional data, information on brands, information on research strategies and the ability to know users’ opinions on initial product ideas.

Participant 5, who stated that his consultancy did not really conduct user research, commented:

“It would be quite cool to get a random choice of different types of people in a room and sit them down and say: “this is the product, what do you think about it when you hold it, touch it?” – I think it would be very beneficial to get some feedback from users.”

Participant 5

4.4.5 The desire for a tool that looks into the lives and worlds of users

The final question asked participants whether they would welcome a tool that would enable them to see into the lives and worlds of their users. All the participants, regardless of the degree of user research their consultancies carried out, stated that they would. Participant 6, commenting on the mock-up resource illustrated in the A3 poster, stated:

“I certainly think that if there was something like this available it would assist in the [design] process.”

Participant 6
Another participant stated:

“I’d love to be able to use the tool now and be able to feed information back into it to make it more and more useful.”

Participant 7

A further participant said:

“It’s a good idea [the resource]. I think it’s the sort of tool we would use. To be honest, when we do research now, it is virtually all Internet based.”

Participant 2

Some participants indicated the ability to take virtual tours around users’ homes would be particularly useful. Participant 1 commented that he toured users’ homes while undertaking video ethnography and that he found the idea of doing the same online exciting. Participants 5 also liked the idea and remarked that it would be good if a designer could ‘click’ on certain products seen in the tour and read users’ comments on them.

A number of participants stated that the ability to look into the lives of people of different ethnic cultures would be beneficial. Participant 8 was one of these. He stated that if he were asked to design a product for shanty town dwellers he would find it advantageous to be able to ‘see’ into their lives. However one participant, Participant 4, questioned the need to understand other ethnic cultures. He stated that he could not envisage himself regularly designing for people outside his ethnic culture and remarked that if he were asked to design a product for the Taiwanese market he would hire a Chinese designer.

The participants reacted positively both to the inclusion of videos of people carrying out everyday activities and to being able to witness users’ frustrations and delights when using certain products. The inclusion of anthropometric data also received a positive response. However, Participant 10 questioned the usefulness of knowing measurements of individual users as most products are designed for mass use.

Many participants offered suggestions as to how the resource could be improved. Participant 10 suggested that the resource would benefit from having pages explaining the fundamentals of anthropometry, such as how anthropometric data should be
collected and how distribution curves work. He also suggested that the resource could contain a number of pages on ageing and disability. Participant 7 agreed, stating:

“With disabilities, it would ideal to have graphs and charts that give you information on the types of disabilities that people have when they get to a certain age.”

Participant 7

Participant 9 also spoke about ageing and disability; however, unlike Participant 7, he suggested using video to inform designers:

“What would be good would be to have some videos, and this is where it gets really ethically tricky, that allow you to see a small child using a mobile phone versus an elderly person using a mobile phone versus an elderly person with arthritis using a mobile phone. Instead of focusing on numerical data, designers could see the differences. It would make designers care about product ergonomics.”

Participant 9

Participant 1 thought the resource would benefit from the inclusion of strategies that a novice researcher could use in order to carry out user research. He also showed interest, along with Participant 5, in having more brand related information. Another participant, Participant 2, commented that the resource could have information on peer group pressure and the effects of the media on what people buy; however, the participant did not make any suggestions as to how these topics could be incorporated.

Another topic discussed was how such a resource could be set up and maintained. Several participants who were less familiar with user research wondered whether it might be possible to encourage people to create, upload and maintain their own data pages, in a similar manner to Wikipedia and social networking websites. Participant 4 said:

“I think you’d want it to work like Wikipedia, with people adding to it all the time…[pointing at the illustration of the mock-up resource in the A3 poster] You wouldn’t be able to centrally control something like this. And then you are going to be dictating your own prejudices and ideas on it anyway. You would be far better letting it organically grow.”

Participant 4
Participant 1, who spent the majority of his time as a user researcher, disagreed. He thought such a website would spin out of control; he also questioned whether it would be possible to police the quality of the information on the resource. Certainly the literature suggests user generated websites can be difficult to run; Wikipedia encounters vandalism and is open to users uploading spurious information (Wikipedia, 2013) and Flickr is constantly bombarded by unprincipled users trying to upload indecent images (Boyd, 2007). Another issue with users recording themselves is that they do not always film the parts of their lives/activities that designers are interested in because they do not believe these are relevant (Salari, 2008c).

Furthermore, while the social networking websites Facebook and MySpace invite users to upload personal information, information that may be perceived as invaluable to many businesses, it is notable that neither organisation sells this information. The reason for this seems to be that users who post personal information do not want it being used or handled by others, as seen when Facebook introduced new features that automatically informed pre-approved friends of changes made by a user to his/her profile. On this occasion it was reported that: “Hundreds of thousands of Facebook’s most avid users turned on the site, horrified what they viewed as an invasion of privacy” (Lacy, 2006). Interestingly, the users criticised the website’s move even though their pre-approved friends could view the changes anyway. Facebook responded by increasing privacy protections.

A further concern with social websites is that they do not attract every culture equally. In America Facebook generally attracts white and Asian teenagers whereas MySpace tends to attract black and Latino teenagers (Boyd, 2011). Boyd (2007) explains that this division occurs due to contextual cues contained in websites; she also argues that regardless of how sophisticated a piece of software is, no social website can grow to support all cultures. Obviously the author of this thesis recognises that he is not developing a social website, however there is the danger that if the resource relies on individuals uploading their own data, the website might only attract individuals of a certain socio-economic group. This outcome would have an unfavourable impact on the resource as it would mean the resource would fail to offer information on a diverse range of individuals. Furthermore, by requiring users to record themselves, those who do not have recording equipment, computer knowledge or Internet access would be prevented from submitting information.
Another issue raised by Participants 2 and 10 was that the information in the resource would date. Participant 2, discussing the matter, wondered whether links to other websites would help keep information current. He commented:

“What if you were to design it [the resource] in such a way that when you click on a link to a Taiwanese person, it takes you to a whole series of links to Taiwanese websites that give you an insight into what they buy, what they do, what films they are looking at, that sort of stuff? So at least it’s in real time as it would be updated all the time.”

Participant 2

Participant 9, thinking along similar lines to Participant 2, suggested that a design related search engine could be developed instead of a website. He commented that much of the information wanted by designers probably existed online already but that precision search tools do not exist to find it.

The author recognises that certain information in the resource would date and that updating would be an issue. However, the principal aim of the resource is to give designers a broad and quick understanding of what drives users to make certain decisions and what delights/frustrates them, these factors have greater longevity. Furthermore, a search engine (or website that principally uses external links) cannot itself guarantee that the information it is linked to is current, relevant, accurate, or complete. Indeed, the most useful linked information could be written in a language not understood by those viewing it.

In addition to a search engine, Participant 9 also suggested two other forms that the resource could take. One was an Internet portal where designers could communicate directly to users, and the other was a series of DVD videos to inform designers of what life is like in key geographical areas.

Overall, participants liked the mock-up resource and saw it as a good starting point for research. That said, Participant 4, wondered whether some designers might misuse it by focusing too much on the opinions or actions of one individual. Furthermore, the way in which the resource appeared to be viewed by some participants could give rise to cause for concern. Although not expressly stated, the author felt that some participants from small consultancies saw the resource as a practical solution to the problem of obtaining user information when designing for clients that do not want to
pay for user research. In other words, they seemed to see the resource as an inexpensive stand in for engaging with users directly. This was in contrast with the other participants who clearly saw the resource as an additional information stream. This former view of the resource is somewhat disconcerting as it suggests that there is the possibility that some designers might start to see the resource as an alternative to meeting users even when meeting users is easily possible. It is possible that Participant 6, who did have one to one contact with users, might have had this in mind when he said:

“It would be useful to have something to hand that would give us more [user] information because it can take a large amount of time and effort, and a large part of the budget to get accurate information.”

Participant 6

As it is unrealistic to expect any resource to equal the rich information obtained through user contact, it is important that the author’s resource should not be seen as a substitute for direct contact. Instead it should be seen as a foundation for research and an advocate of user engagement.

4.5 Conclusions

The interviews were conducted to learn of designers’ thoughts with regards to both user understanding and user research techniques, and to discover what additional user information was needed in the design process. A number of conclusions were drawn from the interviews: some of these supported the resource’s creation, while others offered direction as to how the resource should be developed.

4.5.1 Designers value user information but some are unable to conduct much research

All participants recognised the importance of understanding users. The most widely used techniques were ‘user absent’ tools/methods and ‘web tools’ (see Section 2.7). However, although participants valued user research, many from small consultancies often designed with little, or no, user information due to a lack of time and money. Consequently, the resource needed to be quick and economical for designers to use. It was also clear that some clients of small consultancies were sceptical of the benefits of
user research and often did not supply designers with the kinds of user information they need. Ideally, therefore, the resource needed to enable clients to appreciate the benefits of user research and enable them to see the rich, broad user information that designers require when designing.

4.5.2 Designers believe a resource that enables them to look into users’ lives would be beneficial to the design process

The design professionals were excited by the resource shown in the A3 poster. They spoke positively of being able to explore cultures and environments dissimilar to their own and thought that the virtual tours around users’ homes and the videos showing people’s everyday lives would be beneficial to the design process. They also enthused about the information on ethnic cultures and anthropometrics. However, there were concerns that some designers would focus too much on a single user’s opinion or mode of behaviour, and that the information in the resource would date if not refreshed regularly. It is clear that these issues needed to be considered further.

4.5.3 Designers want a mix of user information

It was evident from the comments made in the interviews that participants were interested in having both personal and general user information. For example with regard to medical conditions, they were interested in learning how people personally managed their treatment regimes and how medical conditions developed over time. It was also evident that participants wanted information on a wide range of topics such as research strategies, emotional data, and brands. Therefore, it followed that in addition to containing personal profiles of individuals, the resource needed to contain generic user related information.

4.5.4 Designers want user information that is reliable

The findings of the interviews revealed two differing views on how the information contained in the resource should be collected and managed. One point of view was that information should be generated, uploaded and maintained by users; the other point of view was that information should be collected and controlled by resource administrators. However, a number of participants stated that the problem with online user information and methods such as focus groups is that they do not always provide
reliable information. Since the aim of the resource was to help designers understand their users, the author felt it was important that all the information in it was reliable. As user generated content is not always reliable (see Chapter 2), he decided that users would not be permitted to upload their own information.

4.5.5 The Internet would be a good platform for the resource

It was clear from the interviews that designers were comfortable using the Internet. Many stated that they often turned to it to find information on users. Since the Internet was already widely used as a design research tool, it was concluded that it would be a good platform for the resource. Using the Internet would also mean the resource could be easily updated and additional features, such as forums, added later if so desired. Furthermore, an Internet-based resource, unlike a paper-based resource, could support video: a medium stated as ideal to communicate rich descriptive user information by a number of the participants interviewed.

4.6 Summing up and looking ahead

The literature reviewed in Chapter 2 revealed that designers need to understand many aspects of users’ lives and have an appreciation of their surroundings if they are to develop appropriate products for people. It also found that they work under immense time pressure. However, while the literature identified a large number of user research tools and methods, none were found that offered designers a broad but immediate overview of the lives and worlds of users.

The interviews described in this chapter revealed that although designers valued user research many worked with little user information due to a lack of time and money. It established that designers wanted two different kinds of user information. The first was information on specific individuals such as a person’s lifestyle, and the second was information on general user related topics such as how some diseases progress over time. It also ascertained that the resource should be Internet based and, where possible, principally contain information in the form of video.

The next phase of the research was to address the third research question: ‘How do designers want such information presented?’ This was accomplished with the aid of a focus group.
5.1 Introduction

This chapter reports on a focus group conducted to determine how the user information should be presented in the resource so that it was easy to find and presented an appropriate format for the design process. The focus group also collected opinions on how the resource should function. It took place on 19th February 2009.

The findings of the focus group were used, in conjunction with the information sought by the design professionals, to create a design specification for the resource. This specification is discussed and the end of this chapter.

5.2 Aim

The aim of the focus group was to gather opinions on how the user information should be presented in the resource and how the resource should function.

5.3 Method

5.3.1 The group and its members

The focus group was moderated by the author and conducted with five members drawn from the Department of Design and Technology at Loughborough University. The members were aged between 27 and 38; three of them were academic staff and the remainder were research students (see Appendix E for more details). They were
chosen as they had experience both in working in design and using the Internet and thus were considered information rich (Patton, 2002).

Everyone who participated in the focus group was male. Although this was not the original intention (it was hoped that at least one female would attend) the focus group was still conducted. This was done as the known differences that exist between the ways in which males and females interact with websites (for examples see Saunders et al., 2009) are relatively small and do not prevent either sex from navigating or finding online information.

5.3.2 The number of groups

There are no firm rules as to how many focus groups should be conducted in a research project (Langford and McDonagh, 2003). The number typically depends on the topic(s) being explored, the location of the members, the range of responses being sought and the available budget (Krueger and Casey, 2009; Litosseliti, 2003).

Fern (2001) argues that focus groups centring on thought elicitation (rather than theory confirmation) may require only one group. It was thus decided that a single focus group would be conducted with the possibility of arranging others if questions remained unanswered or further insight was needed. Ultimately, enough insights of a reasonable quality were generated in the first focus group to eliminate the need for others.

5.3.3 The procedure

The proceedings began with an explanation of the background of the project, followed by a short demonstration of the resource using a modified version of the mock-up (described below). Members were told that the mock-up was a starting point for discussions and that every aspect of it was open to debate. Following this, four discussion topics were introduced and discussed. These were: information categorisation, information format, intangible information (i.e. information that is somewhat difficult to show, such as ethics) and resource functionality. During the discussions mild digressions were permitted if the moderator deemed them beneficial. The topics for discussion were introduced with the help of videos. One was also introduced with the aid of a diagram. (These visual aids are referred to in Section 5.3.5.
along with the reasons each topic was discussed; images of them can be found together with the transcript of the focus group in Appendix F).

It should be noted that in this chapter each focus group member is referred to by number (e.g. Member 1). This system has been used to help the reader relate to comments made by various members. Numbers are also used in the transcript of the focus group, which can be found in Appendix F.

5.3.4 The new mock-up

Two sizeable modifications were made to the original mock-up (see the A3 poster in Appendix B for the original mock-up) prior to it being shown to the focus group. These modifications were the addition of a new section and a restructuring of the categorisation system used to organise the information for each individual on the resource. Both modifications are discussed below.

The addition of a new section titled ‘Information Pages’

The main modification to the original mock-up was the addition of a new section created to contain general user related information, such as facts on population ageing and information on the different forms of colour-blindness. This was done as several design professionals in the interviews said that they thought this kind of information would be useful. It was decided that this new section would be called Information Pages and the original section, containing profiles of individuals, would be called Individuals’ Lives (see Figure 5.1).
Figure 5.1 The two sections of the resource (top) An Information Page (bottom) An Individuals’ Lives page

The modified Individuals’ Lives categorisation system

The other sizeable modification was a restructuring of the hierarchical categorisation system used for each individual on the resource. This modification is perhaps best explained as a collection of three smaller alterations. Below is an explanation of each alteration, together with the reasons it was made. An illustration of the original and new categorisation systems can be seen in Figure 5.2.
(i) Renaming the *Interests* category

The *Interests* category was renamed *Activities & interests* to ensure this category was not ‘empty’ for some individuals. For instance, some individuals, such as fulltime childminders, might not have any discernable interests and thus would not have any information in a category titled *Interests*. By renaming the category *Activities & interests* this occurrence is eliminated, as any undertaking, including childminding, can be classed as an activity.

The author felt there was no advantage in the resource having categories which failed to provide designers with any information on users (i.e. empty categories). He also felt such categories might be confusing, for example, designers might question whether they had set up the resource correctly or whether information was missing. Arguably, instead of ensuring all the categories contained information, another approach could have been not to show categories that were empty. However, it was felt that this might also cause usability problems, as individuals on the resource would have a different number of top level categories. Nielsen and Loranger (2006) censure such inconsistencies as they typically force web users to shift their attention from using a site to working out how to use it.

(ii) Renaming the *Possessions* category

The *Possessions* category was renamed *Products* as it was felt that an individual who lived in shared accommodation might frequently use products that were not his/her own.
(iii) Reorganising information into new categories and sub categories

The third alteration involved the reorganisation of the information in two categories into other categories/sub-categories. The two categories reorganised were Tasks & abilities and Dimensions. The information in the ‘Tasks’ part of Tasks & abilities became a new sub-category\(^7\) of the newly formed Activities & interests, and the ‘abilities’ part was merged with Dimensions to form a new sub-category\(^8\) of the category Details. These changes were implemented because it was logical to incorporate the ‘Tasks’ into the newly created Activities & interests category.

5.3.5 The topics

This section discusses the four focus group topics. It includes an explanation of the background of each topic along with the reason it was discussed. Information is also given on the discussion aids used to introduce each topic.

Information categorisation

This topic was discussed first to help members familiarise themselves with the type of content found in the Individuals’ Lives section of the resource. Since many of the other topics related to this, it meant the author could immediately clarify any confusion that might arise. It was also hoped that the more members became familiar with the resource, the more suggestions they might have in later topics as to how it might be used in the design process.

The topic involved the discussion of the categorisation system used to organise the information on each individual within the resource, and the potential problem of category overlap. In the focus group, these issues were discussed together because they were interrelated. However, to aid clarity, they have been considered separately here.

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\(^7\) The new sub-category was called Tasks.

\(^8\) The new sub-category was called Human characteristics.
(i) The Individuals’ Lives categorisation system

Nielsen (2000a) asserts that most web users are search dominant: that is they prefer to find content by searching rather than browsing. However, although it would have been possible to design the resource with just a search engine, it was felt that this would be inappropriate for a resource intended to broaden user understanding, since it would not encourage designers to search for topics of which they knew little or nothing about. For example, it seems improbable that a designer would input the term ‘Japanese cosplay’\(^9\) into a search engine if he/she were unaware of it.

Discovering chance information can broaden one’s knowledge and help quash stereotypes by overturning assumptions. One way of increasing the likelihood of web users seeing such information is to use hierarchical categorisation systems such as category menus or category tab sets. Web users use these systems to visit clusters of related information in the hope that they will find what they are looking for. During this process they typically see other content that increases their understanding and gives context to the information for which they are searching. For example, a web user interested in a certain camera might use a category menu that is structured by brand on a photography website. Clicking on the desired brand would present the web user with a list of cameras including the one he/she was interested in. Here the web user could learn about the desired camera and, even though the information had not been purposely sought, learn where the desired camera fits in the brand’s product range as well as learning of other cameras in that brand.

Having experimented for some time, it was clear that the original plan, which was to ask members to devise a categorisation system for the resource, was unrealistic. The task was too involved to be both understood and accomplished in the time made available to the focus group. It was therefore decided that a potential categorisation system would be devised in advance of the meeting and presented for comment when the meeting was held\(^10\). It was felt that this approach was practicable and would still

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\(^9\) Japanese cosplay is a form of performance art where individuals dress up as specific characters. The characters portrayed are fictional and typically drawn from Japanese comic books and fantasy movies.

\(^10\) It should be noted that the categorisation system presented to the focus group only showed top level categories: sub-categories were not shown. Sub-categories were not shown as they were likely to be, in the main, different for each individual on the resource. For example, only individuals who played badminton would have a badminton sub-category. When sub-categories needed to be discussed they were introduced verbally by the author.
give members the opportunity to discuss how information in the resource should be divided. (The categorisation system devised can be seen in Figure 5.2).

(ii) Category overlap

Category overlap occurs when categories are not mutually exclusive. Strictly speaking, it cannot occur in a 'pure' hierarchy, as each entity in the structure only belongs to one category/sub-category. However, as Morville and Rosenfeld (2007) explain, large information systems are never ‘pure’ hierarchies. This is because when information systems grow, their categorisation systems need to use an increasingly large number of compound terms to increase precision, and this in turn forces polyhierarchy. Hence, even if the prototype resource were structured as a ‘pure’ hierarchy, this hierarchy would breakdown at some point when the information in the resource was increased.

Arguably, category overlap could be managed in the resource by allowing all non-exclusive entities to be placed in more than one category. However, although this approach would have benefits, for example it would increase the likelihood of such entities being seen, the literature suggests that the categorisation system would lose value if the amount of cross-listing grew large (Morville and Rosenfeld, 2007). Furthermore, it is possible that some designers might be annoyed by the amount of information repeated in the resource as it is likely that repetition would be high. One reason for the high level of repetition is that most activities involve products, and these products need to be kept somewhere. For example, many people who cycle, own a bicycle which they keep on their property. Thus if cross-listing were allowed, these people would have the same information relating to their bicycle in three of the suggested categories: Living space, Activities & interests, and Products. It was thus felt that unless designers demanded cross-listing it should be avoided.

A video was made to introduce the issue of category overlap to the focus group members. The video showed a woman using a pair of hair straighteners in her kitchen. Underneath were the words: “Which category should this information be placed in: Living space, Activities & Interests or Products – or all three?” It was explained to the focus group members that the information could be placed in Living space because the woman was in the kitchen, Activities & interests because the woman was straightening her hair, and Products because the hair straighteners were a product.
Information format

It was decided that information in the resource should be communicated visually wherever possible. This decision was made as both the design professionals in the interviews (see Chapter 4) and researchers in the literature (e.g. Taylor et al., 2002) think that it is the most appropriate way for designers to learn about users.

With this decided, questions arose with regards to which visual formats to use in the resource. For example, should the virtual tours around users’ homes use photographs or videos; and if videos, should they be in the form of a guided tour or a photographic pan? As there were a number of areas to be discussed, the topic was divided into five sections. It was expected that some of these sections would be covered quickly and others would take longer to discuss. The five sections were: typical day videos, virtual tours, presenting and answering questions, thinking aloud and languages, and music and visual effects. The following paragraphs address each section in turn.

(i) Typical day videos

One of the techniques IDEO use to understand users is to follow them throughout a typical day to discover what they do and where they do it (Moggridge, 2007). When the first mock-up was created, it was decided that it would have ‘typical day’ videos for every individual on the resource. It was thought that these videos would give designers a quick insight into each individual’s life. However, the author did not know how long designers would like these videos to be or the manner in which they would like the information presented.

When Nielsen wrote his book ‘Designing Web Usability’ in 2000, he suggested that all online videos should be less than a minute long as the act of sitting still conflicted with the basic web user experience of being in control and moving around. However, in a more recent book both he and his co-author Pernice, state that web users are changing: with some even choosing to watch TV online during their usability test sessions. Under the heading ‘The Evolving Web User’ they now say: “It is impressive to see how smoothly users can switch gears from pull media such as the Web, where they are in control and clicking furiously, to push media, where they sit back and watch content streaming to them once they have chosen what video to watch.” (Nielsen and Pernice, 2010, p.322).
As web users’ behavioural patterns are still evolving with respect to watching video online, it was decided that a sample typical day video would be made and presented to the focus group. This was done so that members could see the type of information that needed to be shown, and thus make informed decisions with regard to video length and content presentation.

The sample video was shown in its entirety; it was just under six minutes long. It showed a typical day of a British man who worked as an installer of wood burning stoves. It showed his day from the moment he got up to when he went to bed.

(ii) Virtual tours

The aspect of the resource that received the most positive comments in the interviews with designers was the virtual tours around users’ homes. Designers liked the idea of being able to see into users’ rooms/areas and discover the kind of items they surrounded themselves with.

After much experimentation, the author developed three different formats in which the tour could be presented. These were: a guided tour conducted by the individual on the resource, a 360° pan of the room/area, and an interactive photo montage where the designer could ‘click’ on items in the photo to learn more about them. The last format was developed on the recommendation of Participant 3 in the interviews with design professionals (see Chapter 4). However, deciding which one of these formats was the most suitable for the resource proved difficult as each format had its own strengths. Because of this, consideration was given to building the resource with all three formats: allowing the designer to choose the format he/she thought the most appropriate for the task at hand. However, it was recognised that producing all three formats for every room/area on the resource would be very time consuming, so it was decided that an example of all three formats should be made and presented to the focus group for discussion. The author had hoped that these discussions might result in a single solution with the combined strengths of all three formats or that an agreement might be reached as to which format(s) should be used and which disregarded. It was also hoped that some suggestions might be made as to how the guided tours could be improved within the resource.
(iii) Presenting and answering questions

Fulton Suri and Marsh (1997) assert that ergonomics information, in addition to being accurate, needs to be both engaging and usable. However, although much literature discusses techniques designers can use to elicit information from users (e.g. IDEO, 2011), far less information seems to exist with regard to which of these techniques designers find most engaging to watch. For example, with respect to video presentations, the author has found nothing in the literature that indicates whether designers prefer to sit and watch structured question and answer sessions, or watch users talking alone to camera.

In some situations one format is likely to be more informative than another. An example of this might be watching an individual do a task, as opposed to just hearing him/her talking about it. However, if designers choose not to watch certain formats, perhaps because they find them uninspiring, the quality of the information in them is immaterial. With this in mind, it was decided to produce examples of the formats the author intended to use in order to discover if any members of the focus group disliked them. The formats shown were: an informal interview, a structured question and answer session, and a talk (where the individual on the resource just spoke to the camera without an interviewer present). In each case the same individual was filmed talking about going to university on the bus.

(iv) Thinking aloud and languages

In sections of the resource, such as Activities & interests, it was thought likely that some individuals might be performing tasks that could benefit from narration. Since much has been written on ‘thinking aloud’ and its associated merits (e.g. Priede and Farrall, 2010) the author did not want to trigger a debate on this. But the author was interested in finding out whether designers would prefer to read about what an individual did rather than hear him/her speak.

In addition, the author also wanted to discuss the subject of language. In a resource that contained individuals from different nations, it was thought likely that many individuals would speak a different language to the designer. The author was therefore interested to hear opinions as to whether subtitles, dubbing or narration would be preferable in these situations. Furthermore, as English is arguably the lingua franca in
design, the author was also interested to hear what members thought about non native fluent English speakers speaking English.

A video was made to encourage discussion. It showed a Taiwanese male making a cup of coffee using a method he had learned from a Japanese coffee connoisseur. While he carried out this task he was thinking aloud in Mandarin Chinese.

(v) Music and visual effects

Music can help establish an atmosphere quickly. It can define a location, a period, and an ethnicity. It can also elicit emotion. Arguably, music could be used to give designers an immediate sense of the individual on the resource and his/her environment. However, the author personally felt that playing music to ‘set the scene’ or elicit emotions was in most cases inappropriate, as it can mislead, mask information and reinforce stereotypes. Perhaps an example of an occasion when the author felt it might be appropriate would be in a video where an individual is seen composing music. Here, the author could envisage that overlaying a soundtrack of the music being composed might aid designers in their understanding of that individual.

Visual effects can also add to the viewing experience. For example, visual effects can induce tension and suggest what people are thinking. However, like music, the author felt that in most cases using visual effects was inappropriate, except perhaps if it were an effect that compressed time or one which simulated a visual impairment such as tunnel vision.

As the use of music and visual effects could be used in many of the videos in the resource, the author thought it would be prudent to gather opinions as to their possible use. To promote discussion a video was shown. The video showed a traditional Taiwanese wedding and contained added music and visual effects: the added music was traditional Chinese temple music and the visual effects were motion blur and lens distortion. The video was shot and edited by a professional wedding photographer. The author had not changed the footage in any way. The post-production modifications were, according to the photographer, made to make the footage more dramatic and engaging.
Intangible information

Some of the aspects that make us who we are, are intangible: such as our moral standpoint and the values we attach to a brand. By their very nature they cannot be easily captured or presented. However, in the interviews with design professionals (see Chapter 4) several interviewees indicated that they were interested in having more information on such aspects; so a method to record and present them needed to be found.

One method considered was to simply ask users to stand in front of the camera and to record what they said on film. However, web users, unlike television viewers, quickly tire of watching people simply talking to camera (Nielsen and Pernice, 2010). Thus to open a discussion on how it might be best to present such information a video was made. The video was a collection of clips, each showing a different individual discussing a different ‘intangible’ subject to camera. The subjects discussed were: brand loyalty, the environment and animal welfare.

Resource functionality

Nielsen and Loranger (2006) declare that, since the millennium, people no longer find the web interesting in its own right; they now see it as a tool to perform specific tasks which they want to complete quickly (Nielsen, 2008). One factor affecting speed is the way in which a website functions.

In order to encourage discussion on how the resource should function, the author made a video showing a designer using the resource first on his own and then as part of a team. As the video was shown, the question: “How should the resource function to enable designers to effectively accomplish their goals?” was displayed on the screen.

It was recognised, prior to discussions, that members might make suggestions that would be too difficult to incorporate into the resource in the time available. However, these suggestions were still recorded as it was felt that they might help guide the development process.

It was decided that the topic of resource functionality should be discussed last: after members had benefited from maximum exposure to the resource, exposure that would aid understanding of its purpose and content. It was hoped that this familiarity would
lead to a greater number of relevant suggestions as to how the resource should operate and the features it should contain.

5.4 Method of data analysis

The analysis and interpretation of the focus group data started with the author transcribing the audio recording of the meeting into a word processing computer package. During this process the author not only noted what people said but also their intonation, especially on the occasions where it was used to express doubt, convey irony and so on. The author read and re-read what he had written while listening to the audio recording to ensure that he was familiar with the data as a whole.

The author then printed and pre-coded the transcript (see Figure 5.3). The latter, which is recommended by Saldaña (2009), involved underlining, circling and highlighting text that was worthy of attention. The decisions as to what was worthy of attention and what was not was based on the author’s understanding of the topics. This understanding was informed by what the focus group members had said during the meeting, what the design professionals had said in their interviews (see Chapter 4), comments made by researchers in the literature (see Chapter 2) and the author’s experience as a designer. While pre-coding, the author also wrote notes to remind himself of interesting details, ideas for analytical consideration and inferred meanings (i.e. things he had ‘read between the lines’).

Figure 5.3 A section of the transcript showing pre-coding and notes
The author then created a provisional coding frame containing *a priori* codes based on topics discussed in the meeting. He then went through the transcript applying these codes to the members’ comments. Once this was completed, he went through the transcript again attaching descriptive codes, *in vivo* codes and analytic codes to members’ opinions, ideas, explanations and so on.

Next, the codes and the coding frame were subjected to a process of refinement. This refinement involved reading the transcript repeatedly, looking for new insights and patterns while asking questions such as: “Is this code really needed?”, “Can these codes be combined?”, “Is this code a sub-category of another code?” and “Should a new code be created for use here?”. Once the author was content with both the codes and the coding frame (i.e. all the significant comments in the focus group had been coded suitably and all the codes had been categorised appropriately in the coding frame), he printed a new copy of the transcript. This transcript was colour-coded to allow quick and easy identification as to which member said what; for instance, Member 4’s comments were printed on a yellow background. He then read through this transcript and applied the new codes in a manner as shown in Figure 5.4. A full list of the final codes used can be found in Appendix G.

The author then photocopied the transcript and cut up the copies using a pair of scissors so that each coded comment was on a separate piece of paper. He then placed the comments into piles according to their codes. Next the author analysed and compared the comments within each pile to identify patterns, relationships and themes. He did this by looking for agreements/disagreements between members, identifying words/ideas that were frequently repeated, questioning members’ assumptions and looking for anything that indicated a causal relationship, such as a linguistic connector. After this, he rearranged the comments into new piles according to who said what. He then analysed the comments within these new piles using, where applicable, the same

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**Figure 5.4 A coded comment taken from the transcript**

You’d need to be able to search for the persona. You’d need to be able to look for specifics, such as 30 to 40 year old housewives and get a list. On a different thread, another thing that strikes me is that under the category *Living space*, you could have something as simple as a floor plan of each room. They would be very informative.
techniques as before. To ensure that he was not reading of the comments out of context, the author regularly referred to a complete copy of the transcript.

Various factors were taken into consideration when deciding how much weight to give a comment. One such factor, relating to reoccurring comments, was how often the comment was said. Generally speaking, the more often something was said the more weight it was given. That said, some things that were mentioned only once were given more weight than those mentioned several times if they were considered to be highly relevant to the topic being discussed. Conversely, but to a lesser extent, some things that were mentioned the same number of times as others were given less weight if they were not considered to be particularly relevant to the discussion topic. All judgement calls were made by the author based on his knowledge of the subject.

Another factor that was taken into consideration when deciding how much weight to give a comment was specificity: the more detailed and less general a comment the more weight it was given. A further consideration was Intensity of delivery. Comments that were delivered with passion and enthusiasm were given more weight than those that were not. Finally, comments that were offered by several members of the focus group were, in general, given more weight than those that were offered by just one or two members.

5.5 Results and discussion

In this section the results of each topic are discussed together with one general finding. As the moderator allowed members of the focus group to digress slightly during the discussions, information relating to one topic was occasionally talked about in another. For ease of reading, this information has been treated as if it were discussed in the topic it related to.

5.5.1 Information categorisation

The majority of the focus group members seemed content with the four categories shown: Details, Living space, Activities & interests and Products. Member 1 did suggest that there should be an extra category called Culture; however, this suggestion was opposed by Members 4 and 5 who argued that the entire resource was about culture. Member 1 also suggested that if information could be categorised under more
than one heading it should. However, Member 2 and Member 3 challenged this idea. Member 2 argued that if links were employed in the resource this would make information duplication unnecessary, and Member 3 thought that repeatedly seeing the same information while using the resource would be annoying.

When the members were asked whether they could envisage a different system for finding information from that proposed, two other approaches were suggested. The first was to tag the videos and use these tags to create an extensive list of category headings which designers could select, using checkboxes, to see the information they wanted. The second was to allow designers to build bespoke categorisation systems from a large number of selectable categories.

However, both these suggestions were strongly rejected by Members 1 and 3. They thought the better idea was to start with the author’s categories and let the designers ‘drill down’ to find what they wanted. What they particularly disliked about the suggestions was that they all involved the designer being presented with a large number of categories. They thought that trawling through so many choices would be tedious. One of them commented:

“One of the dangers of designers being presented with a page that just asks them to tick stuff would be that they’d miss a lot – like context. You absorb a lot of extra detail when browsing.”

Member 1

Nielsen (2000a) warns that web users can find too many choices demoralising. In his book ‘Designing Web Usability’ he offers the example of the search engine AltaVista which, at the time of the book’s publication, typically displayed a huge array of checkboxes to ‘help’ users refine their searches11. Interestingly, AltaVista no longer uses checkboxes, and neither do three of the four top search providers on the Web: Google, Baidu and Bing (Marketshare, 2010). Furthermore, Yahoo, the one that does, only uses checkboxes so that the web user can limit searches to web pages written in languages he/she can understand. It does not use checkboxes in the creation of the search enquiry process.

11 It should be noted that Nielsen was not discrediting the use of checkboxes per se but suggesting that they should be used with care. This is because when used in large numbers they can overwhelm web users.
For People's Lives to be useful, it would need to contain a broad range of information on a large number of individuals (in addition to a large amount of material on general user related topics). This would mean that the number of categories would be vast. Potentially there could be categories for every kind of activity, every type of product, every sort of accommodation, every nationality etc. It is arguable whether such a system would be either usable or practical. Furthermore, as the member who actually put forward the idea of tagging acknowledged himself (Member 5), the tagged information would still need some form of categorisation system otherwise designers would be unable to find what they needed.

A separate issue concerned the placing of brand related information in the resource. It was explained that the author intended to place the brand information under the Details category. However, there was a consensus amongst members that it should be assigned to the Products category.

### 5.5.2 Information format

(i) **Typical day videos**

Member 5 thought the typical day videos in the resource should be shorter than the six minute sample shown as it would save designers time. He suggested that narration could be used to do this. Other members disagreed. They either thought the videos should be the same length as the sample or longer. One member who had carried out ethnographic studies as part of his work commented:

> “… you don’t really know what people will be looking for. As soon as you start editing things out, you prevent people from discovering things.”

Member 2

Although there was some disagreement over how long the videos should be, there was a consensus that designers should not have to watch a video from start to finish to find the information they were interested in. Several members suggested that a navigable timeline could be used to enable designers to skip information that did not interest them. Although no final agreement was made as to the form of this timeline, it was clear that members thought designers would find such a feature useful.
(ii) Virtual tours

Members of the focus group saw value in all of the three the formats shown: the guided tour, the 360° pan, and the interactive photo montage. One, when asked which he thought the most appropriate, answered:

“… they all offer different information. Good information. It's really difficult to choose, it's really difficult.”

Member 3

Perhaps the format that the focus group members liked the most was the guided tour. However, comments were made that although the format could give designers a feel for the individual on the resource, the individual might not discuss what the designers were interested in.

Member 1 stated that the tours should also include a floor plan. He argued that this would enable designers to quickly understand the size of a space and help them gauge what could go in it.

(iii) Presenting and answering questions

None of the members of the focus group thought that any of the formats shown (i.e. the informal interview, the question and answer session and the talk) were inappropriate. However, it was suggested that the videos could have transcripts so designers could read what an individual said instead of watching the video. It was thought that this would be useful if designers were in a hurry or wanted to know the answer to a specific question.

(iv) Thinking aloud and languages

Members were happy with individuals ‘thinking aloud’ if it added value. However, the idea of individuals speaking just for the sake of speaking was deemed inappropriate.

Subtitles were considered the most suitable method of communicating when there was a language barrier. Indeed, when discussing dubbing, Member 3 stated that he chose not to watch dubbed films as found the mismatch between the words and the lip
movements distracting. He also remarked that he found the added voice(s) devalued the experience of watching as it(they) invariably seemed unnatural and lacked emotion.

Member 5 added that any form of communication by sound would be ineffective if people did not turn their speakers on.

(v) Music and visual effects

After watching the prepared video, members stated that they thought the addition of music and visual effects in the clip were both inappropriate and unhelpful.

However, it was apparent from their comments that they were unaware that the footage had been taken from an authentic Taiwanese wedding video. Once they had been informed of this, their opinions totally changed. One member said:

“Now that’s interesting! In which case use it but tell people. It would need to be labelled as such.”

Member 5

Clearly there is a distinct difference between material made on behalf of, or by, the individual on the resource and material that has been specifically adapted for the resource. Because of this, the focus group was asked if they could envisage any occasions when the addition of music and/or visual effects for the sole purpose of resource presentation might be appropriate. Replying to this question, members indicated that both the use of occasional annotation and an effect to shorten time would be acceptable. However, in the main, members thought that video clips should not be manipulated in post production; instead, they felt that they should be ‘raw’ and reflect reality as closely as possible.

5.5.3 Intangible information

The discussion on this topic started with the how the resource should deal with brands. Member 5 suggested that the resource could show adverts that relate to the products that individuals on the resource bought. He thought that this would help designers understand the marketing material each individual was exposed to.
The discussion then widened to include ethical and environmental issues. This happened when Member 1 remarked that the only way he could perceive that an individual’s ethical and environmental standpoints could be presented was through some form of interview. However, Member 5 disagreed; he thought that designers could infer this information from the brands an individual bought. He thought interviewing individuals was unnecessary.

However, on reflection, the author feels there was a problem with Member 5’s approach as it relied on assumptions being made by the designer using the resource. For example, an individual might buy a certain brand or product for ethical reasons, environmental reasons, convenience, price, etc. Without asking the individual, the actual reason remains an uncertainty. Furthermore, if an individual refuses to buy a brand or product, perhaps because it conflicts with his/her values, it is highly debatable whether a designer would be aware of its absence.

Moreover, there would also be the problem, particularly with individuals from different nations, that the designer might not know anything about the brand or product being shown. And even if he/she did, it might be possible that his/her interpretation of what the brand or product stands for might not match the individual’s. Finally, there is the issue that a designer might not be able to discern the brand of a product shown. For example, a fair traded banana looks similar to any other banana.

### 5.5.4 Resource functionality

The members of the focus group had a number of suggestions as to how the resource should function. Some of these suggestions related to specific features while others related to more general issues such as speed.

During the focus group it became clear that members thought the resource would be used for a wide range of tasks including learning about specific user groups, stimulating ideation, and creating personas. From this, it was apparent that the Individuals’ Lives section of the resource would need to function in two different ways. It needed to allow designers to explore information relating to one individual, and it needed to allow designers to explore information, such as kitchen layouts, across user groups.
Members indicated that they thought that the ability to both store and retrieve previously looked at information was important. It was suggested by Members 3 and 4, that one way to do this would be to use a virtual storage area where designers could amass information as they browsed. It was suggested that this storage area could work in a similar manner to an online shopping basket in that items, in this case videos and images etc, could be placed in it and viewed whenever the depositor wanted. Member 4 suggested the author might look at the ‘Getty Images’ website (www.gettyimages.co.uk) to see such a system in use.

Chhibber (2007), when developing a ‘pleasure resource’ for designers (see Chapter 2), also conducted a focus group in which different features for storing information were discussed. However, although some of these features were quite sophisticated, members did wonder whether a simple ‘save’ feature (as found in many software packages) might be a better solution as it was likely to be faster and easier to use. Although a feature to store information was eventually incorporated into the pleasure resource it was different to those discussed in Chhibber’s focus group. Chhibber gave no indication as to why this was. Furthermore, although the feature to store information was tested in speed trials, no information was given on what designers thought of it.

Member 4 suggested that it would be useful if different pieces of information could be seen alongside each other as he thought this would help designers identify patterns. He also commented that the videos should not be too long and the resource should be quick to use:

“I think the videos shouldn’t be too long. Everything should be designed around getting information quickly. Time is money”… “You don’t want to spend all your time finding material, especially if you have to book your time against the project.”

Member 4

This view reflected that of Participant 7 who, in the interviews with design professionals (see Chapter 4), said that he wanted to “grab” information quickly.

Member 1, also discussing videos, suggested that the information in them should not go into any more detail other than making designers aware of the main issues. He thought that if further information was needed designers could find this out themselves.
On a different matter, Member 2 suggested that it would be useful if designers could tag previously looked at information so it could be found again. He thought this function would be particularly useful for designers working in teams as it would allow them to share information easily. This comment builds on a remark made by Participant 4 in the interviews with design professionals (see Chapter 4) in which it was indicated that the ability to tag information would be useful.

One member thought that it might be useful if designers could set up their own profile pages in which they could save the Individuals' Lives pages and the Information Pages they were interested in. He suggested that if any changes were made to these pages, then the changes could be automatically brought to their attention. He further suggested that designers should be able to define the format that their updates were delivered in. For example, if a designer wanted written material, he could choose to receive updates as text only.

Finally, on a commercial note, Member 1 suggested that the resource could be modular allowing designers to purchase only the user groups they were interested in. Hence, if a company made products exclusively for Chinese users or older users, they could buy just this user group.

5.5.5 General finding

When conducting the interviews with design professionals, the author became concerned that some designers might see the resource as an alternative to undertaking user research even when meeting users was possible. The author was thus reassured to hear that members of the focus group clearly recognised that the resource could not, in the main, replace first hand user research. Below are some of the comments made to this effect:

“…I don’t think browsing the resource would be the right thing to do if you’re looking for a particular answer or want deep analysis. The right thing to do would be your own research.”

Member 2

“The resource is never going to replace serious ethnography.”

Member 3
“If further research needs to be done, it needs to be done. The resource can’t contain everything.”

Member 1

5.6 Conclusions

The aim of the focus group was to gather opinions on how the information in the resource should be presented and how the resource should function. Four topics were discussed. These were: information categorisation, information format, intangible information and resource functionality.

To reflect the aim, the conclusions have been arranged under the headings: ‘how the information should be presented’ and ‘how the resource should function’.

5.6.1 How the information should be presented

It was concluded that the information in the Individuals’ Lives section of the resource should be divided into four categories: Details, Living space, Activities & interests and Products and where appropriate, it should be presented in layers so designers could ‘drill down’ to find what they were looking for. It was established that Brand related information should be placed in the Products category.

It was concluded that information being elicited from or given by individuals on the resource should be shown in the form of informal interviews, question and answer sessions and talks (where the user just speaks to camera). It was determined that transcripts should be provided where possible and subtitles used instead of dubbing. With respect to thinking aloud, it was decided that this should be used only if it added value. Talking to camera was considered to be the best way to convey intangible information.

From the comments made in the focus group, it was concluded that virtual tours should include a guided tour, a 360° panorama, an interactive photo montage and a floor plan and that typical day videos should have a navigable timeline to enable designers to jump to various sections. It was also decided that videos, as far as possible, should reflect reality: music should not be added for theatrical effect and visual effects should
be avoided except for annotation or where it was needed to compress events that last a long time.

5.6.2 How the resource should function

It was concluded that the resource should contain only key information and that this information should be quick to find and easy to save. It was also concluded that the resource should be able to be browsed in two ways so that designers could look at all the information on one individual as well as looking at specific information, such as kitchen layouts, across user groups. This was decided as members in the focus group expressed this desire.

It was determined that designers should be able to compare different pieces of information side by side and tag information they were interested in, so they could easily refer back to it.

Finally, the focus group wanted designers to be able to set up their own profile page in which they could store pages they were interested in, and, that if new content were added to such pages, there would be a means of flagging this up.

5.7 The design specification

The design specification was created to guide, rather than to dictate, the resource development process. It drew upon the conclusions above and the comments made by design professionals in the interviews (see Chapter 4).

A copy of the design specification can be found in Appendix H. It summarises the key aspects and features that the resource should have, and offers directions, where applicable, on their implementation. The design specification was consulted throughout the development process to ensure that all decisions made reflected the needs of designers.

5.8 Summing up and looking ahead

The literature reviewed at the outset of the thesis and the findings of the interviews with design professionals (see Chapter 4) confirmed that a resource was needed and
desired; it also established its content. The focus group helped to define how the content should be presented and how the resource should function. In the following chapter the next phase of the research is discussed: the creation of the prototype resource.
6.1 Introduction

This chapter describes the creation of the prototype resource. It opens with an account of some of the project planning issues, then, after an explanation of the organisational structure of the resource, each part of the resource is introduced in turn and its main unique features discussed. The features that were shared between the different parts of the resource are discussed at the end.

The resource was created with reference to the design specification (see Appendix H). However, it was recognised that creating a resource that fulfilled all the requirements in the specification would be a formidable task that would take many hours to complete. It was also clear that creating such a resource would have limited additional academic benefit over a cut-down version with fewer features and less content. It was thus decided that a cut-down version would be built for evaluation purposes.

A copy of the prototype resource can be found on the attached DVD (Appendix S).

6.2 Practicalities and initial considerations

6.2.1 Budget and time

The first stage of project was to decide what was realistically achievable within the budget and time available. Limited funds dictated that the author himself would collect the information for the resource and build it. As the author had neither experience in building websites nor filming/editing, it was decided that he should only create the features that directly supported the resource’s main goal: helping designers gain a
broad and immediate understanding of the lives and worlds of users. It was also decided that, to keep development time within reasonable limits, he should only create sufficient web pages to allow the resource to be evaluated by designers.

6.2.2 Coding and browsers

To keep the coding as simple as possible, it was decided that the resource needed to work in one browser only. The browser chosen by the author was Mozilla Firefox as it follows many recognised web standards and was thus considered to be more straightforward to code for.

The design specification stated that the resource should have some form of search engine. However, it was recognised that building this, and the associated results pages, would not be realistic in the time available due to the amount of coding required. It was thus decided that these features should be built to look as if they worked and presented in the evaluation as a demonstration. Two additional Individuals' Lives pages and one Information Page were also created for the demonstration. These are discussed in Section 6.3.4 and Section 6.3.5.

6.2.3 Fidelity

The resource was built to have high-fidelity. High-fidelity prototypes are better at generating feedback on issues relating to detail, such as labelling and colour choice, than low-fidelity prototypes, and thus better suit the refinement stages of the design process (Benyon et al., 2005; Brinck et al., 2002). High-fidelity prototypes also make finding certain issues easier in usability evaluations as they are ‘running systems’. Running systems prevent evaluators from doing impossible things. For example, they do not allow evaluators to navigate to a different area of a website if the link to go there is missing. This is unlike low-fidelity prototypes, such as paper prototypes, that allow evaluators to navigate anywhere they want just by turning the page. Thus if an evaluator fails to notice a missing link in a low-fidelity prototype, the usability issue will remain unexposed (Nielsen, 2011).
6.2.4 Decision making

As many design related decisions needed to be made during the development process, the author put together a small informal group in which problems were discussed and solutions explored. The group, which is referred to in this chapter as ‘the design team’, consisted of two research students and a design tutor. All had professional design experience, an understanding of web usability and had either built or commissioned at least one website.

6.2.5 Internationalisation

Internationalisation is: “The process of ensuring at a technical/design level that a product can be easily localized.” (Localization Industry Standards Association, 2010). Ideally, especially as this research is concerned with culture, the resource would have been designed with internationalisation in mind. However, as the number of considerations to achieve such a task is vast, it was thought impractical to address this aspect in the time available. For example, one task would have been to ensure that all the Individuals’ Lives category headings would translate into other languages without losing their precise meanings, as if they did not, the category system would not work across locales and would need adaptation during localisation. A number of localisation issues have, however, been discussed where appropriate.

6.3 The information space

6.3.1 Overall structure

The prototype resource had four distinct sections: the home page; the results pages; Individuals’ Lives (content pages that were specific to a particular individual); and Information Pages (content pages that contained general information about user related issues). It also had links to external websites. In a fully functioning resource a designer would be able to move freely between these sections as illustrated in Figure 6.1. However, in the prototype designers were more restricted. They could only move between the home page, Individuals’ Lives and the Information Pages. This was because the search facility and the results pages functioned as demonstration pages only.
6.3.2 The home page

The home page is typically the most important page of a website. It is a company’s “face to the world” (Nielsen, 2002). In the case of People’s Lives, it would be the gateway to the resource: the place where all designers would come to subscribe, consider subscribing or to sign in. Effectively, it would be the most visited page of the resource.

Most web users make a judgement about a website very quickly. Often within ten seconds of arriving users have decided to stay or leave (Nielsen and Tahir, 2001). If a web user does leave there is only a 12 percent chance that he/she will return (Nielsen and Loranger, 2006). In other words, once a web user has decided to move on he/she has almost gone for good. Because of this, Nielsen and Tahir (2001) recommend that all home pages should communicate immediate value and follow interface design guidelines, as users have little time to learn new methods of interaction.

Nielsen and Loranger (2006) found that 23 percent of web users do not scroll the home page on their first visit and that even fewer scroll on subsequent visits. Thus if a home page does not fit a web user’s screen, some of it might not be seen. Although this was
not a concern in the prototype as the page was to be demonstrated by the author and would be scrolled, the author felt that it would be improper to disregard this fact. Therefore, the information was arranged on the page in such a way that the most important was at the top and least important at the bottom. In this way the important information would always be seen regardless of screen size or whether the web user scrolled.

The home page in the resource was created to be distinct from all other pages. It had a different looking header and a unique page layout. This was done for two reasons: firstly, to ensure that designers would recognise that they were back at the home page if they returned from looking at other pages and secondly, to increase the likelihood of designers identifying the page as the top of the resource’s navigational hierarchy. The practice of differentiating the home page from the other pages of a website is recommended by Nielsen and Tahir12 (2001) and Userfocus (2011).

The main features created for the home page are outlined below and shown in Figure 6.2.

### 6.3.2.1 Tag line

The tag line was placed near the logo. The tag line was brief and summarised what the resource was for. It was created on the suggestion of Krug (2006) and Nielsen (2002).

### 6.3.2.2 Login/logout buttons

This feature gave subscribing designers access to/egress from the resource. However, as it was felt that little would be learned by illustrating the process of signing in as part of the demonstration, this was not done. Instead, the demonstration started with the presumption that a designer had already signed in. As such, only a sign out button was shown in the prototype. This was labelled ‘logout’. The reason for this choice of labelling was that it has been found that almost three quarters of people prefer the term ‘login’ (or one of its variants, e.g. Log In, Log-in or LOGIN) to any other term to sign in (see Moallem, 2004).

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12 Although the guidelines were written in 2001, Nielsen (2010) maintains that they are still valid.
6.3.2.3 Tour

This feature allowed designers to learn about the resource by watching a movie.

6.3.2.4 ‘How to get started’

This feature showed first time visitors to the resource how to get started if they were unsure of where to begin. The search engine (described in Section 6.3.6.1) acted as the start point for designers who were familiar with the resource.

6.3.2.5 Examples of resource content

This feature allowed designers to view examples of the kind of material they would be able to access if they were to subscribe to the resource. To reinforce the resource’s structure, the information relating to Individuals' Lives was kept separate from the information relating to Information Pages.

Figure 6.2 The home page and its main features

6.3.3 The results pages

Each time a designer performed a search of Individuals' Lives or Information Pages, a results page would be shown. To assist the designer in understanding the results,
organising them and so on, the results page had many features. These features are explained below and shown in Figure 6.3.

All features, where possible, were designed to work in a similar manner to those found in other widely used software packages and websites. They also followed design guidelines suggested by Brinck et al. (2002); Hearst (2009) and Morville and Rosenfeld (2007). For identification purposes, the results pages that related to Individuals’ Lives displayed an Air Force blue flash on their tabs and the results pages that related to Information Pages displayed a pistachio green flash.

The search engine was positioned at the top of the page. It showed designers the search terms on which the results were based and allowed designers to change their search queries easily, if they wished.

Figure 6.3 The results pages for Individuals’ Lives (rear) and Information Pages (front)
6.3.3.1 ‘Open new results window’
This feature enabled a designer to open a new window so that a set of new search results could be kept separate from others.

6.3.3.2 ‘Recently closed tabs and windows’ button
This feature enabled designers to restore the results pages closed in a current session.

6.3.3.3 Collapsible ‘search terms analysis’ panel
This panel showed the number of ‘hits’ for the search query: both for the whole expression and for each search term entered. Designers could use this information to help them refine their search queries. The panel could be collapsed to save screen space.

6.3.3.4 ‘Close tab’ button
This button closed a tab.

6.3.3.5 Rename tab
This feature enabled a results page’s tab to be renamed by clicking on it and typing a new name.

6.3.3.6 ‘Search results’ panel
This area displayed the search results. They were displayed differently for Individuals’ Lives and Information Pages. The results for Individuals’ Lives were displayed in a table. This table displayed personal information about each individual together with links to other information generated by a search.

The results for Information Pages were displayed as a list. The list showed the titles of each Information Page and a few lines of text showing the context in which each search term was found. To learn more about an Information Page designers could hover their cursor over its title; this activated a tooltip which showed a short summary of the page. To open an Information Page designers could click on the title.
A search of the Information Pages could also be configured to show results for external websites. If this option had been enabled, pre-vetted external websites that related to the search terms were shown alongside the Information Pages.

6.3.3.7 ‘Customise’ button

This feature was unique to the results pages that related to Individuals’ Lives. It allowed designers to customise the columns in the results table to suit their needs. For example, one column in the table displayed, by default, the age of each individual; this column could be changed so that it showed the date of birth of each individual if a designer found this more useful.

6.3.3.8 ‘Sort by’

This feature allowed designers to sort the results according to various criteria. For example, designers could sort the Information Pages alphabetically.

6.3.3.9 Page number

This feature showed the total number of pages that the search query returned and indicated which of these pages was being viewed.

6.3.3.10 Save and select buttons

These buttons allowed designers to select and save the search results they were interested in. A designer might want to do this if he/she planned to look at the results later or wanted to share them with someone else.

6.3.3.11 ‘Contents’ button

This button was unique to the search results that related to the Information Pages. The button, which appeared next to every search result, allowed a designer to view the content menu for an Information Page without having to open it.
6.3.4 Individuals’ Lives

Individuals’ Lives was the largest part of the resource to create. Ideally, it would have contained the profiles of many individuals. However, as time was limited alternative solutions were considered. Two of these were discussed in detail by the design team. One was to make incomplete profiles for several individuals with enough information and functionality that designers could explore and evaluate them, providing they knew what features of the resource they could interact with. The other was to make a single ‘full’ profile that designers could explore freely, viewing and clicking on whatever features they chose.

Eventually, it was decided to create a full profile, as it was felt that this would give designers a more realistic experience of the resource, since all the internal links would work. It was felt that a full profile would give designers a better understanding of the type of content available in each individual’s profile.

The individual chosen for the full profile was a male Mandarin speaking retiree who lived in the Republic of China (Taiwan). He was chosen for two reasons. Firstly, it was felt that he was likely to be different, in many ways, to the designers evaluating the resource. This was considered important as the aim of the resource was to help designers understand the lives and worlds of people dissimilar to themselves. Secondly, he was an acquaintance of the author. This meant that he could be relied upon to be accommodating when technical aspects of the filming did not go to plan since a rapport had already been established. Taylor et al. (2002) suggest that acquaintances are used in design-related video ethnography for such reasons.

It was decided that as well as the full profile, two additional Individuals’ Lives pages, relating to two different individuals, would also be created for the purpose of the demonstration. These pages would show how the results pages (see Section 6.3.3) related to the rest of the resource and how individuals on the resource could be compared. Arguably, the author could have just created one additional Individuals’ Lives page and demonstrated it alongside the full profile mentioned above. However, as the additional Individuals’ Lives pages had virtually no functionality, they took a negligible amount of time to make. Furthermore, it was felt that having more individuals on the resource made it seem more realistic, as it looked more comprehensive.
The two individuals shown in the demonstration were Taiwanese females. They were chosen for the same reasons as the male. Both females were filmed visiting the hair salon. These films were incorporated into the Individuals’ Lives pages and used in the demonstration to show designers how aspects of individual’s lives could be compared in the resource.

The main features of the Individuals’ Lives pages are explained below, together with an explanation of the different types of pages that were made for the resource (see Table 6.1). In total, 24 Individuals’ Lives pages were created: 22 pages that related to the full profile and two that related to the individuals shown in the demonstration.

6.3.4.1 The Individuals’ Lives header assembly

This feature was common to every page in Individuals’ Lives (see Figure 6.4). It had two components: a header and an information panel.

The header was Air Force blue and had the words ‘Individuals’ Lives’ written on it. This colour was chosen as it was unlike any other used in the resource. This was important as the author wanted to make the page distinct so that designers would instantly recognise it as an Individuals’ Lives page. The header, in addition to showing the words ‘Individuals’ Lives’, carried the name and identification number of the individual the page related to. In a fully functioning resource this number would be used for differentiating between people with the same name and assigning tags (the ‘tag’ feature did not function in the prototype). The header also showed the data collection date and the ‘print’, ‘tag’ and ‘save’ functions. The text in the header had a plain font and simple formatting. This was done to reduce the likelihood of it being perceived as an advertising banner, and therefore ignored, when designers first encountered it (Nielsen and Loranger, 2006).

The second component, the information panel, showed a photo of the individual and a few details, such as the individual’s age and income. It was placed in the top left corner of the page, out of the content area, but in a ‘high-priority’ spot where users often look (Nielsen and Pernice, 2010). In a fully functioning resource the designer would be able choose the details shown in the information panel using preferences.
6.3.4.2 The menu

This feature was displayed on every page of Individuals’ Lives. As it was the main browsing navigational feature in this part of the resource, much time was spent on its design. The first consideration was where to put it. Many authors recommend that menus should be placed either along the top or along the left side of a web page (see Lazar, 2001; Morville and Rosenfeld, 2007). One reason is that this is where web users tend to look for them (IBM, 2006; Nielsen and Pernice, 2010). Another reason is that the right side and the bottom of a web page are not always visible, especially in browsers that are not maximised (Brinck et al., 2002; Lazar, 2001).

Unlike menus that are placed down a web page, which can go off-screen and need to be scrolled, menus placed horizontally along the top of a web page are always seen in their entirety (Tseng, 2010). However, although options are always visible on horizontal menus, they are not as easy to append as they need to fit within the website’s width (Brinck et al., 2002). It was this limitation that led the author to reject them as the resource would need to be flexible to allow for future changes. For example, cyberspace may soon play such a central role in people’s lives that it would make sense for it to have its own category. Furthermore, it was also recognised that since many languages have longer words than English, a menu with a ‘fixed’ width may cause layout problems if the resource were later adapted for a different locale (Brinck et al., 2002; Horton, 1994).

Having decided that the resource should have a menu placed down its left side, the next stage was to decide which options on the menu should be visible by default and
which should be hidden. This decision needed to be made because it was clear that some individuals would have very long menus if all the options relating to them were shown. However, as options reveal content (Krug, 2006), it was recognised that if too many options were hidden, designers would not be able to gain a detailed snapshot of the individual’s life.

After much discussion it was decided that some of the options in Living space, Activities & interests and Products would be placed in submenus and hidden by default. In Living space all rooms and living areas were placed in submenus according to the floor or type of dwelling to which they belonged. Although this meant that designers would not immediately know what rooms were in each property, it did mean that they would know what kind of property it was (e.g. apartment, house, caravan etc). In Activities & interests all the tasks were placed in submenus labelled ‘tasks’ and all the rituals in submenus labelled ‘rituals’. The other items, such as hobbies and pastimes, were kept on display. This was done as it was felt that ‘tasks’ and ‘rituals’ generally told designers less about the individuals than their other activities and interests. It was also felt that designers who were particularly interested in specific tasks and rituals would probably look for them using the search engine rather than by browsing. In Products all the brands were placed in submenus labelled ‘brands’. In reality this would have probably have been done anyway, as some form of identifier was undoubtedly needed to clarify that brands were obviously not products.

One area relating to submenus which the design team struggled to agree on was whether favourite and problematic products should be placed in submenus labelled ‘favourite’ and ‘problematic’ or not. The advantage of placing them in submenus would be that they would be clearly labelled as to whether they were ‘favourite’ or ‘problematic’ but the disadvantage would be that the names of the products would be hidden from view. Eventually it was decided that the products should not be placed in submenus but have icons placed next to them indicating whether they were ‘favourite’ or ‘problematic’. Icons (i.e. pictorial symbols) were chosen rather than the words ‘favourite’ and ‘problematic’, to save space and keep the menu from spreading across the web page. This was important because it freed up more space for content.

Although icons have the ability to save space they can also be misleading if their images evoke the wrong association (Benbasat and Todd, 1993; Wang, 2005). It was therefore important that the images used for the favourite and problematic product submenu icons were selected carefully. The most promising images seemed to be a
thumbs-up\textsuperscript{13} for favourite products and a thumbs-down for problematic products since these images signify ‘like’ and ‘dislike’ on YouTube, a site known to be frequented by designers (see Chapter 4). However, problems arose fitting these images on the menu as they needed to be made very small and this significantly reduced image quality. Because of this a ‘smiling’ and ‘sad’ face were used instead. These reduced well and were deemed appropriate as they are also widely used online (e.g. on Skype). To assist those designers who might be perplexed, the icons were displayed with their referents on the \textit{Products} pages alongside the favourite and problematic products they represented.

\textsuperscript{13} This gesture would not have been considered if the resource were being developed for locales other than the United Kingdom as some cultures find it offensive (Horton, 1994).
### 6.3.4.3 The pages

The table below shows the different pages (and page types) made for the resource. It displays the type of information shown and the format it was presented in.

<table>
<thead>
<tr>
<th>Category</th>
<th>Page title</th>
<th>Information shown</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Details</td>
<td>Personal information</td>
<td>Personal details</td>
<td>Text</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Information about the individual: age, occupation, marital status, etc.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Profile</td>
<td>• A five line summary of the individual</td>
<td>Text</td>
</tr>
<tr>
<td></td>
<td>Photo album</td>
<td>• A history of the individual’s life</td>
<td>Photos and text</td>
</tr>
<tr>
<td></td>
<td>Family, friends &amp; pets</td>
<td>• Relationship information (including links to information on some of the family, friends and pets mentioned in the individual’s profile)</td>
<td>Photos and text</td>
</tr>
<tr>
<td></td>
<td>Thoughts, values, beliefs &amp; feelings</td>
<td>• Videos of the individual discussing various topics</td>
<td>Videos and text</td>
</tr>
<tr>
<td></td>
<td>Purchasing decisions</td>
<td>• A description of buying behaviour and the factors that drove purchase decisions</td>
<td>Text</td>
</tr>
<tr>
<td></td>
<td>Technology</td>
<td>• The individual’s proficiencies with modern technologies</td>
<td>Text</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The individual’s thoughts on modern technologies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A typical day</td>
<td>A typical day</td>
<td>Videos</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• A video that showed a day in the life of the individual</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Human characteristics*</td>
<td>Anthropometrics</td>
<td>Photos</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Anthropometric data on the individual</td>
<td></td>
</tr>
<tr>
<td>Living space</td>
<td>Overview</td>
<td>Background information</td>
<td>Photos and text</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Information about the property (e.g. how long it had been the individual’s home)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plan of property</td>
<td>3D interactive plan of the property that showed the layout of its floors, rooms and areas. (Clicking on parts of the plan took the designer there)</td>
<td>Diagram</td>
</tr>
<tr>
<td></td>
<td>Neighbourhood</td>
<td>Information on the area and the local amenities that the individual used</td>
<td>Photos and text</td>
</tr>
<tr>
<td>Room/area</td>
<td>General information</td>
<td>Location</td>
<td>Diagram</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------------</td>
<td>----------</td>
<td>---------</td>
</tr>
<tr>
<td></td>
<td>The name of the room/area and a brief description of what it was used for</td>
<td>An interactive plan of the floor that showed where the room/area was located. (Clicking on the various rooms/areas shown in the plan took the designer there)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Explore the room</th>
<th>Photos, videos and diagrams</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A scan of the room (i.e. photographic pan)</td>
<td></td>
</tr>
<tr>
<td>● A video tour of the room/area given by the individual</td>
<td></td>
</tr>
<tr>
<td>● An interactive room/area plan. (Clicking on objects in the plan revealed information about them)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Specific information relating to the room/area</th>
<th>Videos and text</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Information about the room/area, such as a video that showed the room in use</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activities &amp; interests</th>
<th>Activity/interest</th>
<th>General information</th>
<th>Photos and text</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>The name of the activity/interest and background information on it (e.g. how long the individual had participated in the activity/interest)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interview/demonstration</th>
<th>Videos</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A personal discussion and/or display of the activity/interest</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity/interest in action</th>
<th>Videos</th>
</tr>
</thead>
<tbody>
<tr>
<td>● A ‘fly on the wall’ documentary of the individual taking part in the activity/interest</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Videos</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Videos of different tasks being undertaken (e.g. ironing, visiting the hair salon etc.). Where appropriate, the videos could be played four times faster</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rituals</th>
<th>Videos and text</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Videos of rituals (e.g. burning joss paper) and text explaining them</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Products</th>
<th>Videos and text</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Information on favourite products, problematic products and other products</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Brands</th>
<th>Videos and text</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Explanations as to why the individual likes or dislikes certain brands</td>
<td></td>
</tr>
</tbody>
</table>

* This page would also contain information on disabilities for some individuals.

Table 6.1 The types of Individual Lives pages made for the prototype resource
The figure below shows some of the Individuals’ Lives pages made for the resource. The assortment includes pages from each of the four categories: *Details*, *Living space*, *Activities & Interests* and *Products*. The entire range of pages can be seen on the attached DVD (Appendix S).

![Image of Individuals' Lives pages](image)

**Figure 6.6 A selection of the Individuals’ Lives pages**

### 6.3.5 Information Pages

Two Information Pages were created for the resource: one had full functionality and the other had limited functionality.

The Information Page with full functionality was created to be used by design professionals in the final testing process (i.e. the evaluation with design professionals, see Chapter 8). It was on the topic of ‘divination blocks’. Divination blocks are crescent shaped blocks used in traditional Chinese religions that help people make decisions on a wide range of issues from employment to love. This topic was chosen as it was felt that most designers would not know much, if anything, about it. It would thus help them to see how the Information Pages could broaden their understanding of worlds dissimilar to their own.

The Information Page with limited functionality was created for the demonstration; it was on the topic of ‘first haircuts’. A hair-related topic was chosen as the two
individuals shown in the demonstration visited the hair salon. The topic could therefore be associated with them and their activity of having their hair done.

6.3.5.1 The Information Pages header assembly

This feature was common to every page in Information Pages (see Figure 6.7). The feature, which was similar to the header assembly found in Individuals’ Lives, had two parts: a header and an information panel.

The header was pistachio green and had the words ‘Information Pages’ written on it. This colour was chosen as it had not been used for any other main parts of the resource. The header showed the topic title; the topic identification number; the date the page was last modified and the ‘print’; ‘tag’ and ‘save’ functions. The information panel was positioned next to the header and showed a picture that related to the topic. A picture was used as well as the topic title because pictures can be recalled better than words (Paivio et al., 1968). Thus if designers were to come across the page again they would be likely recognise it because of the picture, even if the page’s content had changed or they did not recognise the title.

![Figure 6.7 The Information Pages header assembly](image)

6.3.5.2 The menu

This feature was positioned in the same place as the menu in Individuals’ Lives. However, unlike the menu in Individuals’ Lives, which took a designer to a different page, this menu took a designer to a different point on the same page. To reduce the chance of designers presuming that both menus functioned in the same way, the Information Pages menu was styled differently to the menu in Individuals’ Lives (Brinck et al., 2002). The menu is shown in Figure 6.8.
The table below summaries the content found in the Divination Blocks page. (The content in each Information Page would vary depending on the topic).

<table>
<thead>
<tr>
<th>Page title</th>
<th>Sub-heading and information</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Divination blocks</td>
<td>Overview&lt;br&gt;● An overview of divination blocks: where they originated, who uses them and what they are used for etc.</td>
<td>Photos and text</td>
</tr>
<tr>
<td></td>
<td>Traditional use&lt;br&gt;● An explanation of how divination blocks are traditionally used to ask the gods questions</td>
<td>Photos, videos and text</td>
</tr>
<tr>
<td></td>
<td>Light-hearted uses&lt;br&gt;● Examples that showed how divination blocks have changed from being exclusively used for divine assistance to being used for divine assistance and fun. Examples included game shows, competitions and everyday decision making</td>
<td>Videos and text</td>
</tr>
<tr>
<td></td>
<td>Abstraction&lt;br&gt;● Examples of everyday objects (such as shoes and whiteboard rubbers) being used like divination blocks in casual decision making and playground games</td>
<td>Videos and text</td>
</tr>
<tr>
<td></td>
<td>Consumer products&lt;br&gt;● Examples of consumer products based on the theme of divination blocks. The products included electronic games, children’s stationery products and mobile phone fobs</td>
<td>Photos, videos and text</td>
</tr>
<tr>
<td></td>
<td>Divination machines&lt;br&gt;● A video that showed an automated divination machine in Taiwan. Such machines can be found outside Taoist and Buddhist temples</td>
<td>Video</td>
</tr>
</tbody>
</table>

Table 6.2 The content found in the Divination Blocks page
The figure below shows the two Information Pages made for the resource. The left page was on the topic of ‘divination blocks’; it was created to be used by designers and was fully functional. The right page was on the topic of ‘first haircuts’; it was created to be demonstrated and had limited functionality. To see the pages in their entirety please see the attached DVD (Appendix S).

![Image of Information Pages](image_url)

**Figure 6.9 The Information Pages**

### 6.3.6 The shared features

A number of main features were found in more than one part of the resource. For consistency these shared features were designed to look and, where applicable, to operate in the same manner. These shared features are listed below.

#### 6.3.6.1 The search engine

This feature appeared on every page in the resource as recommended by Nielsen and Loranger (2006). On the home page it gave designers familiar with the resource a clear starting point; on the other pages it showed designers the search terms they last used and offered them a quick route to all content.
The search engine took a long time to design, much longer than the author, or any member of the design team, had expected. In fact, there were so many issues to consider that, arguably, it could have been a research topic in its own right. Many authors in the literature warn that designing a search engine is a difficult task (e.g. Morville and Rosenfeld, 2007). Indeed, some consider it so difficult that they believe that non-specialists should not even try (Brinck et al., 2002). One problem is that web users do not know how to use them properly (Lazar, 2006; Notess, 2006); they repetitively obtain poor results as they do not understand how to construct effective search queries (Muramatsu and Pratt, 2001). One common misconception is that inputting more search terms produces more plentiful and higher quality results whereas in reality increasing the number of search terms reduces the number of results as the search is more constrained (Brinck et al., 2002). In fact, web users are so bad at devising search queries that Nielsen (2001) suggests that perhaps the only possible long-term solution to the problem is to teach children how to search properly at school.

Another problem is that different search engines work in different ways (Lazar, 2006; Sharp et al., 2007). And, because the science of search is still evolving, they keep changing their rules (Notess, 2006; Russell-Rose, 2010). Google, for example, discontinued the use of the ‘+’ Boolean search operator in 2011 (Schwartz, 2011), an operator that had been in use for many years. Changes such as these are known to confuse users (Tognazzini, 2011). They also create complications for search engine designers as in addition to developing features, they need to devise methods to guide users on how to use search engines effectively (Nielsen, 2000a).

A further problem is that search engines are extremely technical. Many factors, such as server load balancing and platform limitations need to be considered to get them to work properly. It is thus very easy for designers (including information architects) to develop seemingly workable concepts which are not technically practical (Morville and Rosenfeld, 2007).

Discussions about the form that the search engine(s) should take covered many issues. These included whether the Individuals’ Lives and Information Pages should have separate search engines, whether search queries should be case sensitive, and whether query builders (such as automatic word stemming tools) should be built-in as they have disadvantages as well as advantages. The most debated issue was how search queries should be formed in Individuals’ Lives. In this part of the resource the search engine would be used to define user groups. However, it was recognised that to
search effectively, the terms that referred to the intrinsic characteristics of a user group would need to be specified separately to those that did not. Otherwise designers looking for Japanese males who own cars and who inputted the terms ‘male’, ‘Japanese’ and ‘car’ might be shown results relating to males that own Japanese cars. Eventually, after considering many designs, two different concepts were selected and mocked-up. Neither of them was ideal but it was clear that one of them needed to be selected for the prototype as the feature was taking too long to develop considering its overall importance in the research project.

The first concept had two interfaces: one for Individuals’ Lives and one for Information Pages. The two interfaces differed in the number of search boxes they had. The Individuals’ Lives interface had two, one for terms that related to the intrinsic characteristics of the user group and the other for terms that did not. The Information Pages interface had one search box for all search terms. A designer could switch between the two interfaces using a button.

The second concept (see Figure 6.10) used the same interface for both Individuals’ Lives and Information Pages. However, unlike the first concept, the Individuals’ Lives searches were case sensitive. Uppercase letters were used for terms that related to the intrinsic characteristics of the user group being looked for and lowercase letters were used for everything else. A designer could select which part of the resource to search using a drop down menu. When the search engine was first used a pop-up box appeared explaining how to use it. Although pop-ups are not desirable as they are often perceived as adverts and dismissed without being read (Nielsen and Tahir, 2001), it was felt that showing the instructions permanently would take up too much screen space. To reduce the chance of the pop-up being perceived as an advert it was designed to look like the rest of the website in colour and style (Nielsen 2007). To avoid the pop-up being blocked it was coded using DHTML.

Both concepts had a white text field, a button labelled ‘search’ and a search box 27 characters wide (Nielsen, 2002; Nielsen and Tahir, 2001). They also had two buttons: one to access advanced search features and another for opening previous searches that had been saved. Neither of these buttons actually did anything if clicked. They were solely to show designers the kind of features that would be available in a fully functioning resource.
The concept finally chosen was the second concept. Although by being case sensitive it broke with convention, it was the preferred choice of the design team because it was considered much neater. It was also felt that the violation was not severe enough to dissuade designers from using the resource even if they did not like it, especially as they would, realistically, need to use other non-conventional search operators to obtain high quality results.

It should be noted that although a number of English language search engines, such as AltaVista, have been case sensitive (Notess, 2006), some languages do not use cases (e.g. Chinese). As such, if the resource were localised, the search engine would need adapting for some languages.

![Figure 6.10 The search engine](image)

### 6.3.6.2 Logo

This feature informed visitors as to the site they were on. It was placed in the upper left corner of every page, as suggested by Nielsen and Pernice (2010). If a designer clicked on the logo he/she would be taken to the home page.

### 6.3.6.3 The Home link

This feature, like the logo, took designers to the home page if clicked; it was positioned at the top left of every page, apart from the home page. Strictly speaking, as it performed the same task as the logo, it was a duplicated link. In the main, duplicated links are not recommended as they clutter interfaces and make them more complicated (see Nielsen and Loranger, 2006). However, as the convention of clicking the logo to go to the home page is still not recognised by a large number of web users (Brinck et al., 2002; Krug, 2006), it was decided that the feature should be included. Indeed, this may be the reason that Nielsen, although an opponent to duplicated links, also
recommends the practice of including a link to the home page on every page except
the home page (see Nielsen and Pernice, 2010).

6.3.6.4 Videos

Several design professionals when being interviewed (see Chapter 4) indicated that
they thought video was an appropriate medium to communicate user related
information in the design process. However, although many authors also support this
view in the literature (see Taylor et al., 2002; Ylirisku and Buur, 2007), the author,
similar to some members of the video industry (e.g. Crowell, 2011), found little written
guidance on how best to present videos for use online. Interestingly, this is despite the
fact that in the United States watching video online has grown across all age groups
and now is more popular than visiting social networking sites (Madden, 2009). However,
a small number of guidelines relating to issues such as positioning and consistency
were found and these were used to create the videos (see Nielsen and Pernice, 2010
and Sorflaten, 2010 for these guidelines).

Members of the focus group thought that it would be better if designers did not have to
watch videos in their entirety to find the information they were interested in. Because of
this the long videos in the resource were segmented. For example, the interviews were
segmented by question and the typical day videos by time. Segmenting long videos is
also recommended by Nielsen (2000a) as it helps web users feel in control.

The information in the videos was chosen to reflect what the design professionals had
asked for in the interviews. This included information on users’ frustrations, delights
and latent needs. Each video was shown to at least one member of the design team
before being incorporated in the resource. This was done to ensure that the information
in each video was appropriate, of the right depth and engaging. A number of alterations
were made as a result of these showings. For example, more footage was spliced into
some of the interviews to further break up the monotony of the individual speaking to
camera.

Where appropriate, videos had transcripts and subtitles. Subtitles in these videos were,
as suggested by Nielsen (2000a), placed in a letterbox to maximise readability
(see Figure 6.11). Each video displayed its run time to help designers plan what they
could and could not watch in the time available to them.
6.3.6.5 Links

Links that appeared in the text were coloured blue; this colour was chosen as it is the colour most associated with clickability (Nielsen and Loranger, 2006). When one of these links was clicked, a pop-up appeared that offered one or more connections to related information (see Figure 6.12, left). For example, clicking on the word ‘Taiwan’ showed a pop-up that offered connections to an Information Page and an external web page on Taiwan.

In addition to links that appeared in the text, all the pages in Individuals’ Lives and Information Pages had one or more ‘Links’ panels (see Figure 6.12, right). Each panel showed all the connections relating to a topic and thus negated the need for designers to find and click all the links in the text to see the connections available. Where a page had more than one panel (this occurred when a page covered more than one topic), the panels were hidden. This was done to try to reduce the likelihood of designers thinking that the panels related to the whole page rather than to their respective topics. The hidden panels were positioned next to the topics to which they related and could be viewed by clicking a button.

The connections in the ‘Links’ panels and pop-ups were grouped under colour coded headings according to where they would take a designer if clicked: using colour to group related items is recommended by Shneiderman et al. (2009). Air Force blue was
used for connections that would take designers to an Individuals’ Lives page; pistachio green was used for connections that would take designers to an Information Page and indigo blue was used for connections that would take designers to an external web page. Two other colours were used in certain areas of the resource. Jet black was used in the Individuals’ Lives section of the resource for connections that would take designers to a page related to the individual being looked at. Deep orange was used in the Information Pages section of the resource for connections that would take designers to the source of a piece of information, such as an academic paper or book. 

Each connection had three parts: a title, an image, and an explanation of the type of information the connection would provide if it were followed. Connections in the ‘Links’ panels also had ‘reverse look-up’ buttons. These, if pressed, took designers to the word/image on the web page with which a connection was associated.

![Image](image.png)

**Figure 6.12** A ‘Links’ pop-up (left) and a ‘Links’ panel (right)

### 6.3.6.6 Text

Although the resource principally contained visual material, as this was the type of material that the design professionals indicated they would prefer in the interviews, it also contained text. Where text was used the passages were kept short. This was done because designers, like other web users, dislike to read anything online that is long-winded (Brinck et al., 2002; Lofthouse, 2001; Nielsen and Loranger, 2006).
The literature reports that web users often scan text before they decide whether to read it or not (Krug, 2006; Nielsen and Tahir, 2001). Because of this the text was optimised so that it could be scanned. Several techniques were used to do this. These included using bullet points; providing descriptive section headings; writing each paragraph with the most important details first and not writing exclusively in capital letters (Nielsen and Loranger, 2006; Nielsen and Tahir, 2001).

The text was written in an informal and non-academic tone. A non-academic tone was used as research has found that designers dislike it (see Lofthouse, 2001). Text styles were applied in a consistent manner across the resource to enable designers to recognise the information hierarchy on each page and to prevent designers from incorrectly reading meaning into things when there was no meaning to be read (Morville and Rosenfeld, 2007; Nielsen and Tahir, 2001). To aid legibility, all text was written in a colour that contrasted with its background (Nielsen, 2000a; Tognazzini, 2011).

### 6.3.6.7 Layering

Information in the resource was layered to enable designers to explore a topic to the depth of their choice. Bulleted ‘key points’ and images were provided for designers wanting to learn the bare facts on a topic, and videos and text were provided for designers wanting additional information. For designers who wanted more information, links were provided. These links took designers to other information elsewhere on the resource or to information on external websites.

Layering information has the advantage that it serves the needs of the causal browser and the serious researcher without compromising the completeness of the information or the ease at which it can be scanned (Nielsen and Loranger, 2006). However, it should be noted that information that was very closely related was not ‘diced’ just so it could be layered. Instead, it was kept together, where possible, even if it made a page fairly long. This was done as web users do not mind scrolling pages that contain such information (Nielsen and Loranger, 2006).
6.3.6.8 Aesthetics

Attention was given to the aesthetics of the resource as research suggests that attractive websites are perceived to be more trustworthy than unattractive websites (Robins and Holmes, 2008). Furthermore, according to Norman (2004), attractive websites also help people to think more creatively: an obvious benefit to anyone working in design.

Although people’s ideas of what is aesthetically pleasing differ, and there is a scarcity of suitable measures for aesthetics (Shneiderman et al., 2009), a number of guidelines exist that are deemed to make an interface look more appealing (e.g. Lazar, 2006; Shneiderman et al., 2009). These guidelines were followed. They included not overloading the page with information, using a grid layout to create a structured look, and not using more than four colours on a page.

6.4 Chapter summary

Due to a number of factors, such as time and budget constraints, the development of the prototype resource was guided, rather than determined, by the instructions set out in the design specification. Compromises were made with the number of pages created and the resource’s functionality. Just enough pages were created to give designers a clear understanding of what the finished resource would be like; and some of the features, such as the search engine, were designed for demonstration purposes only. A few features did not work at all.

The resource was constructed with four distinct sections: the home page, the results pages, Individuals’ Lives and Information Pages. These sections were built using recognised usability guidelines: such as consistency, simplicity and clear navigation (see Lazar, 2006; Nielsen and Loranger, 2006; Shneiderman et al., 2009).

The information used in the resource was chosen to reflect that requested by the design professionals in their interviews (see Chapter 4). It included lifestyle information, emotional information and videos of people doing everyday things. Where possible, information was displayed visually. This was done as designers prefer visual information to written information (Macdonald, 2000; Porter, 2002).
6.5 Summing up and looking ahead

The previous two chapters outlined what information should be in the resource and how this information should be presented. This led to the construction of the prototype resource discussed in this chapter. The next chapter describes the first part of the final phase of the research: the heuristic inspection.
7.1 Introduction

Although the prototype resource had been built using standard usability guidelines, it was decided that it should be inspected for usability issues prior to being evaluated by design professionals. This was for two reasons: first, it was recognised that one error in the software could bring an evaluation to a halt and second, it was felt improper to ask designers to give up their time to look at the resource without checking it for problems.

The method chosen to inspect the resource was the heuristic inspection. This method involves several people examining an interface to ensure it complies with a number of usability principles known as heuristics (Nielsen, 2012). This method is considered by usability experts to be a reliable and quick way to find usability issues (see Lazar, 2006; Nielsen, 2012). And, as Stone et al. (2005) explain, it has the benefit that inspectors can suggest solutions to any of the errors they find during the examination process. The heuristic inspection took place on 15th November 2011.

7.2 Aim

To inspect the prototype resource for usability issues so that they could be addressed prior to the evaluation with design professionals.

7.3 Method

7.3.1 The inspection team

The inspection team consisted of five Loughborough Design School students. This number was chosen because Nielsen (2005a) states that the majority of important
usability issues can be found using a group this size. Cato (2001) and Tan et al. (2009) also recommend this number of individuals in an inspection team. The inspection team were all male and aged between 22 and 37. (Further details of the inspection team can be found in Appendix I).

7.3.2 The materials

The heuristics used in the inspection were taken from various published lists. As the resource was a prototype, care was taken only to select the heuristics that addressed the features in the resource that could be tested. For example, although several heuristics are published that focus on browser compatibility, none of these were selected as the resource was only created to work in Firefox. In total, eleven heuristics were chosen for the heuristic inspection (see Table 7.1). Each inspector received a printed copy of these heuristics together with a form on which they could record the usability issues they found (see Appendix J).

As explained in the previous chapter a number of the pages in the resource did not function but were created to be demonstrated. To enable these pages to be evaluated a video was made. This video showed a designer conducting two searches and viewing a number of search results. During the video all the interface functions available to the designer were explained and the features that could be demonstrated were shown. Although it was recognised that this approach was not the same as being able to interact with a working interface, it was felt that it would allow for some usability issues to be found. The video was installed separately on each of the inspectors’ computers allowing each inspector to work at his own speed and re-watch segments of the video if he wanted to see something again.

7.3.3 The procedure

The heuristic inspection ran for one hour and followed Nielsen’s (2005a) recommendations. It started with a brief explanation of the resource after which each heuristic was explained in turn. The inspectors were then asked to go through the interface twice: the first time to familiarise themselves with its functions and the second time to inspect it. They were also asked to watch the video. They were instructed that they should make a note of every usability issue they found (not just those that related to the heuristics) and that they should explain why they thought something was a
<table>
<thead>
<tr>
<th>#</th>
<th>Heuristic</th>
<th>Description</th>
<th>Offered by</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>System status</td>
<td>The system should always keep the user informed as to what is going on. Feedback should appropriate and provided within a reasonable time.</td>
<td>a, c, e, f, h, i, j, l</td>
</tr>
<tr>
<td>2</td>
<td>Control</td>
<td>Users should always be in control of the system. They should never become trapped in situations that have no visible escape. Users should dictate the pace of the interaction.</td>
<td>a, b, e, f, i, j</td>
</tr>
<tr>
<td>3</td>
<td>Familiarity</td>
<td>The system should use language, metaphors and symbols that are familiar to the user. Information should be presented in a natural and logical order.</td>
<td>a, d, e, f, h, i</td>
</tr>
<tr>
<td>4</td>
<td>Consistency &amp; contrast</td>
<td>Design variation should appropriate and meaningful: similar things should be similar and different things should be different. Page elements (fonts, bullets, headers etc) should be consistent across the system.</td>
<td>a, b, c, e, h, i, j, k, l</td>
</tr>
<tr>
<td>5</td>
<td>Errors</td>
<td>Errors should be quick and easy for the user to correct. Error messages should be easy to understand and offer a solution.</td>
<td>a, b, c, e, f, g, h, i, j, l</td>
</tr>
<tr>
<td>6</td>
<td>Minimise memory load</td>
<td>All actions, objects and options should be visible. Users should not have to remember information from one screen to another.</td>
<td>a, c, h, i, j</td>
</tr>
<tr>
<td>7</td>
<td>Navigation</td>
<td>The system should be well organised and use clear directional signs. Users should be able to move around quickly and find things easily.</td>
<td>a, b, e, l</td>
</tr>
<tr>
<td>8</td>
<td>Perceived affordances</td>
<td>Page elements that do things should be seen as being able to do things: scrollbars should look like they can be dragged, and buttons should look like they can be pressed.</td>
<td>a</td>
</tr>
<tr>
<td>9</td>
<td>Online help</td>
<td>Although, ideally, users should be able to use the system without help, help should be available if the user needs it.</td>
<td>e, i</td>
</tr>
<tr>
<td>10</td>
<td>Minimalist design</td>
<td>Everything should be presented in the simplest way: language should be direct and pages uncluttered.</td>
<td>b, c, i</td>
</tr>
<tr>
<td>11</td>
<td>Pleasurable to use</td>
<td>The system should make the user feel respected. System messages should be polite and no design element should disadvantage or stigmatise any user group. The system should have both aesthetic and functional value. The information should be presented in an engaging and interesting way.</td>
<td>a, g, k, l</td>
</tr>
</tbody>
</table>

Key:  (note: a number of the authors have extended other author's lists or amalgamated lists)

- a Benyon et al. (2005)
- b Brinck et al. (2002)
- c Constantine and Lockwood (1999)
- d Gerhardt-Powals (1996)
- e Hilberg & Lazar (2003)
- f International Organization of Standardization (2006)
- g Muller et al. (1998)
- h Molich and Nielsen (1990)
- i Nielsen (1994)
- j Shneiderman et al. (2009)
- k Sutcliffe (2002)
- l Tognazzini (2011)

Table 7.1 The eleven heuristics used in the inspection
usability issue rather than just saying they disliked it. Finally, they were told that should ask for help if they became stuck rather than spend time struggling. Each inspector worked alone and examined the sections in the resource in a different order. The latter was done to ensure that each section was examined at least once with ‘fresh eyes’.

Figure 7.1  The heuristic inspection (showing four of the five inspectors)

Once the inspection had been completed a debriefing session was conducted. In this meeting the inspectors were asked to discuss the usability issues they had found and to offer any suggestions as to how they could be fixed. The inspectors were then thanked for their time and the heuristic inspection was closed.

Following this the author produced an illustrated list of all the issues found. This list was then given to three of the inspectors and they were asked to rate each usability issue for severity. To do this they were given a scale that ranged from zero to four, where zero was: “I don’t agree this is a usability problem at all” and four was: “usability catastrophe: imperative to fix” (see Nielsen, 2005b; and Appendix L). For each of the issues they were asked to consider the frequency with which it occurred, how difficult it was to overcome and its persistence. They were asked to complete the severity rating exercise on their own.

7.4 Results and discussion

In the rating exercise, four issues were judged to be ‘minor usability problems’. All the other problems were judged to be ‘cosmetic problems’ or not considered to be
problems at all. In total, the five inspectors identified 27 different usability issues (see Appendix K). Apart from three of these, all were unique to the inspectors who found them.

The following paragraphs describe the four issues that were judged to be ‘minor usability problems’.

7.4.1 The orientation of the arrow icons

This issue related to the arrow icons found on the submenus in the Individual Lives and Information Pages. All three of the inspectors who identified this problem stated that they could not tell from the orientation of the icons whether the submenus were open or closed.

One possible reason for this confusion could be that although most submenus use arrows there are no agreed standard orientations for them. For example, submenu arrows in Microsoft Windows XP point down to signify closed and up to signify open; this is unlike submenu arrows in Microsoft Windows 7, which point to the side to signify closed and to the right and down to signify open (see Figure 7.3). This disparity was, in fact, recognised when People’s Lives was developed and a decision was made to adopt the arrow orientations used in Adobe Creative Suite as it was felt that many designers would be familiar with them. Interestingly, although many of the inspectors agreed the arrows were pointing in the wrong directions, there was no agreement between the inspectors as to which way they should point.

Figure 7.2 The arrow icons
7.4.2 The search engine pop-ups

This issue related to the search engine's pop-up notices that told designers whether to input search terms in a certain case or not (see Figure 7.4). In the debriefing session two of the inspectors commented that they thought some designers might dismiss these notices without reading them. They argued that a better solution would be to get rid of the notices and have a single non case sensitive search box like that used by Google or Yahoo! This last comment supports the findings of Nielsen and Loranger (2006) who state that most people want all search engines to work like that of their favourite search engine. However, when it was explained to them that good quality results can only be generated if a distinction is made between the search terms that relate to the intrinsic characteristics of a user group and those that do not (see Section 6.3.6.1), they recognised that their solution was not possible. The inspectors, upon discussing the matter further, suggested that the pop-up boxes remained and that the author asked the professional designers for their opinions when the resource was evaluated.
7.4.3 The position of the ‘Links’ panel

Although only one investigator listed the position of the Links panel as being a usability issue during the inspection, it was the usability issue that received the highest severity rating by the three severity rating inspectors. The concern raised was that although the panel typically contained links for the whole page, its varying position on each of the pages did not suggest this. In the debriefing session a couple of solutions to this problem were offered. One was to always place the ‘Links’ panel under the menu that appeared on the left-hand side of all the Individuals’ Lives and Information Pages; the other more popular solution was to place the ‘Links’ panel at the bottom of every page and make it the width of the page.

![Image of the 'Links' panel](image)

Figure 7.5 The ‘Links’ panel (ringed in red)

7.4.4 The individual’s photograph

This issue related to the photographs of the individuals that were found in the top left corner on every Individuals’ Lives page (see Figure 7.6). It was suggested that these photographs should be interactive and, when clicked take a designer to the *Personal information* page of the individual he/she was looking at.
7.5 Conclusion

The main purpose of the heuristic inspection was to find out whether the prototype resource had any usability issues that would disrupt its evaluation with design professionals. As no ‘major usability problems’ or ‘usability catastrophes’ were found, the resource was considered good enough for evaluation. Nonetheless, it seemed logical that if some or all of the ‘minor usability problems’ could be quickly fixed, they should.

It was decided that as there were no agreed solutions as how to revise the submenu arrow orientations or the search engine pop-ups, these issues should not be addressed. It was also decided that moving the Links panel to the bottom of the pages should not be done as this would involve a substantial amount of reprogramming. However, as linking the individuals’ photographs to their Details pages was quick to do it was decided that this usability issue should be addressed.

7.6 Summing up and looking ahead

With the prototype resource constructed and examined for usability issues using a heuristic inspection, the last part of the final phase of the research was to evaluate the resource with practising designers. This evaluation is discussed in the next chapter.
8.1 Introduction

This chapter describes the evaluation of the prototype resource with design professionals. The evaluation was performed to assess the overall success of the resource with respect to the research aim, (see Section 1.3) and to identify the aspects of the resource that would benefit from further development. The evaluation involved a usability test, a standard post-session rating questionnaire and a semi-structured interview.

8.2 Aim

To evaluate the resource for its functionality, usability, content presentation and its value to the design process and to identify aspects of the resource that would benefit from further development.

8.3 Method

8.3.1 The participants

Ten participants evaluated the resource. They included a toy designer, an appliance designer, a design ergonomist and design consultants of various specialisms. The participants ranged from having less than one year’s design experience to more than thirty-five, and were aged from under 21 to over 51. They included company directors, design managers, non-titled employees, and a student on a work placement. They also included both sexes. More information on the participants can be found in Appendix N.
8.3.2 The System Usability Scale

It was decided that in order to gain an understanding of the resource’s overall level of usability, opinions should be collected during the evaluation using a standard usability questionnaire. Such questionnaires have the advantage over self-constructed questionnaires because they have been thoroughly validated.

The questionnaire used was the System Usability Scale: a questionnaire that consists of ten statements to which participants indicate their strength of agreement using a 5-point Likert scale (Brooke, 1996). A copy of the questionnaire can be found in Appendix P.

It should be noted that an alteration was made to the wording of one of the statements in the questionnaire. Statement 8 originally read: ‘I found the system very cumbersome to use’. However, Bangor et al. (2008), who have conducted over two thousand studies with the questionnaire, have discovered that some people are confused by the term ‘cumbersome’. Because of this they now use the term ‘awkward’ in their questionnaires. As Lewis and Sauro (2009) found that this alteration rarely leads to any detectable difference in the findings (i.e. it simply saves the researcher from explaining the term), the author implemented this change.

8.3.3 Dates, location and equipment

The evaluations were carried out between December 2011 and February 2012 at the participants’ workplaces using a laptop computer on which the resource had been installed. Screen capture software was used to record the participant’s interactions during the usability test and a sound recorder was used to capture the interviews.

8.3.4 The procedure

8.3.4.1 Overview and demonstration of the non functioning pages

The evaluations started with an overview of the purpose of the research and an explanation of how the different parts of the resource (i.e. the home page, the results pages, the Information Pages and the Individuals’ Lives pages) related and interconnected with each other. After this, the author gave a demonstration of the pages that did not fully function; these pages included the home page, several results
pages, two Individuals’ Lives pages and an Information Page. Participants were shown how to search for a target user group, how to view and compare individuals in this group, and how to find and view information on specific user related topics. They were shown the features that worked and an explanation was given for those that did not. During this process, participants were asked to comment on any issues that they thought were problematic and to point out any aspects of the resource that they did or did not like.

8.3.4.2 The tour of the functioning pages

Next, the participants were given a quick tour of the fully functioning Individuals’ Lives pages and the fully functioning Information Page. This was done to give them an understanding of the kind of information available in these pages and to help them create a mental model of the resource’s information architecture as quickly as possible (see Rubin and Chinsnell, 2008). The latter was considered important for two reasons. First, the author hoped to ask questions on the information architecture in the interviews and so it was important for the participants to know it beforehand. And second, as the only way participants could move around the resource was to use the menus and links (as the search engine did not work) it was essential for them to have a good understanding of the resource’s information architecture to be able to find things in the usability test.

8.3.4.3 The usability test

Once the tour was finished, the computer was handed over to the participants and they were asked to perform a number of tasks to test the resource’s usability. The tasks included asking participants to go to different parts of the resource (i.e. both Individuals’ Lives and Information Pages) to find key pieces of information and to interact with certain features. As it has been found that participants can forget a lot of detail by the end of a usability test (Stone et al., 2005), they were asked to think aloud while they performed their tasks.

The tasks were arranged in such a way that they took the participants through the information hierarchy in a logical order. Like the tour, it was hoped that this approach would help participants create a mental model of the resource’s information
architecture. Although this approach meant the task order was not counterbalanced, this was deemed acceptable since the tasks were unrelated and the test was short.

As thinking aloud affects the time a participant spends on a task, the participants were not timed during the testing process. However, levels of success were recorded in accordance to Tullis’ and Albert’s (2008) categorisation system. This system classifies success in terms of how easily a task is completed: ‘no problem’, ‘minor problem’, ‘major problem’ and ‘failure/give up’. These success levels were then used in conjunction with Nielsen’s (2005b) severity rating system, as used in the heuristic inspection, to judge how serious each issue was.

A copy of the tasks undertaken in the usability test can be found in Appendix O.

8.3.4.4 The content evaluation

Following the usability test, each participant was asked to evaluate the resource’s content. Due to time restrictions, this involved each participant evaluating a different set of pages rather than the whole resource. The participants were told they would have around ten minutes to look at their pages and that during this time they should read some text, watch a video and look at some photographs/illustrations. They were told that they would not be tested on the information they looked at but that they would be asked general questions such as whether they had found it easy to understand.

The content evaluation did not, as suggested by some researchers (e.g. Colter, 2010), involve participants looking for a particular piece of information which they were then questioned about. This was because, when piloting the evaluation, it was found that this encouraged people to scan text rather than to read it. While it was recognised that scanning text was important, this quality was already being assessed in several of the tasks in the usability test.

8.3.4.5 Collecting opinions with the System Usability Scale

Having seen the demonstration, completed the usability test and interacted freely with the resource during the content evaluation, the participants were asked to complete the System Usability Scale. They were told that they should answer all ten questions and that they should do so with respect to the resource as a whole (i.e. their answers
should not just apply to the pages they interacted with but to those that were demonstrated as well).

8.3.4.6 The interviews

Each evaluation ended with a semi-structured interview. In these interviews participants were asked questions about the resource’s functionality, usability, content presentation and value to the design process. A copy of the interview outline can be found in Appendix Q. An example of a transcript of one of the interviews can be found in Appendix R.

8.4 Results and discussion

In this section the findings of the evaluation have been subsumed under the following headings: ‘functionality’, ‘usability’, ‘content presentation’ and ‘value to the design process’. Areas of the resource that would benefit from further development have been discussed throughout.

8.4.1 Functionality

All the participants indicated that the level of functionality in the resource was, by and large, about right. That said, half of the participants did suggest additional functions and features. One participant suggested that the results pages for Individuals’ Lives could have additional tools to allow designers to quickly filter results by age group, sex and so on. And two participants thought that the photographs should have a zoom feature to enable designers to magnify areas of interest. A further participant thought that the ability to watch videos full screen would make the material more engaging and that the resource would benefit from having a breadcrumb trail and a site map. Finally, another participant thought that a feature enabling designers to contact individuals shown in Individuals’ Lives would be a valuable addition to the resource.
8.4.2 Usability

8.4.2.1 Usability issues found in the demonstration

The only feature shown in the demonstration that was considered a usability problem was the case sensitive search engine and its associated pop-ups. It was so strongly criticised by nearly all the participants that the author, using Nielsen’s severity rating system (2005b), classified it as a ‘usability catastrophe’. The two main concerns were that designers would forget that the search engine was case sensitive and that the pop-ups would be dismissed without being read. Over half of the participants thought that a better solution would be to have two non case sensitive search boxes in which designers could input their search terms (i.e. to use a search engine similar to that originally described in Section 6.3.6.1). This approach, as well as being more conventional, would also negate the need for pop-ups.

Two participants added that they thought the search engine would also benefit from being more ‘live’; by this they meant that it should continuously show designers how their search terms affect the number of results that would be returned.

8.4.2.2 Usability issues found in the test

In the usability test four participants failed to complete a task. One did not realise that he could click on the interactive plan of the property to take him to different room and three did not realise that they could click the interactive photograph of the individual to take them to the individual’s Personal information page. However, although these three participants did not successfully accomplish their tasks, none saw their lack of success as a problem. This was because they all knew of a different way to do what they wanted and they all thought that they would have discovered these interactions if they had been given more time. Nevertheless, as one participant suggested, a simple solution to help designers recognise that such features were interactive would be to add tooltips indicating what each feature did if it were clicked. Based on the fact that these issues were not considered serious by the participants and that they did not prevent them using the resource, the author judged these issues to be ‘minor usability problems’.

Two other features were also judged by the author to be ‘minor usability problems’. The first was the ‘Play 4X faster’ speed selector button found on some of the videos
(see Figure 8.1). This caused problems for one participant who struggled for around ten seconds before he could get the feature to work. The problem was that he thought he only needed to click the button to get the video to play four times faster when in fact this only set the speed and he additionally needed to click the ‘Start’ button. A solution to this problem might be to replace the ‘Play 4X faster’ speed selector button with a ‘Play 4X faster’ play button. This button could be integrated into the video viewer alongside the original ‘Start’ button and, when clicked, play the video at four times its normal speed without the need to press additional buttons. To revert to normal speed the designer could press the original ‘Start’ button which, for clarity, could be renamed ‘Play at normal speed’.

![Figure 8.1 The ‘Play 4X faster’ speed selector and ‘Start’ button](image)

The second feature was the ‘reverse look-up’ button. This button was found next to all the links in the ‘Links panels’ and took designers to the information on the page the link related to (see Figure 8.2). Two participants commented that they found the button confusing as on clicking it they thought that they would be taken to a new page rather than to a different location on the same page. However, both participants commented that they had used similar features on other websites and that it was unlikely they would find it confusing again now they knew how it worked.
8.4.2.3 The System Usability Scale rating

The number generated by the System Usability Scale was 75.75 (with a 95% confidence interval of 68.89 to 82.61). According to Tullis and Albert (2008), this value is characteristic of a product having a satisfactory level of usability. However, it should be noted that this value is partially based on ‘apparent usability’ rather than on ‘inherent usability’ as a number of the features did not function and others only functioned to a level that they could be demonstrated (see Kurosu and Kashimura, 1995). Because of this, the value should be seen as a rough estimate of the resource’s potential usability rather than a precise indicator of the resource’s actual usability.

8.4.2.4 Usability issues discussed in the interview

Everyone in the interview commented that the resource would be quick to learn and that re-establishing proficiency after a break would not be a problem. In addition, they all thought that no extra documentation was needed to perform the activities they had witnessed in the demonstration and the tasks they had performed in the usability test.

All the participants found the experience of using the resource positive or very positive. However, three participants stated that the interface would be better if it were more consistent. One of these participants specifically referred to the fact that the ‘Links’ panel was not in the same location on all the pages. This issue was also identified in the heuristic inspection.
When asked whether any of the features were difficult or frustrating to use, four participants indicated that they had found issues that warranted further attention. Two commented that they found the slider bars on the room scans fiddly, and two stated that they found the scroll bars in the ‘Links’ panels awkward when they controlled them using the mouse wheel. Both issues would be easy to address: the first through recoding and the second though repositioning14. All of the participants stated that they felt confident when exploring the interface and recovering from errors. Apart from two participants, who were initially confused by the favourite/problematic face symbols on the menus, all participants found the interface elements clear.

8.4.3 Content presentation

The general consensus amongst participants was that the interface looked fit for purpose but could do with being neautened up in places. All the participants were happy with the quality of the videos and photographs; and of the eight who offered an opinion, all thought the text was at the right level and not too wordy. (The other two participants indicated they would need more time with the resource to comment accurately). Everyone agreed that the information structure in the resource was logical and liked the way in which the information was layered. Two participants commented they also liked the ‘key points’ and thought that this feature would help them decide whether to explore a topic in more detail. A further two participants mentioned that they found the subtitling helpful.

All ten participants thought the information in the resource was engaging and they all agreed that the most captivating information was the video and the photos. Although each participant examined a different set of pages, they all agreed that the information they looked at individually was relevant and potentially useful. The materials that received the most praise in Individuals’ Lives were the videos showing the individual going about his daily activities and the room scans. Both these were considered to offer a high level of insight; and one participant added that he had not seen this kind of information anywhere else. Although the content in the Information Page was also considered potentially useful no section of it was singled out as offering more insight than another.

14 By placing the ‘Links’ panels at the bottom of each page the need for scroll bars would be eliminated as the panel’s heights would not be restricted; this alteration would also improve consistency as the panels would be in the same place on all the pages.
All but one of the participants thought that the information in the resource was probably the right depth. The participant who thought otherwise believed that the information was too deep. He argued that the resource should contain only videos of people going about their everyday lives and that everything else, such as the interviews, room tours, external links and Information Pages, should be removed as they made the resource too complex. While this viewpoint was not shared by any of the other participants, it does suggest that a more modular approach to the resource might be desirable to some designers: an approach that would permit them to build the resource to their own information requirements.

None of the participants thought that any information was obviously missing from the resource; however, several of them did comment that they would need more time with a more complete resource to pass proper judgement. And, apart from the participant who thought the resource should only contain videos of people going about their everyday lives, none of the participants thought that the resource contained extraneous or unnecessary information. Indeed, one participant stated that he would be happy if it had even more information.

### 8.4.4 Value to the design process

When asked as to whether the resource would be of value to the design process, all of the participants stated emphatically that it would. However, one participant added that his reply was conditional on the resource having a good ‘save’ feature that would permit him to label, store and retrieve information quickly. (Such a feature was already included in the resource but was not demonstrated as it had been built with no functionality). Two other participants also stated that the resource’s value would depend on the number of individuals on the resource’s database; they both indicated that the more users on the database the more valuable the resource would potentially be.

All the participants thought that the resource would be of most value at the start of a project to learn more about users, to give them a ‘cultural overview’ before they conducted their own research, to check anthropometric data and to help generate ideas. All but one of the participants added that they would also use it during the design process as a source of reference, to verify concepts and to remind themselves (and
their staff) of the people they were designing for. One participant also stated that it would be useful for bids and proposals.

Although all the participants stated that they thought the resource would help them gain a clearer picture of users, they all saw it as an additional data stream rather than as a replacement for conducting their own research. Nonetheless, two of them did state that they would probably use it on its own when they were working on projects that did not have the financial resources to fund user research; this was because it would enable them to work with some user information rather none. Another participant also stated that he might use the resource on its own to answer simple questions, such as whether Chinese and British children start to read at the same age, provided that the information he was looking at was accredited by an expert.

When asked whether the resource would be worthwhile using in terms of time and effort, all the participants answered that it would. Two participants added that they did not envisage using it for every project but that they would use it for projects in which they wanted to know more about a user group. There was a consensus that Individuals’ Lives was probably more useful than Information Pages but two participants clearly thought that the resource’s value would be greatly compromised if it did not have both sections.

The participants were asked if they had any concerns about the resource. Three issues were raised. The one that was raised the most, which was mentioned by four of the participants, was to do with the integrity of the information: how would users know it was reliable and authentic? When asked what reassurances might help to mitigate these concerns, two participants stated that the information in the resource should, where possible, be referenced or accredited by a profession body. Another participant, specifically discussing the information in the Individuals’ Lives pages, stated that trying to resolve concerns about integrity through design was difficult. He added that designers would probably only start to trust the information in these pages with time, unless the resource was built in conjunction with a leading university or a trusted brand such as Mintel. The second concern was to do with how often the information in the resource would be updated. This was an issue raised by two participants who stated that if the information in the resource was not refreshed regularly it would start to lose its value. Finally, the third concern was to do with the anthropometric data. This was raised by one participant (a trained ergonomist) who thought that some designers might base the dimensions of their designs on
anthropometric data taken from just a couple of individuals. The participant suggested that an answer to this problem might be to state clearly on all the anthropometric pages that basing ergonomics decisions on the measurements of a small number of individuals would be bad practice. The participant suggested that the resource could also encourage designers to use the ergonomics databases shown in the ‘Links’ panel, if appropriate, or contact a qualified ergonomist.

The participants’ final question was whether they could envisage themselves using the resource if it were a proper working product. All the participants stated that they would. However, a number did add the proviso that their decision would be dependent on cost.

8.5 Limitations

Although the results of the evaluation were generally very positive, the evaluation had limitations and as such the findings should not be generalised beyond that which is appropriate. First, as only a small number of participants took part in the evaluation and they were selected using typical case sampling, the findings are unlikely to be fully representative of those for which the resource is intended. And second, as certain features in the resource were only able to be demonstrated, participants often had to make judgements based on what they were shown rather than what they personally experienced. Furthermore, it is also likely that some of the participants, if not all, guessed that the resource was developed by the author and thus offered more favourable replies in their interviews than they would have had had they thought the resource had been developed by an unrelated third party.

In addition to the above, it is also important to point out that the findings related to first-time usage, not regular usage; and that the participants only looked at a small selection of pages. Also, the act of thinking aloud while performing tasks, although useful for data collection, was not representative of the way in which the resource is likely to be used. These limitations suggest that it is advisable to be cautious with the results. However, it is probably fair to say that the results do suggest that the resource, with a few modifications, has strong potential to be of great value to the design industry.
8.6 Conclusion

The aim of the evaluation was to assess the resource with design professionals for its functionality, usability, content presentation, value to the design process and to identify areas of the resource that would benefit from further development. The evaluation involved a usability test, the completion of a usability questionnaire (the System Usability Scale) and a semi-structured interview.

All those who participated in the evaluation agreed that the resource had a good level of functionality. However, a number of the participants suggested additional features, including a photograph zoom feature and a full-screen video feature. The System Usability Scale revealed that the participants thought the resource, when taken as a whole, had a satisfactory level of usability. That said, participants thought it likely that the search engine and its associated pop-ups would cause usability issues as it did not allow enquiries to be inputted in lowercase and/or uppercase and pop-ups would be dismissed unread. This feature would need to be substantially redesigned if the resource were released as a finished product.

The participants agreed that the resource contained information that was engaging, of the right depth, logically arranged and likely to be useful. The materials participants considered offered the most insight in the Individuals’ Lives pages were the videos of the individuals going about their everyday lives and the room scans. All the material in the Information Pages was thought to offer the same level of insight.

Overall, the participants were excited by the resource and stated that it would be of great value to the design process. Crucially, none saw it as an alternative to conducting user research but as an additional data stream. Participants’ principle concern was that the information in the resource was authentic. They all stated that they would use the resource if it were reasonably priced.

Clearly, testing a more complete resource during a live project in a studio environment would provide more accurate information as to the appropriateness of the resource. It would also highlight areas where additional improvements could be made.
9.1 Introduction

The aim of this research was to provide an understanding of the attributes that professional designers require from a resource intended to give them a quick, but broad, overview of the people they are designing for. While working towards achieving this aim several topics and issues were identified that the author felt were worthy of discussion. This chapter discusses these. Additionally, it reiterates the purpose of the resource and discusses its content.

9.2 The resource

The resource was created because the author, having worked in design, was aware that many designers did not regularly use research tools or methods to understand users but instead relied on self modelling and stereotyping. He recognised that this practice was problematic as markets were becoming more diverse and people were demanding products to be more user-centred. The author believed that designers were not using the tools or methods available to them as they did not suit their needs, and thought that there might be an opportunity for a new tool that would inform them of the people they were designing for. The author did not know what form this tool might take or what information it might contain, so he consulted the literature for guidance. The literature revealed that there was a need for a tool that offered designers a broad and instant understanding of users. The author, having collected information from participants on what content the resource should contain and their opinions as to how it should function, then created a prototype of this tool which he evaluated as outlined in Section 3.4.
9.2.1 Purpose

The purpose of the resource was to provide designers with a quick, but broad overview of their users so that they might identify with them and create more appropriate products. It was created to be used at the beginning of the design process when designers innovate and consider product ideas, the aim being to encourage designers to think about how people in different cultures behave and live. In addition to informing designers of their users, it was also hoped that the resource might spur designers to conduct their own user research by showing them that many people do not have the same lifestyles, tastes and values as them.

9.2.2 Content

The information in the resource was informed by the review (see Chapter 2) and by what professional designers said in their interviews (see Chapter 4). For example, in the literature Bronfenbrenner (1979; 1986) and Comer (2004) argued that people have a bi-directional relationship with their environments: people shape their environments and their environments shape them. The resource therefore offered information on people’s surroundings. Likewise, in the literature, Desmet (2008) asserted that when designing products it is important to understand people’s concerns as these play a key role in determining emotions; thus information on people’s values, interests and so on were included in the resource. However, it should be noted that the resource was not developed to replace current methods and tools but to fill a gap in the existing information available; as such, some types of information were not represented in the resource to a great extent (e.g. marketing information; see Chapter 2 for its definition). When the resource was built, the information it provided was divided into four categories: Details, Living space, Activities & interests and Products. These categories were used to help designers find information quickly when browsing.

The review, together with the focus group, offered guidance as to how the information in the resource should be presented. It was clear that the information needed to be visual, layered, not overly technical and presented in ‘easily digestible’ chunks. It was also clear that designers wanted to be able to navigate to different points in the videos quickly, and that they thought subtitles, transcripts and accompanying explanations summarising what was going on in them would be useful. It was also apparent that the videos should not contain special effects for dramatic effect and that the people in them should behave as naturally as possible.
Several aspects of the resource were informed by other researchers’ work. For example, the *Products* category of Individual’s Lives included videos of people being interviewed with their favourite products. Comparable videos were used in RealPeople (see Chapter 2). However, unlike the videos in RealPeople, the videos in Individual’s Lives were linked to other visual material that showed the products being used, stored, maintained, cleaned and so on in context. This was included to enable designers to understand how these products fit into people’s lives. Furthermore, in contrast to RealPeople, the author’s resource also included videos of people discussing problematic products. These videos were included to help designers understand what aspects of products displeased people. This was considered important as pleasure can be elicited not only through the acquisition of delight but also through the removal of discomfort (Jordan, 2000).

Typical day videos were also informed by the work of others. Vox Pops\(^{15}\), for example, make similar videos to those found in the resource. However, unlike Vox Pops videos, which are single-segment videos created for presentations and marketing initiatives, the videos in People’s Lives were segmented. This enabled designers to move between different sections of the film quickly and watch only what interested them. Another company that made similar videos was EverydayLives\(^{16}\). However, like Vox Pops, their videos were not segmented and were created to be viewed in their entirety, in one sitting.

A final example was the *Task* videos. Many people have uploaded similar videos of themselves performing tasks on YouTube. However, at time of writing, YouTube videos can only be viewed in real time. In People’s Lives the majority of the Task videos supported a 4X faster button. This button allowed the video to be watched at four times its normal speed. This feature was incorporated as the author read that researchers at Palo Alto Research Center often watch films at high speed, to help them identify rhythms and periodicities of the task being undertaken (see Ylirisku and Buur, 2007).

On reflection, if the author were creating the resource today he would make a number of changes to the way visual content was presented. He would include a zoom feature on the photographs to enable designers to explore them in more detail and make all

\(^{15}\) Vox Pops is a video research and communications company (see www.voxpops.com).

\(^{16}\) EverydayLives was a video ethnography company that helped businesses understand the lives of their users so that they could design more appropriate products and services for them.
the videos bigger so they were more engaging. Both these changes were suggested by
design professionals in the evaluation (see Chapter 8). He would also include full
length (i.e. uncut) footage of all the films in case some designers wanted to watch the
sections of film that were removed from the edited versions. This was mentioned by
Member 2 in the focus group (see Appendix F). (In the prototype uncut films were not
included due to offline buffering issues).

9.2.3 Scope and depth of information

Literature indicated that designers needed more instantly accessible stories, emotional
information, lifestyle information, background information and intangible information;
and that they required this information in a visual format (see Chapter 2 for the
definitions of these information types). It also suggested that designers would
appreciate having simple, highly visual anthropometric information. The comments of
the design professionals (see Chapter 4) supported this. They requested a broad range
of information including that on people’s routines, dimensions, ways of life, frustrations,
delights, latent needs and brand preferences. In addition, they requested information
on general user related topics such as population ageing.

However, while designers appealed for many different types of information, it is
questionable as to whether the resource should contain them all. A growing number of
resources are appearing online that offer designers high quality information in specific
areas. SizeChina (see www.sizechina.com), for example, is a resource that has
become available since the author started his research. It has been developed
specifically for designers and offers accurate anthropometric data on Chinese head
shapes in a non-technical and visual way. Due to these new resources and due to the
ease in which older specialist resources can now be accessed using the Internet (e.g.
PeopleSize; see www.openerg.com), there is a strong argument that People’s Lives
should focus on providing just one kind of information. Arguably, this kind of information
should be contextual information (principally in the form of video) that shows people
going about their everyday lives. Designers consulted were excited by this information
in the resource commenting that they found it highly insightful, valuable and engaging
(see Chapter 8). They also commented that it was presently difficult to obtain in the
resources presently available.
As stated in Section 9.2.1, the resource was developed to be used at the outset of a design project to assist in the acts of ideation and concept generation. As such, the information it contained was designed to be at a level that would give designers an overview of individuals and their lives. It was not created to offer deep insights into highly specific topics, situations and instances. For example, while the resource would include videos showing people with osteoarthritis taking their daily medicine and having difficulty moving around, it would not include videos showing the intricacies of hip surgery or explain the complexities of such a procedure. In the main, designers thought the information in the resource was of the right depth and they all saw it as an additional data stream rather than a replacement for doing their own research into specific topics (see Chapter 8).

9.2.4 Maintaining the data

At several points during this research design professionals and university members questioned whether individuals on the resource should create and maintain their own data profiles. However, although this sounded appealing, the author increasingly believed it would be impracticable.

One problem was that capturing, editing and categorising information would have taken each individual several days to complete. This would have demanded considerable commitment of those included on the resource. It is questionable whether those involved would have had the time, enthusiasm and discipline to create their profiles properly. Indeed, Salari (2008b), in a self financed project, asked 250 members of an ethnographic panel\(^{17}\) to make short videos of themselves. The members were all known to make their own videos and upload them to YouTube. To Salari’s disappointment, not a single member sent him a film. The author of this thesis concluded that if he collected and handled material in the resource, then this would relieve individuals of data collection and editing. It would also allow them to behave more naturally in front of camera as they would not have to worry about the technicalities of filming themselves.

A second potential problem was that of erroneously exposing personal information of people not involved in the project. Many researchers talk about the need to go through

\(^{17}\) An ethnographic panel is a collection of individuals that are happy to be filmed and for their images to be used for a variety of different purposes. They are used extensively by marketing companies.
videos and remove personal details which are often accidentally revealed film (e.g. Conand and Dornadic, 2012; Isaacs, 2013). If these details were accidentally included in a video, they might cause unnecessary embarrassment and/or offence. They could even prompt legal action.

Image and sound quality were also identified as potential causes for concern. As Faulkner and Zafiroglu (2010; p.120) explain, films shot by participants are often shaky and have poor audio. Considering designers might make design decisions based on such videos, it was thought preferable to make solely good quality videos. Furthermore, it seemed likely that without the involvement of a trained observer many details might not be captured. This was because many people who film themselves do not capture mundane activities as they deem them unimportant (Moore, 2002; Salari, 2008a). Also it is very difficult for someone to look at their own culture and idiosyncrasies objectively.

Many design professionals raised questions about how to keep resource material up to date. The author envisaged that the individuals' profiles would need updating/renewing every six to seven years. While, it could be argued that the profiles should be updated more regularly in accordance with changes in technology, most characteristics that make us who we are remain fairly constant. As Norman (1988) and Hofstede et al., (2010) elucidate, our thinking processes, core needs, values, ethnic cultures and so on do not change quickly. However, the author envisaged that any material deemed out of date would be kept, to inform designers about the trends and fashions of the past.

9.2.5 Missing information

The purpose of this research is to help designers understand users who are different from themselves. However, it is unlikely that the resource would be able to contain information on all types of users because collecting such a large amount of information would be almost impossible. In addition, it is likely that users from certain cultures may not want to be featured on the resource and that filming in some locations might be too challenging. For example, filming in Saudi Arabia could prove impossible because of the many restrictions in place to preserve local sensitivities (The British Embassy in Riyadh, 2011).

However, from the comments made in the evaluations it was evident that the design professionals did not only accept these limitations but expected them. Perhaps
because of this, they did not see them as a major problem. Instead, they were excited at the prospect of being able to get hold of any additional information and felt that any missing information could be acquired using other research methods and tools.

9.2.6 Marketing the resource

Many design professionals during the course of this research questioned how the resource might be marketed. Creating a database that contains information on a large number of cultures and topics would be a costly task. Nonetheless, the findings of this research (see Chapter 8) suggest that such a database would be of great value to those working in design. Furthermore, several design professionals thought that it might also be of value to people who work in other professions, such as advertising and marketing.

Many of the design professionals suggested ways in which the resource might be sold. One suggestion was that designers could subscribe to the whole resource for a set period of time, during which they could access it as much as they liked. Another suggestion was that designers could buy access to user groups as and when they pleased. Whatever the conditions of sale, access to the resource would need to be reasonably priced, otherwise it might be found that only large design consultancies and companies could afford to use it. This would somewhat defeat the resource’s purpose as its information would only be available to those that typically already conduct user research.

9.3 Video resources

When the author started his research in 2006 the Internet was very different. Around half of users in OECD countries accessed the Internet using dial-up, YouTube was less than a year old and many popular websites such as Bing, Dropbox, Instagram, Pinterest, Spotify, and tumblr did not exist (Curtis, 2013; Dropbox, 2013; Marston, 2012; Microsoft, 2009; Organisation for Economic Co-operation and Development, 2011; Pinterest, 2013; Tumblr, 2013; YouTube, 2013a). However, although the Internet has grown, become faster and more popular since 2006, a resource that offers designers broad, contextual video-based information on a wide range of individuals, such as People’s Lives, still does not, to the author’s knowledge, exist.
That said, numerous websites, such as Dailymotion (www.dailymotion.com) and YouTube, allow people to upload, view and share videos. However, while many videos on these websites show individuals going about their lives, they are often stand alone clips. This limits their use for user research as they do not allow designers to build up a broad understanding of individuals. These websites typically host videos that have been created for entertainment, educational purposes, news broadcasting and so on. As such, designers need to filter search results to find what they need. Furthermore, if they find an interesting video, there is often little or no information explaining why the video was uploaded or when it was shot.

Another problem with some video websites (e.g. YouTube) is that they have different portals for different nationalities. This means that search terms often need to be inputted in a language different from that of the designer. Furthermore, once a video has been found, it is likely be in the language of the person who uploaded it.

In Individual’s Lives, all videos (except the interviews) show individuals behaving naturally; they are also all dated and categorised. This means that designers know exactly what they are going to get from a search; and by using the main menu they can find whatever information they need quickly and easily. In addition, designers can search for people from different nationalities, while learning about them in their own language. Besides, all videos carry subtitles written in the designers’ native tongue.

Another source of user related video information are organisations that supply films for educational establishments. Such companies and organisations include Alexander Street Press (See Section 2.7.5), The People’s of the World Foundation (http://www.peoplesoftheworld.org), New Day films (www.newday.com), The BBC (www.bbcshop.co.uk) and Ethnoscope (www.docfilm.com). Most these organisations sell DVDs and some stream video online.

However, while the videos supplied by these organisations offer insights into people’s lives they are usually on highly specific topics such as the effects of US immigration policies on children and life in New Orleans after Hurricane Katrina. They also typically have music and/or narration; these post-production techniques were considered undesirable in videos for designers by the focus group members (see Chapter 5). Furthermore, many of the films are over an hour long; this means designers have to watch them for a considerable amount of time before discovering whether they contain any useful information. Finally, most of the organisations that supply these films are
not set up to sell them to commercial enterprises; consequently, commercial licences may be required. This often means contacting the individual film makers, a process which takes time and could result in a negative reply.

9.4 The Internet as a research tool

The size of the Internet is now vast. While there is no official guide to its enormity, Netcraft, a British Internet mining company whose clients include Microsoft, Cisco and the 2012 Olympic Games, calculated in December 2011 that it supported around 556 million websites (Netcraft, 2011). Clearly, with this amount of information online and much of it free and current, many designers have turned to the Internet to conduct research. Resources such as image banks, chat rooms, blogs, social networks, Internet forums and review websites all provide information on users and their needs. While this information typically relates only to people who have Internet access, collecting it is often cheaper, faster and less obtrusive than traditional research methods such as interviews and focus groups.

However, one problem with the Internet is that anyone can upload anything. Not only has this resulted in people uploading material with inaccuracies but it has also led to companies purposely posting fictitious reviews for commercial advantage. The latter is now so common that the consumer review website Yelp (www.yelp.com) believes that around a quarter of the reviews it receives are not real (British Broadcasting Corporation, 2013). The lack of tight controls online has also resulted in people creating fake profiles on social networking sites. Facebook, for example, estimated in 2012 that around 83 million of its personal accounts were fake (Ebersman and Spillane, 2012). Furthermore, many people who maintain ‘genuine’ profiles online often embellish their credentials so that they appear more interesting and successful (see Toma and Hancock, 2010). Clearly, designers using such information are unlikely to obtain an accurate understanding of people and their needs.

Another problem with information online is that it is rarely accompanied by details about the individual who uploaded it. This prevents designers from learning anything about a contributor and hampers their ability to empathise with him/her. In People’s Lives, each individual comes with a broad range of information about his/her living arrangements, pastimes, values and so on. This information helps designers understand the lives of
the people they are designing for and assists them in viewing the world through the eyes of others.

A final problem with information online relates to ethics. Many personal websites and blogs provide useful user information. However, whether this information is private or not is open to debate; moreover, due to many people choosing to remain anonymous online, it is often impossible to establish who owns it. It is thus often left to the person viewing the website or blog to decide whether the information can be used or not. Forums also raise ethical issues. Questions arise as to whether solely observing a discussion is a form of ‘electronic lurking’ and whether engaging in a debate to elicit information solely for commercial gain is, at any time, acceptable (see Eysenbach and Till, 2001).

### 9.5 Overcoming resistance to user research

The information in the literature (see Chapters 1 and 2) and that gathered in the interviews (see Chapter 4) revealed that while most designers believe that user research has benefits, the amount of user research actually being carried out by some designers is very small. Furthermore, of the research that is being undertaken by designers, most is conducted using ‘standard’ resources such as YouTube and Flickr, rather than the user research tools and methods described in the literature. In agreement with Storer and McDonagh (2002), the author found that the main reason designers were not conducting much user research was that many clients/companies do not believe that conducting user research is financially worthwhile due to the amount of time that it takes, which means they are unwilling to fund it. As several designers explained in the course of this research, this lack of faith by clients/companies towards user research severely restricts the ways in which they can obtain information about their users. In some cases it often leaves only one option: the Internet.

From the comments made by designers in the interviews, the author feels that until clients/companies can be persuaded of the value of user research, many designers will not be able to use many of the methods and tools developed for them. The question is how can clients/companies be made aware of the research’s value? Storer and McDonagh (2002) believe this is very difficult, as many of the benefits of user research are intangible and thus incapable of being easily measured or included in a cost-benefit
However, Gilmore (2002), discussing ethnography, explains that it is possible to demonstrate the value of user research. He claims that the answer is not to espouse the business case for user research, as this often leads to arguments (especially if a lot of money has already been spent on market research), but to show clients the type of information that inspires designers. He suggests that the best way to do this is to show clients videos of real people in real environments (i.e. the kind of information found in People’s Lives). He remarks that when clients see this type of rich information they usually understand why it is needed, and are often more disposed to financing the research needed to produce it.

Understandably, most research in user-centred design has focused on the relationship between users and designers. However, the research in this thesis, together with other research in the literature (e.g. Pruitt and Adlin, 2006; Storer and McDonagh, 2002), suggests that a single-pronged approach to promoting user-centred design is probably not the most effective way to help designers create better products for users. Those commissioning the research also need to be considered. Although clearly more research is needed in this area, it is evident that tools that require designers to leave their desks or invest time with users are, at the moment, problematic.

In industry, many designers are either consultants or employees and thus cannot carry out in-depth research unless their clients or superiors sanction it. Until these people in authority can be made aware of the value of user research, the author believes that many designers will continue to conduct user research at a cursory level regardless of how committed they are to its aims, and regardless of the number of tools and methods they have at their disposal.

9.6 Designers’ information requirements still being ignored

Although Porter and Porter (1999) comment that there is a wealth of information on ergonomics at designers’ disposal, it was clear from the interviews that many design professionals were not taking advantage of it. During the interviews, all the design professionals stated that they used ergonomics information, at least occasionally, in their work. However, while resources such as ‘Bodyspace’ (Pheasant, 1996) and ‘Measure of man and woman’ (Tilley and Henry Dreyfuss Associates, 1993) were popular, other resources were clearly not. One such resource was academic journals. None of the design professionals from smaller consultancies (those consultancies that
had 15 staff or fewer) stated that they chose to refer to academic journals, while
designers from larger consultancies (those consultancies that had 16 staff or more)
said that they rarely consulted them. This last finding is interesting as it is in these
journals that the most up-to-date ergonomics information is often published, which
means practising designers are missing out on information that might be the most
useful and relevant to them.

Many ergonomists complain that ergonomics information is often left out of the design
process (Burns and Vicente, 2000). One recognised reason for this is that designers do
not think that it suits the way they work (Gyi et al, 2000). Designers like visual
information that is quick and easy to use. Although this has been known for many
years, much of the ergonomics information widely available continues to be produced
as text and takes time to interpret and apply (Ball, 2009). One sizable reason for this is
that much of it is generated by academics. As Norman (2001) and McDonagh (2006)
explain, the concerns and goals of academics are very different from those of
designers. Academics are concerned with critiquing and looking for subtleties in
controlled studies and their goals are to publish in select journals, most of which have
strict presentation formats and expect certain writing styles. Designers, however, are
concerned with speed, costs and providing value to clients; their goals are to get
products onto shelves and ensure they sell well.

It is therefore possible that the problem of designers complaining that ergonomics
information is not suitable for their needs, and ergonomists complaining that designers
do not consider ergonomics, could go on indefinitely. However, with calls for
universities to have closer ties to industry (European Parliament, 2010) and with public
and government agencies reducing support for the ergonomics profession (Fulton Suri,
2001), this might not be the case. The ergonomics community might have to adapt in
order to survive. However, the irony is, that unless this happens, one of the greatest
barriers to products becoming more user-centred will continue to be the ergonomists
themselves.

9.7 Using ethnography to deliver a more holistic understanding of users

The literature revealed that users want products not only to offer functional benefits but
also to offer good usability and emotional benefits (see Chapters 1 and 2). However, in
order for designers to deliver such benefits, they need to have a clear picture of who

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they are designing for and of the environment in which the product they are designing will be used. This is because a product's usability and emotional appeal varies according to a user’s background, culture and skill, as well as the context in which the product is being used or viewed.

Ethnography is a research approach that uses multiple methods including interviews, observations and literature analysis to offer designers a comprehensive view of users and their environments (Taylor et al., 2002; Van Veggel, 2005). Unlike many discrete methods such as focus groups, ethnography can show designers what users actually do, rather than what they say they do (Van Veggel, 2005). It can also reveal users’ latent needs and show how users adapt products to make them usable (Salari and Leon, 2003; South, 2004). Furthermore, when video is used (which is usually the case in design research) it offers designers information that is engaging, richly descriptive and easy to digest (Taylor et al., 2002).

In the interviews with design professionals one user researcher stated that he thought that video ethnography was the most beneficial research technique there was for giving designers a good understanding of users (see Chapter 4; Appendix D, Participant 1). He also commented that designers find video highly engaging. This comment was supported by other interviewees and authors in the literature (e.g. Taylor et al., 2002).

However, video ethnography has a number of recognised drawbacks. One drawback is that it is extremely time consuming to conduct. As Salari and Leon (2003) explain, even the briefest of studies takes at least three to four days to conduct, as it usually takes around a day for the person being studied to learn to trust the researcher(s) and to start behaving in a way that is more akin to his/her normal self.

Another is that video takes a long time to spool through, edit and analyse (Salari and Leon, 2003; Taylor et al., 2002). A further drawback, often not recognised by designers (see Van Veggel, 2005), is that video ethnography is a highly specialised activity that needs a high level of training to be effective (Salari and Leon, 2003). Researchers have to be able to put their subjects at ease, they have to be able to know how and when to ask questions and they have to be technically skilled (so they can shoot film in all lights and environments). Furthermore, they have to be able to pick out insightful and informative footage from that shot, and, at the end of the process, they have to be able to create films that are interesting to watch, insightful, educational and useful.
Although ethnography usually generates huge amounts of information, the information that is not immediately used is rarely stored, as this is rarely considered financially worthwhile (Taylor et al., 2002). To address this issue, the research consortium ‘Global Companies in Local Markets’, a corporate-funded research consortium based at the Illinois Institute of Technology, has developed a piece of software called the ‘User Insights Tool’ (see Figure 9.1). This tool organises ethnographic information so that it is searchable and re-usable. It is directed at companies wishing to understand more about the activities and behavioural patterns of people in foreign markets. The tool works by allowing companies to access a shared database that can be searched using keywords. Two companies that have used the software are Proctor and Gamble and China’s Lenovo Group (Berner, 2006).

![Figure 9.1 The User Insights Tool](Fort et al., 2006, p.1)

The tool is similar to the Individuals’ Lives part of People’s Lives in that it enables designers to look into the lives of users. However, it differs in that all the information contained in it relates to projects that have been commissioned/conducted (and uploaded) by the companies in the consortium (Kumar, 2004b). Thus, if some of the companies have not undertaken research into a certain topic (or have carried out research but have not uploaded it because they do not want to share it) the tool will not contain this information. This is unlike People’s Lives, which is a wholly independent resource that does not rely on contributors.
In addition, the User Insights Tool is not based around individuals but on themes, which are referred to within the tool as ‘frameworks’. These frameworks differ depending on the version of the software, but typically cover areas such as brand, strategy, user experience and user interaction. (To learn more about the different versions see Fort et al., 2006; Kumar, 2004b; Whitney and Kumar, 2003). The User Insights Tool is therefore not set up to enable a designer to easily search for a specific individuals, nor is it set up to provide easy access to information on an individual’s family, home, pastimes and so on. Indeed, this information might not be available on the tool at all. Unlike People’s Lives, some of the information on the User Insights Tool is recorded by the individuals featured in the tool. Another difference is that the later versions of the User Insights Tool have a vast array of features that enable the organisation, analysis and printing of data.

However, although the User Insights Tool offers researchers a comprehensive framework to manage ethnographic data, it does not address the fact that many designers do not conduct ethnography because it is a time consuming and complex process. Indeed, from conversations with designers, the author believes that unless the issues of time and complexity are addressed, the use of ethnographic data will continue to be solely the preserve of large design consultancies/companies. The research in this thesis suggests that one way of making ethnographic information more readily and more quickly available to a greater number of designers is to create an ‘off-the-shelf’ resource such as People’s Lives.

9.8 Video ethnography

Video ethnography is an emerging field in design (Ylirisku and Buur, 2007), hence there is limited guidance in the literature as to how it should be conducted and how results of studies should be presented to designers. However, papers on video ethnography do exist and several websites discuss the method (e.g. www.nakedeyeresearch.co.uk). While not all these websites relate to design, they do offer insights into video ethnography as a practice. This section discusses some of the issues that relate to video ethnography and its use in the resource.
9.8.1 Questioning and narration

One aspect of video ethnography that varies greatly between practitioners is how participants are questioned. Some practitioners question participants about what they are doing while the camera is rolling (e.g. Isaacs, 2013) while others question them only once the camera has been turned off (e.g. Salari, 2008d). The author decided to use the latter approach. He made this decision after speaking to Salari (telephone conversation: 04 November 2008), a professional video ethnographer. Salari explained that he used to question people while filming but stopped as he found that it distracted them from what they were doing; these distractions resulted in them behaving unnaturally. He explained that his clients (all of whom were marketeers, managers or similar; i.e. not designers) (personal email: 15 November 2013), generally want footage that show people behaving as naturally as possible, so he started only to ask questions after he had shot the film. As designers are also interested in seeing people behaving as naturally as possible, the author also chose not to speak to participants while they were being filmed (unless the film was of an interview).

However, the author did not follow Salari’s approach with respect to post production. Salari and Leon (2003) having filmed a participant would ask the participant to narrate over the film to explain various issues, such as what he/she was doing. While, hearing a participant’s voice can foster empathy, this post-production process was not done as the members of the focus group (see Chapter 5) had indicated that hearing background noises helped them understand an individual’s environment better. Instead the author added supplementary information as text. It should be noted that participants did talk in the videos but never in the role of a narrator.

Another issue with narration is that the commentary always relates to a certain topic. The resource, however, could be expected to be used on a variety of projects with different aims. Consequently, it might be off-putting if the narrator was talking about something other than what the designer was interested in. An answer to this might be to have narration but give designers the option to turn it off.

9.8.2 Editing and analysing

Most commercial video ethnography projects have a clearly-defined focus. This typically involves gathering information that relates to a product being developed (Ylirisku and Buur, 2007). The author, however, did not have the advantage of knowing
what designers would specifically be looking for, or what products they might be developing, when using the resource. This gave rise to the question of what footage should be kept and what discarded.

In 2002, Taylor et al. (p.179) described the mechanics of video editing as “relatively undocumented”. The author found that this was still the case. Of the accounts of video editing that do exist, most are very brief (for examples, see Isaacs, 2013, p.102; Ylirisku and Buur, 2007, p.30). However, Salari (2009) does offer some guidance; he explains that material that is usually kept focuses on key events, conversations and occasions. Therefore the author of this thesis watched the films he had shot with those who had participated in them and selected sections that showed incidents referred to by Salari. He also selected sections that showed particular behaviour. These then formed the basis of the final films.

The films were then analysed. In industry, this process is usually structured and often involves several people. For example at Palo Alto Research Center, researchers meet weekly to analyse each others’ videos. They watch small sections of film (no more than 30 minutes each) and discuss what they have seen in relation to a defined focus (Ylirisku and Buur, 2007). The author did not carry out such meticulous analysis since he did not know what the designers using the resource would be looking for. Instead, the data was analysed on a more basic level. Ylirisku and Buur (2007) argue that the role of ethnography in design is not to convey overly analysed interpretations and finished explanations but to deliver material that stimulates debate and triggers creative thought. Additionally, Restrepo (2004) argues that designers often mistrust data that has been interpreted by others.

9.8.3 Participants filming themselves

In the past video ethnography usually involved the skills of professional cameramen as cameras were complicated to use. However, over the past few years cameras have become simpler, smaller and cheaper. Most cameras now shoot reasonable footage in most lighting conditions and many are so small that they are built into mobile phones. These changes have led to more and more researchers experimenting with people filming themselves. It has also led to the rise in popularity of video sharing websites such as YouTube.
When the author started his research, cameras used cassettes and shot poor footage indoors if lights were not used. Because they were also complicated to use, he did not ask people to film themselves. However, if the author were beginning this research today, with present day camera technology he would ask participants to film themselves. That said, he would still collect the overwhelming majority of the material himself. The reason for this, as mentioned in Section 9.2.4, is that participants often do not film activities that designers consider useful as they do not consider them important themselves (Salari, 2008a). Participants also and tend to be much more self-conscious when they film themselves, often re-making films if they do something foolish (Faulkner and Zafiroglu, 2010); this results in footage that is unnatural and footage that does not show people’s real behaviours and needs. Nonetheless, recent explorations by video ethnographers have shown that when participants film themselves they often reveal emotions and actions that they rarely show in public, such as getting stressed and hitting malfunctioning machines. Viewers who watch these intimate participant-made films have been found to experience stronger connections with the films’ subjects (Faulkner and Zafiroglu, 2010).

9.8.4 Recent technological developments

There have recently been a number of developments that have had, or are likely to have, an impact on the way in which video ethnography is practised. One such development is Ethos, a mobile phone application designed to be used by ethnographers in the field (see www.ethosapp.com). The application allows ethnographers to capture video, photos, audio and text and share these data instantly with others. It is possible that this technology could help create videos that are more informative as it enables people not in the field to see what is going on and to ask questions. For example, the application enables an ethnographer to film a French person cooking a meal and send this video to people who are not French. The recipients can then ask questions and even request that certain things are filmed. In addition, all this can be done in real time.

Another development is Swivl: a device that enables people to film themselves without continually having to stop what they are doing to adjust the camera. The device consists of a motion-tracking base unit, into which an iPhone or digital camera is placed, and a wireless marker that is worn by the person being filmed (see
www.swivl.com). The device enables participants to pay less attention to the practicalities of filming, thus enabling them to behave more naturally.

9.9 Many designers lack the skills to conduct good quality user research

It was clear from the comments made in the interviews (see Chapter 4), that many clients wanting to commission user research were looking towards the design industry to conduct it. However, it was also clear that many designers, especially those that worked in small consultancies, were ill-prepared to carry out this type of research as they had had little or no training in user research tools and methods.

The fact that many designers lack experience conducting user research is discussed in the literature. The ethnographer, Van Veggel (2005), attests that many designers are sent into the field without any user research experience or training. He comments that many do not have a clear understanding of the information they need to collect or how they are going to collect it, and that a fair number also lack the skills needed to observe people and analyse data properly. He states that many make assumptions as to what motivates people to do things, instead of looking for deeper answers into why they carry out certain tasks a certain way. Torres et al. (2009) comment that such situations often arise because many companies believe that anyone with a reasonable level of intelligence can carry out any role without training or experience.

However, the practice of using untrained (or virtually untrained) staff to conduct user research is undoubtedly risky, especially when designing for people outside one’s own culture. An incident that clearly demonstrates this is offered by Honold (2000). He refers to research carried out by German design-engineers were asked to conduct research into washing machines in India. During the research the design-engineers saw that many families kept their washing machines on trolleys. Because these families lived in cramped conditions the design-engineers assumed that the trolleys were used to move the machines from their storage locations into the bathroom/kitchen so that they could be used. The design-engineers thus concluded that there was a need for a mobile washing machine. This was incorrect. The trolleys were actually used to move the machines to one side so that the floor under them could be cleaned. In other words, what people needed was a machine that prevented dust from getting underneath it, not one that was mobile.
Norman (1999) states that what designers need from academia are fast and cheap research methods. He suggests that these can be developed by trading the scientific accuracy of present methods for quicker results. However, it seems, from the comments made both in the literature (see Chapters 1 and 2) and in the interviews (see Chapter 4), that some design consultancies might be forfeiting too much precision in a quest to save time and money. Indeed, two of the design professionals that the author spoke to in the interviews (one whom worked for a large consultancy and the other a small consultancy) stated that they had been asked to re-conduct user research that had been poorly carried out by a different design firm. This finding is somewhat disconcerting, as some companies commissioning user research for the first time might question whether it is worth doing so again. It also raises the question as to whether the consultancies conducting poor user research would be better off not conducting research at all, as guessing users’ needs might be more accurate than working with substandard data.

People’s Lives would contain information on how to conduct user research, but obviously there is no guarantee that designers using the resource will read this information or act on it. Because of this, the author believes that other research tools and methods are also needed. One approach, as suggested by McDonagh (2006), is for user research to be more widely taught on design degree programmes. Although this approach does not directly involve designers in industry, it does bring a level of skill and a heightened awareness of research tools and methods available to those about to enter the design industry.

9.10 Additional uses for the resource

While the resource was created for use at the beginning of the design process to give designers a quick, but broad overview of the people they are designing for, the author envisages that it could have a number of secondary uses including:

- **Inclusive design**: The resource could be used to encourage the practice of inclusive design by enabling designers to see into the lives of those who are often excluded from using products due to inappropriate design decisions.

- **Teaching**: The resource could be used to demonstrate various ergonomics issues to students. It could also be used to introduce the concept of user research and to explain the problems of self modelling.
• **As a communication aid in industry:** The resource could be used to explain ergonomics issues between departments. It could also be used to show clients, whom often fail to see why market information is of limited value to designers (see Gilmore, 2002), the benefits of undertaking user research.

• **The formation of authentic personas**\(^{18}\): The resource could be used to create trustworthy personas by supplying background information that is factual and valid.

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\(^{18}\) Most authors agree that personas, although fictional, should be grounded in reality (e.g. Grudin and Pruitt 2002; Jordan, 2002), as without this they can mislead and bring about worse designs than if designers had self modelled.
10.1 Introduction

This final chapter describes how the aim and objectives of the research were met and what conclusions were drawn from the research findings. It considers the successes and limitations of the work, presents the thesis’ contributions to knowledge and offers suggestions for further research.

10.2 Meeting the aims and objectives

The aim of this research is to provide an understanding of the attributes that professional designers require from a resource intended to give them a quick, but broad, overview of the people they are designing for. This was accomplished by fulfilling the four objectives described below.

10.2.1 Review

The first objective was to review relevant literature. This was achieved through examining academic journals, conference papers, books, design magazines and websites that related to several areas. These areas were: the principle factors that shape people’s lives; people’s needs with respect to products; how people's needs are addressed by industry; information types available to designers; the design process and the various tools and methods designers employ to enhance their understanding of users.

The literature suggested that to understand a user group properly it is necessary not only to identify with individuals but also the environments in which they live. This is
because the relationship between people and their environments is one of reciprocal influence: people shape their environments and their environments shape them.

With respect to functionality, the literature revealed that designers frequently develop product features that are neither used nor wanted. This finding suggested that designers do not properly understand users’ needs and that they would benefit from more information in this area. With respect to usability, the literature revealed that even though users now expect products to be easy to use, designers frequently design products that cognitively and/or physically challenge people. It indicated that one reason for this is that designers do not always use information that is available to them, as they find it overly technical, too time consuming to implement and too text based (designers prefer to communicate visually). The literature suggested that designers also often think they are more akin to the user than they actually are.

The literature explained that industry is becoming ever more interested in creating products that elicit pleasure. It suggested that designers can create pleasurable products providing they have a thorough understanding of the people they are designing for and the context in which a product is to be used. This means that designers will increasingly need good quality user information on a wide range of user topics, including information on people’s lifestyles, values and activities.

The review showed that there are many different types of user information. It revealed that some types of information, such as marketing information, are often supplied to designers by clients while others, such as stories and lifestyle information are not. It also revealed that while there are many user research tools and methods available to designers, none gives them a broad and quick insight into the lives and worlds of users at the beginning of the design process.

10.2.2 Content, presentation and functionality

The second objective was threefold: to identify what information should be included in a resource that offered designers a quick, but broad, understanding of users, to establish how such information could best be presented and how the resource should function. The author conducted interviews and a focus group to meet this objective. The interviews were used to find out what design professionals thought of user research tools and methods presently available to them, and to identify the kind of user
information they would like to see made available in the future. The focus group was used to inform how such information should be presented to ensure that it was easy to find, engaging and useful.

10.2.2.1 The interviews

All the design professionals interviewed thought user research tools and methods brought benefits. However, designers in small consultancies did not always conduct user research due to tight budgets and deadlines. When they did, they tended to use tools and methods that were inexpensive and readily available, such as YouTube and books on anthropometric data.

One method praised by design professionals who regularly undertook research was video ethnography as it produced material that was engaging, believable and richly descriptive. This finding supported comments made in the literature (e.g. Taylor et al., 2002).

The interviews revealed that the design professionals wanted two types of user information: information specific to individuals (e.g. a person’s latent needs) and information on general user related topics (e.g. instructions explaining how to take anthropometric measurements). It was clear that they wanted this information to be concise, Internet based and simple to understand.

The design professionals were interested in being able to take virtual tours around users’ homes and being able to watch videos of users going about their everyday lives. They thought that this kind of information would be useful when designing.

10.2.2.2 The focus group

The focus group thought that the information in the Individuals’ Lives section of the resource should be categorised under four headings: Details, Living space, Activities & interests and Products. It recommended that brand information should be subsumed under Products.

It suggested that the information should be presented in layers so that designers could see the most important facts first and ‘drill down’ to find additional information if they
wanted. It proposed that video information should have navigable timelines so that
designers need watch only the video segments they were interested in, and suggested
that such videos should not contain music or visual effects for dramatic effect.

The focus group thought that intangible information such as people’s values and
beliefs, should be communicated by individuals talking to camera and that videos,
where appropriate, should be accompanied by transcripts and the use of subtitles
rather than dubbing. It stated that the resource should be quick to use and that it
should allow different pieces of information to be easily compared. It thought that the
resource should have functions to enable information to be tagged and saved.

10.2.3 Resource creation

The third objective was to create a prototype of this resource. This was achieved by
collecting the information requested in the interviews and assembling it into a website
guided by the comments made in the focus group. The website was built in accordance
with established usability guidelines.

Due to budgetary and time constraints plus the author’s lack of experience in building
websites, it was decided that only the features that directly supported the resource’s
goal of helping designers gain a quick and broad understand the lives and worlds of
users should be created. For the same reasons, some of these features were created
to be demonstrated rather than to be used.

The design specification for the resource can be found in Appendix H; the resource can
be found on the attached DVD (Appendix S).

10.2.4 Resource evaluation

The final objective was to evaluate the resource in terms of its functionality, usability,
content presentation and overall value to the design process. It was fulfilled by
conducting a heuristic inspection with students and an evaluation with design
professionals.

It should be noted that the heuristic inspection was primarily carried out to ensure that
the resource was robust enough to be assessed by the design professionals.
10.2.4.1 The heuristic inspection

The heuristic inspection found a number of minor usability issues. The most severe related to the Links panel which did not appear in the same position on all the pages in the resource; it was felt that this might cause confusion. The author dealt with the usability issues that could be addressed quickly. However, as he believed that the other issues highlighted were unlikely to prevent the resource from being properly evaluated by the design professionals, they were ignored.

10.2.4.2 The evaluation with design professionals

The evaluation found that overall the resource had an acceptable level of usability. That said, one feature was considered a 'usability catastrophe'. This was the search engine and its associated pop ups. The design professionals stated that this feature should be redesigned so that it was not case sensitive. They felt that this would make the search engine more consistent with other search engines and would remove the need for pop ups.

The design professionals thought that the resource looked fit for purpose, was enjoyable to use and would be quick to learn. They commented that the information in it was engaging, logically arranged, of good quality and likely to be useful. They particularly praised the room scans and the videos of users going about their everyday lives. They thought that these features offered high levels of insight.

All the design professionals were confident that the resource would be of value to the design process. They all envisaged it as an additional data stream, rather than a replacement for undertaking user research. Their principle concern was that the information in the resource was authentic. Providing that it was, they all stated that they would use the resource if it were available and priced appropriately.

10.3 Conclusions

The overall conclusions of this research are summarised below:
Designers require visual information, especially video

The literature highlighted that designers prefer to communicate visually. One form of visual information they find particularly valuable is video as it is highly descriptive, engaging and insightful. They also find video helpful because it reveals users’ latent needs and assists in building empathy. Building on this, the research revealed that designers want, and favour, a certain kind of video. They want video that is instantly accessible and shows users in context. Designers do not want to see users acting to camera or continually explaining their actions and thought processes, neither do they want certain post production additions for dramatic effect such as music. Designers want to see people going about their everyday lives and behaving naturally. They do, however, want subtitles if people are speaking in a foreign language; they also want transcripts.

Designers require ‘off-the-shelf’ information that offers a quick and holistic view of users

Users vary in size and age and have different lifestyles, beliefs, abilities, desires and so on. It is thus easy for designers to unintentionally exclude or offend members of a user group if they fail to have a complete understanding of those they are designing for. Many tools and methods exist to help designers understand single aspects of users (e.g. RealPeople offers information on pleasure needs). However, none exist that have been created to enable designers to gain a broad and instant understanding of users at the start of a design project. Presently, many designers use websites such as YouTube and Flickr at this point. However, while these websites are instantly accessible, they offer arbitrary glimpses into people’s lives. None offer the contextual information designers need to allow them to fully empathise with users. What designers need is structured information which has been selected specifically to give them a comprehensive understanding of users and categorised to enable them to explore data quickly.

A resource that delivers a broad range of user information quickly at the beginning of the design process needs certain attributes to be of use

In order to provide professional designers with a broad but quick understanding of users it is necessary that the information they are given is relevant, appropriate and presented in a manner that is usable and useful. This research found that designers want two different types of user information: personal information on the worlds and daily lives of individuals and general information on user related topics. It found that
this information does not have to be vast or exhaustive. For example, if a user’s hobby is computer programming, the resource needs to show the user computer programming and the environment in which he/she works; the resource need not explain the intricacies of how the user forms his/her codes. The research found that, overall, designers want concise, up to date information, offering easy access and navigation, such as searching and browsing, and presented predominately in a video format. They want the information to be ‘layered’, allowing them to drill down to detail if they wish, internet-based and with functions that enable them to save, sort, tag, share and compare data.

10.4 Successes

Much of this thesis was concerned with the development of a resource to quickly provide designers with a broad range of user information so that they could create products that were more appropriate for people. In industry, it is likely that the resource’s success would be judged by an increase in related profit. However, this thesis was not concerned with commercial gain. Its aim was to discover the kind of information that designers require to acquire an overview of the lives and worlds of the people they are designing for, and in this respect, the resource was considered successful. All the design professionals who contributed to its development and evaluated the end result offered information and/or guidance as to the kind of material that would help designers understand users.

The process used to develop the resource was also considered successful. It drew attention to fact that much user information is presently missing from the design process and revealed areas of user research that are presently under explored, such as how to communicate intangible information (e.g. peer group pressure) to designers.

Finally, the resource was considered successful by professional designers, all of whom gave it a positive response. This suggested that the information it contained and the way it was presented was extremely well suited to their needs.

10.5 Limitations

Three limitations were identified in relation to the work in this thesis. The first was that the research was conducted solely with design professionals who worked in the United...
Kingdom. It might be the case that designers overseas have different user information requirements and different information presentation preferences to those suggested in this thesis. The second was that the resource was a prototype that was evaluated over a short period of time. These factors limited what information the design professionals could see and the features they could interact with. They also made it difficult to ascertain how the resource might perform if used continually over a long period of time. The third was that the research corresponded solely to a certain period in time. Additional/different user needs may need to be considered in the future. These needs might relate to technological innovations, scientific advances, social changes and/or environmental issues.

**10.6 Applicability of the research findings**

This research focused on the kind of user information that professional product and industrial designers need in order to develop appropriate products for users. Despite this, the findings of this research are likely to be applicable to, and of interest to, any designer that develops products, services and/or environments for people. This includes, but is not limited to, exhibition designers, fashion designers, branding designers, user experience designers and interior designers.

**10.7 Contribution to knowledge**

The contribution to knowledge of this research is that it has identified that designers require contextual information in the form of video that shows the lives and worlds of users. This rich, highly engaging information is needed as it allows designers to form a holistic understanding of the people they are designing for. It also enables them to quickly understand how products fit into people’s lives and identify with the practical and emotional needs of people who are often very different to themselves. The research also identifies that this information should be presented online, so that it can be accessed immediately, and created in a way that that designers can navigate it easily.
10.8 Recommendations for further research

The findings of this research offer a better understanding of designers’ user information needs. They also provide the basis for further research. This section offers suggestions for further research that relates to the work conducted in this thesis.

All the designers who participated in this research were from the United Kingdom. Because of this, the information in the resource and the way in which it looked and functioned related to their needs. Further research should be conducted to establish whether this arrangement is appropriate for designers outside the United Kingdom. It may be found that cultural sensitivities, the way in which design is practised and the quality of information offered by clients in other countries, mean that the resource needs to be different for these areas. It might also be found that designers outside the United Kingdom prefer anthropometric data displayed numerically rather than visually as they have been trained more formally in ergonomics compared with designers in the United Kingdom for whom the resource is presently concerned.

Many of the design professionals during the course of this research asked for information that was, by its nature, intangible, such as information on people’s values and the effect that peer group pressure has on people. In the resource such intangible information was communicated through interviews. However, further research in this area may reveal that better ways of presenting this kind of information exist.

Products are increasingly being evaluated for usability during the design process. However, the information gathered in these evaluations is rarely available to designers outside the companies that commission these evaluations and is often not visual. The Products category in Individual Lives contained videos titled ‘Problematic products’. In these videos individuals were shown discussing why certain products frustrate them. The author believes the subject of problematic products would benefit from further research as many problems that frustrate users relate to designers not considering/understanding users in the design process. The research could concentrate on how different usability issues could be communicated to designers in the most effective way.
References


Appendix A

Interviews: the details of the design professionals
<table>
<thead>
<tr>
<th>Participant number</th>
<th>Sex</th>
<th>Age group</th>
<th>Job title</th>
<th>Years in design</th>
<th>consultancy/organisation specialism(s)</th>
<th>size of consultancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M</td>
<td>21 – 35 years</td>
<td>user researcher</td>
<td>5</td>
<td>automotive, consumer products, medical devices</td>
<td>large</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>51 years &amp; over</td>
<td>mechanism designer</td>
<td>31</td>
<td>automotive, consumer products</td>
<td>small</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>36 – 50 years</td>
<td>product designer (director)</td>
<td>10</td>
<td>consumer products, industrial design</td>
<td>small</td>
</tr>
<tr>
<td>4</td>
<td>F</td>
<td>21 – 35 years</td>
<td>product illustrator</td>
<td>15</td>
<td>consumer products, industrial design</td>
<td>small</td>
</tr>
<tr>
<td>5</td>
<td>M</td>
<td>21 – 35 years</td>
<td>CAD technician</td>
<td>4</td>
<td>engineering design, industrial design</td>
<td>small</td>
</tr>
<tr>
<td>6</td>
<td>M</td>
<td>51 years &amp; over</td>
<td>product designer (director)</td>
<td>19</td>
<td>consumer products, toys, industrial design</td>
<td>small</td>
</tr>
<tr>
<td>7</td>
<td>M</td>
<td>21 – 35 years</td>
<td>industrial designer</td>
<td>3</td>
<td>medical devices</td>
<td>small</td>
</tr>
<tr>
<td>8</td>
<td>M</td>
<td>21 – 35 years</td>
<td>user researcher</td>
<td>1</td>
<td>medical devices</td>
<td>large</td>
</tr>
<tr>
<td>9</td>
<td>M</td>
<td>36 – 50 years</td>
<td>user researcher (manager)</td>
<td>10</td>
<td>medical devices</td>
<td>large</td>
</tr>
<tr>
<td>10</td>
<td>M</td>
<td>36 – 50 years</td>
<td>design/ergonomics lecturer</td>
<td>3</td>
<td>human-modelling, ergonomics, inclusive design</td>
<td>N/A</td>
</tr>
</tbody>
</table>

The design professionals were drawn from the following companies:

21 A large consultancy referred to a consultancy that had 15 members of staff or more, and a small consultancy referred to a consultancy that had 14 members of staff or fewer.
Appendix B

Interviews: the pre-interview information pack
Prior to being interviewed, all the design professionals who participated in the interviews received a pre-interview information pack (see below).

The pre-interview information pack

The components in the pack were:

1. Covering letter
2. Five postcards (each with an interview question on the back)
3. A3 poster
4. A4 wallet
5. Consent and personal details forms
6. Business card
7. Jigsaw puzzle
8. Box

The covering letter, the consent form, the personal details form, the postcards with the questions on the back, the jigsaw puzzle and the A3 poster are shown in further detail in the next six pages.
Dear X

Further to our recent telephone conversation, please find enclosed an information pack. The pack contains a number of items including the interview questions which are printed on the back of the postcards.

The research is looking at how designers learn about the people they design for. It is founded on the premise that designers are increasingly being asked to design for people whom are unlike themselves. Arguably, this trend is likely to increase. Two developments that suggest this are the increase in the number of people with expendable incomes in the developing world and population ageing.

Interviews are being conducted to gain an understanding of how designers form a picture of the intended users of their products. It is hoped interviews will include people in the design industry that undertake user research and those that do not.

The aim of the research project is to develop a tool that will allow designers to gain an understanding of users’ lifestyles, preferences, abilities, interests and aspirations. The A3 poster included in the information pack outlines one form that this tool could possibly take.

Any information offered in an interview will be used in relation to this research and to complete a research thesis. Any personal information collected will be treated as confidential and destroyed on the completion of the project.

Thank you for your interest.

Yours sincerely

Julian Bowerman
Interviewee consent form

Interviewer's contact details:

Julian Bowerman
Department of Design and Technology
Loughborough University
LE11 3TU
Tel: 01509 228313
Email: J.C.Bowerman@lboro.ac.uk

I consent to taking part in this interview to provide my views on ‘understanding users’.

An explanation of the nature and purpose of the interview has been given to me by the interviewer. I understand that I may withdraw from the interview at any time and that I am under no obligation to give reasons for my withdrawal.

I understand that my name will not be disclosed with the data and that any personal information collected will be treated as strictly confidential.

I agree to the interview being audio-taped and that what I say and do may be used for research and to compile a research thesis.

.................................................................................................. Signed (the interviewee)

.................................................................................................. Print name

.................................................................................................. Signed (the interviewer)

.................................................................................................. Print name

.................................................................................................. Date of interview
1. Name: ..........................................................................................................

(Note: Your name will remain confidential at all times).

2. Age group:
   - ☐ Under 21 years
   - ☐ 21 – 35 years
   - ☐ 36 – 50 years
   - ☐ 51 years and over

3. Sex:
   - ☐ Male
   - ☐ Female

4. Job title: ........................................................................................................

5. Work experience in years: ...........................................................................

6. Design specialism: .........................................................................................

7. Name of consultancy/organisation: ...............................................................

8. Size of consultancy:
   - ☐ 1 – 14 members of staff
   - ☐ 15 members of staff or more
   - ☐ I don’t work for a consultancy
How important is it to have a good understanding of users?

What are your thoughts on user research tools and methods?

How do you ensure that your designs address the needs and desires of users?

What additional information about users would you like to have while designing?
The jigsaw puzzle was created to act as a visual metaphor for the research project. The pieces could be arranged in two ways to produce two different images. One arrangement used 15 pieces and the other 16 pieces. Both images depicted people. The jigsaw was sent to participants in the arrangement that used 15 pieces. It was assembled alongside the words: ‘An extra piece of information can entirely change one’s view of the user’. The spare piece was also included and labelled: ‘an extra piece of information!’ The message behind the jigsaw was that it is possible to have an incorrect understanding of a user group when using incomplete user information.
This poster details how a tool that could give designers a more holistic view of users might work.

The illustration is intended to spur discussion rather than show a definitive idea. If you think that a different approach would be more appropriate or that the tool should contain different/additional information, please say so.

Feel free to annotate the poster with your thoughts.

1. On receiving the brief, the designer accesses an online database to gain an understanding of the target user group.

2. The designer uses the database’s search facility to find the names of several individuals whom represent the user group.

3. The designer ‘clicks’ on one of the names & the personal information relating to that individual is displayed.

4. To gain an insight into the individual’s environment, the designer looks at a number of photos that show the individual’s country & town.

5. He looks at the individual’s family/friends & reads about what the individual does for a living.

6. The designer decides to capture some of this information so he can share it with his colleagues later.

7. He additionally captures information from the pages relating to the individual’s interests and pastimes.

8. To help understand what sort of products the individual buys, the designer takes a virtual tour around the individual’s home.

9. He also watches a number of short videos of the individual discussing pleasurable/indispensable products.

10. Finally the designer looks at the individual’s dimensions & (dis)abilities. He finds the individual has asthma & clicks the link to read about the disease.

11. Later in the day the designer returns to the resource & adds a few notes to the information he captured. He then shares his findings with his colleagues.
Appendix C
Interviews: the interview outline
Introduction
1. Personal introduction
2. Overview of research project
3. Explanation to the purpose of the interview
4. Brief talk through of the contents of the pre-interview information pack
5. Acquisition of written consent
6. Completion of the participant’s personal details form

Questions
Q1. How important is it to have a good understanding of users?
   a) How comprehensive is the information supplied by the clients?
   b) Do you ever work with a less than desirable understanding of users?
   c) What are your thoughts towards designing intuitively?

Q2. What are your thoughts towards user research tools and methods?
   a) How do you think your clients’ view user research tools and methods?
   b) Do you think that your clients think that you should instinctively understand users?
   c) Have you, or anyone in your consultancy, ever been trained in user research?

   Keywords: immersive experience, role play, personas, focus groups, interviews, ethnography, empathic modelling, ergonomics guidelines, anthropometric data, cultural probes, participatory design, 3D computer manikins

Q3. How do you insure that your designs address the needs and desires of users?
   a) What sources of information do you use – If any?
   b) What are the main user research tools and methods you use – If any?
   c) What do you think is the most beneficial research technique and why?

   Sources keywords: anthropometric data, the Internet, academic journals, market research, design journals/magazines, ergonomics guidelines, standards, recommendations, 3D computer manikins

   User research keywords: observation, co design, focus groups, interviews, ethnography, participatory design

Q4. What additional information about users would you like to have while designing?

Q5. Would you welcome a tool that would enable you to ‘see’ into the lives of users?

Wrap-up
1. Answer any participant questions
2. Thanks
Appendix D

Interviews: a transcript of one of the interviews
### Participant 1

<table>
<thead>
<tr>
<th>Interviewer</th>
<th>How important is it to have a good understanding of users?</th>
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<tbody>
<tr>
<td>Participant 1</td>
<td>It’s imperative to have a good understanding of users. I don’t necessarily believe you need to have an understanding of one individual user. When we look at how people use products, and the context in which they use them, we look at groups of individuals. We look for trends and similarities that run throughout these groups rather than this is Joe he likes this and he has a problem with this.</td>
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<thead>
<tr>
<th>Interviewer</th>
<th>How much information do you like to have?</th>
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</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>It’s great to have a lot of information about users but I think it needs to be relevant. It’s not a case of knowing everything about their lives, but it’s a case of knowing the chunks that are important.</td>
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<table>
<thead>
<tr>
<th>Interviewer</th>
<th>How comprehensive is the information supplied by clients?</th>
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<tr>
<td>Participant 1</td>
<td>It varies, but at the beginning of each project we have what we call a ‘knowledge share’, we get the client to download all the information that they have that they think is relevant. Then we can identify the knowledge gaps. We then use that to focus our research throughout.</td>
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<table>
<thead>
<tr>
<th>Interviewer</th>
<th>Do you ever work with a less than desirable understanding of users?</th>
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<tbody>
<tr>
<td>Participant 1</td>
<td>We try not to. Whenever we start a project we always reflect and bring it back to what users are about. We have a kind of mantra here at Seymour Powell: ‘making things better for people’… if you don’t understand people there is no way you can make things better.</td>
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<thead>
<tr>
<th>Interviewer</th>
<th>What are your thoughts towards designing intuitively?</th>
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<tbody>
<tr>
<td>Participant 1</td>
<td>It’s interesting. We often talk about this topic! Upon seeing the brief, designers intuitively seem to have a good idea. But even though there are these ideas, what we try to do at Seymour Powell is hold them back then feed in other information – other research and other understandings – and see if they still stand good at the end. I think you can design intuitively but it would be irresponsible to only design intuitively. You need to understand much more than your own personal view… It’s great for an architect, that’s one person’s vision or personal view, but it may not have the same implications for a bar of soap or an iron where you need to consider different things. So, I think you can design intuitively but you can help yourself greatly by understanding users.</td>
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<table>
<thead>
<tr>
<th>Interviewer</th>
<th>What are your thoughts on user research tools and methods?</th>
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</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>We are very very involved in it [user research]. We deal with a very large range of products. One client may want us to look their core target user and so we will focus our research tightly around them. But for us it’s also quite important to look at ‘end of the spectrum’ users, as extreme as we can, to identify the larger problems – it’s these problems that are usually experienced by everybody else as well.</td>
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<thead>
<tr>
<th>Interviewer</th>
<th>What do your clients think about user research tools and methods?</th>
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<tbody>
<tr>
<td>Participant 1</td>
<td>Well, we get a lot of repeat work. Clients can really see the value that it [user research] brings to the design process and it feels more quantifiable when it come to making decisions about which designs or concepts you wish to develop... When we show new clients our work they can get very excited, especially by video ethnography and the level of depth and engagement we get from users.</td>
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<tr>
<th>Interviewer</th>
<th>Do you work for both small and large companies?</th>
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<tbody>
<tr>
<td>Participant 1</td>
<td>Our main clients are the large ones, but we do work for much smaller clients with much lower budgets. Here we just scale the research accordingly. Whereas a global main player might be looking at a piece of research</td>
</tr>
</tbody>
</table>
involving four different regions – perhaps South America, the US, Europe and a country in Asia to get a more global understanding. A smaller client might be only looking specifically at the UK and maybe one other country in Europe. Everything’s scaleable and that is how we get around budgeting issues. When it comes down to it, observational research can be done on a very very low budget. It might be as easy as going down to Victoria Station for three hours and just observing what you see.

<table>
<thead>
<tr>
<th>Interviewer</th>
<th>How do you ensure that your designs address the needs and desires of users? What techniques and sources do you use?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>When it comes down to techniques, the main technique we use is participant observation. What you can learn from talking to people then standing back and observing them puts you in a great position. Observation is predominately the main technique that I use… We also use anthropometric data.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interviewer</th>
<th>What techniques do clients ask for?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>A lot of our clients come to us and talk about focus groups. But I’ll give you an example of a focus group we’ve done. We had a room full of men talking about male grooming. A couple of guys were in the room talking about the things they do and their routines – they were getting quite involved and descriptive. Then all of a sudden the alpha male of the group gave his opinion and the entire atmosphere and direction of the group changed. People changed their opinions so radically that you had to question how reliable the information was. I wouldn’t say no to them, I think they are a good start point to throw ideas around and get direction but you need to take it to the next level – observation or face to face interviews... There is always the problem that when people are in a focus group they tend to rationalise: I mean, what people do and what people say are not necessarily the same.</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Interviewer</th>
<th>Can you give me an example when you might not use observation?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>Yes. Sometimes we might go to experts in the field. For example, the best way to understand male shopping behaviour might be to ask the chief buyers at Liberties – let them tell you how the shop works. However, we would then spend a couple of hours watching men shopping!</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interviewer</th>
<th>What do you think is the most beneficial technique for giving designers a good understanding of users?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>The main technique that I prefer to use is contextual, usually in the home, ethnography.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interviewer</th>
<th>Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>It offers designers a really good insight of who they are designing for. Everyone gets really excited by video; everyone sees different things in the same three minutes. I think video is a really powerful tool. Video is a very good platform for innovation; you can present insights to very different disciplines within your client’s company. You can use it to inspire the designers, accounts, the supply chain and everyone can bring a different thing to the mix.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interviewer</th>
<th>Can you explain a little more about what you mean by ethnography – how long does it take and what do you actually do?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>Well, the duration of the project can be several weeks – perhaps twelve weeks, but the amount of time we spend at home with the users is typically a matter of hours. What we do varies on the project but typically involves an interview with user and looking at the user’s entire routine with the product..... Yes, the technique we use is quite short and intense. It's not as pure as pure ethnography when you might be with someone for a period of weeks and very slowly build up their trust. It's much shorter. We would spend the first part of the interview building a rapport and getting a general understanding and the context of the product in their life. And then they would take us around</td>
</tr>
</tbody>
</table>
their house, we would watch them using the products that we were interested
in. However, we would also look at the routines beyond these products. If it
were a television project, we wouldn’t just look at how people turn on the TV,
we might look at their entire evening. The TV might just be something they
keep on in the background, so we would look at other activities they might be
doing while the TV is on. We always make our interviews more like
conversations because when you’re having a conversation you are much
more relaxed – so we don’t have pens and paper or anything else that might
distract them. We’ll have small discreet hand held cameras that we might keep
on our laps all the time. It’s amazing how quickly users forget the cameras are
there. Most people are really interested in telling you about things and
showing you how things impact on their lives.

**Interviewer** Do you ever research in a more ‘low cost’ way?

**Participant 1** I use YouTube to search for inspiration. You can get virtually any video you
want. Flickr’s also great. There’s a lot to be said for going on Flickr and using
keywords to get a taste; it’s the most budget way to do research. Hit Flickr,
Wikipedia – if you trust it! – and YouTube. You’d get enough visual stimuli to
give you a few ideas.

**Interviewer** What extra information about users would you like to have when designing?

**Participant 1** What ever we don’t have, we try to find out! But, to answer your question, our
clients come to us with ages, regions and demographics but nothing lifestyle
orientated. I should perhaps mention that we are constantly trying new things
to see what fits best; every time we do an interview, we very loosely have
video ethnography at the core but the methodology changes from project to
project… Yes, lifestyle stuff. Where people live, what they do. Things like that
would be useful.

**Interviewer** My final question is would you welcome a tool that would enable you to ‘see’
into the lives of users? [The author shows the participant a copy of the A3
poster]. This is a copy of the poster I sent you; I created it to be an
‘ice-breaker’. I don’t want you to think that anything in the poster is prescriptive
– after all, you might prefer to have user information supplied in the form of a
book. I created the poster just to get the ball rolling.

**Participant 1** [Having looked at the poster] Yes, as a start point the tool is great. I think the
greatest task is deciding on the criteria of how you recruit people or how up to
date is the information is. The question is whether the tool takes the form of a
personal blog or a database of information that is constantly updated? Is it
user orientated content? Are they filming themselves and doing their own
virtual tours?

**Interviewer** Which approach do you suggest?

**Participant 1** I think there is a danger if people film themselves. You can lose control and
there’s also the problem of policing the quality of the information on it.

**Interviewer** So, is there is anything you like or dislike about the resource in the poster – or
do you have any suggestions?

**Participant 1** I like the idea of links. I read about… [looking at the mock-up resource in the
A3 poster] which one was it, ah here, “I’ve got asthma” and there’s a link –
that’s a very useful link. However, for me, and for the way we would use it with
our clients, I would also be interested in how a disability such as asthma
affects the user’s life. Without actually talking to users or having some
communication with them it’s actually quite difficult to know. Also how they say
their asthma affects them might be quite different to what you might find if you
spent a day with them… I would be interested to know how they deal with
asthma. What do they carry with them? What do they keep in their bag? Do
they feel that they need to manage the condition discreetly? It’s the
implications of asthma that would get me excited rather than knowing what it is.
Interviewer: Is there anything else?

Participant 1: I think the visual diaries are useful, especially if you’re thinking globally. If you’re doing a project on bathrooms and you’ve got some Japanese users on the database, you might take a virtual tour of their bathroom. On doing so you might think, “hold on a minute, your bathroom is totally different to mine. I don’t understand it.” Then you learn how the Japanese bathing routine works: they bathe outside the bath then relax in the bath. Then that is a great start point. I think some of the information could be great, a really good start point. However, for the level I get personally involved, I would think that’s quite interesting but then I would want to see them – that’s why I am quite excited by the virtual home tour, what is in my bag, things like that.

Interviewer: I notice that you have written something here on the poster.

Participant 1: Yes, I’m interested in brands – but I am always interested beyond what brands people buy: I’m interested in how they use them, how they wear them, how they integrate them into their lives. I am really interested in how they live around these products more than how they describe them to me. I always try and shy away from subjective opinions of stuff such as, “I like the colour”. Instead I might look at how they are fiddling with a product when they are telling me. I might find that quite interesting. It’s really difficult to get at – getting to see beyond what people say and what people like. That’s why I like the virtual tour bit, where they live, a visual diary… what they keep in their bag, what their favourite item is at the moment.

Interviewer: Have you any advice on how the information in the resource should be presented to designers?

Participant 1: It’s quite difficult to build up a picture of people’s lives. But it’s often the mundane things that surround them. [Pointing at the breakfast restaurant shown in the A3 poster]. Here, it might be interesting to have the photo outside the restaurant and then the breakfast. It’s interesting to know what a Chinese breakfast is like. Design is very visual; designers get really excited by seeing things. They’ll say, “That’s quite an interesting graphic, I’ll go and research that a bit more”. Whenever I do anything that I present to designers, the stuff they are most interested in is video…they also like graphics that tie things together. When designers can see a structure to something they say, “that’s quite useful”. In my experience the best things to give designers are very visual. Give them a report to read…umm, well, you know what designers are like, they’re a nightmare!

Interviewer: Let’s just say you left Seymour Powell and went into a consultancy that wasn’t so research focused. What sort of information do you think the consultancy should know – the core things?

Participant 1: Well, if I left this company and went into another that did not have a similar research side I would try to implement observational research as you get so much from it. Even if it was as simple as taking a camera to someone’s house and getting a few key quotes – that in itself would be very useful. Also what has worked really well for me is when I have talked to professors at universities, or experts within the industry, and stuck what they’ve said onto an MP3. In these interviews people raise some interesting questions and designers value their opinions. Maybe you could include some strategies or methodologies in the tool: one thing that might scare a designer from doing research is not knowing the best way to find something out. So if you include a couple strategies that are simple for them to follow, you know, something like: “all you need to do is these four simple steps” that would be of massive value.

Interviewer: Thank you. You have certainly given me a lot of information!
Appendix E

Focus group: the details of the members
<table>
<thead>
<tr>
<th>Member number</th>
<th>Sex</th>
<th>Age group</th>
<th>Status</th>
<th>Years in design</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M</td>
<td>36 – 50 years</td>
<td>academic staff member</td>
<td>13</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>36 – 50 years</td>
<td>research student</td>
<td>14</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>21 – 35 years</td>
<td>research student</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>36 – 50 years</td>
<td>academic staff member</td>
<td>20</td>
</tr>
<tr>
<td>5</td>
<td>M</td>
<td>21 – 35 years</td>
<td>academic staff member</td>
<td>1</td>
</tr>
</tbody>
</table>
Appendix F

Focus group: the transcript of the meeting
Welcome and thank you for taking the time to participate in this focus group meeting. My name is Julian Bowerman. I’m a research student here at Loughborough University.

For those of you who have never participated in a focus group before, a focus group is a meeting in which people discuss specific topics in an informal and relaxed atmosphere.

The purpose of this focus group is to collect ideas and your views on a range of topics that relate to an online design resource I am creating called People’s Lives. You have been invited because you all have worked in design and used the Internet and thus are likely to have important views and experiences to share. I should state that there are no right and wrong answers to the questions I will be asking. I’m not looking for you to reach consensus. I would just like to hear what you have to say.

You have all kindly given me your permission to record the meeting. This is the recording device I’m using [the author shows the focus group members the sound recorder]. It’s pretty sensitive, so there’s no need to lean towards it to talk. All I would ask is for you not to talk at the same time. I should make clear that your contributions will be anonymous.

OK, now I’m going to outline the programme for today. I will start by discussing the background to my research, after which I will introduce you to the People’s Lives resource, and then I’ll ask you to talk about four topics that relate to that resource. The whole meeting should last about one and a half hours. Normally, these meetings start with the moderator asking each group member to introduce himself or herself to the group. However, as you all know each other I’m going to skip that bit!

The background to my research can be summed up with the following sentence: ‘the status quo is changing’. So, what do I mean by this? Well, many populations are ageing; countries such as Brazil, Russia, India and China are becoming more powerful economically; people are demanding more ‘human-centred’ products; and, amongst other things, niche markets are becoming more important. So, what do these changes mean for designers? Well, in the future designers can expect to be designing more and more for people unlike themselves, and design is likely to become increasingly people-focused.

OK, so what is People’s Lives? People’s Lives is a resource that allows designers to look into the lives of people they are designing for. Thus, when a designer gets a brief, he can go away and look at People’s Lives and quickly learn a little about the intended market segment. He can do this by looking at profiles of actual people who belong to that market segment.

In addition to this type of information, the resource also contains information on a variety of user related topics, such as how to conduct usability trials and data on population ageing.
In fact, the resource contains information on a very large number of topics. All these topics were requested by designers during interviews. [An animated list containing many topics is shown. The list includes: interests, values, brands and disabilities].

**Background:**

**The status quo is changing...**

- Populations are ageing
- Countries such as Brazil, Russia, India and China are becoming more powerful economically
- People demanding more ‘human-centred’ products
- Niche markets are becoming more important

---

What I am about to show you is the exemplar resource that I showed designers during their interviews. It was shown to give them a ‘flavour’ of what the resource might look like and to act as a starting point for discussions. I’ll quickly take you through it. It’s not a finished product; everything about it is up for debate. So please pull it apart, find faults with it, praise it – voice your opinions! OK, so the first page is the **Search page**.
Now, the resource is divided into two sections: Individuals’ Lives and Information Pages. The Individuals’ Lives section is the section that contains the profiles of people, and the Information Pages is the section that contains information on the general user related subjects.

Don’t worry too much at this stage if you are a bit lost. It will all become clear as we go on. But for now, just note that I am ticking both these boxes [the author ticks two boxes on the PowerPoint slide: one relating to Individuals’ Lives and the other to Information Pages].

The next step is to input some keywords. So for the sake of the demonstration, let’s say that we are looking for information on British males because we are designing a product for this group. [The author enters the terms ‘British’ and ‘male’ into two of the search boxes]. OK, now I’ve inputted some search terms I can click the ‘Go’ button to start the database interrogation process [the author clicks the ‘Go’ button]. As you can see, a list of names has appeared in blue. These names relate to all the British males on the Individuals’ Lives database. You’ll also notice that the term ‘United Kingdom’ has also appeared in green. This is an Information Page; the computer has picked up on the word ‘British’ and has offered us some information on the ‘United Kingdom’ as Britain is part of the United Kingdom.

So, let’s click on one of these names. [The author clicks on a name]. As you can see this opens a new page. We are now actually in the Individuals’ Lives section of the resource. This can be seen by the word ‘individuals’ under the People’s Lives logo... What we are actually looking at is a set of pages called the Details page set. These pages relate to the name of the individual we just clicked. All the individuals on the list we were just looking at have a set of these pages. However, the information contained in them is different for each individual as everyone is unique.

This page, the one we are looking at, is the ‘personal details’ page. It is the first page in the Details page set. It shows the personal details of the individual we clicked: their age, their income, their nationality, etc. There’s also short video that gives designers a quick peek into the individual’s everyday life. I’ll be talking more about these videos a bit later. Just so you know, I’ve called them ‘typical day’ videos.
If you look across the top here [the author points to the words directly underneath the tab heading 'Details'] you’ll see links to other pages in the Details page set. There’s a page on the individual’s family, a page on their favourite brands, a page on their anthropometric dimensions and so on.

The idea of the resource is to help the designer build empathy with a target user group by looking at a number of individuals who belong to that group instead of learning about a user group through words, as is often the way with traditional briefs. The designer can ‘experience’ the user group through pictures and sounds.

OK, so let’s leave the Details page set now and explore this individual a bit further. The next tab is called Living space. [The author clicks on the tab titled ‘Living space’]. In the Living space page set you can take ‘virtual tours’ around this individual’s home. You might, for example, take a virtual tour around his bathroom if you were designing a bathroom product. Indeed, you might take virtual tours around several British males’ bathrooms to get a better understanding of what people in this market group keep in their bathrooms.

If I click here [the author clicks on the tab titled ‘Activities & interests’], you can look at people’s activities and interests. As you can see, this individual is interested in design, cycling, travel and picnicking. Alternatively, if you want to learn about his possessions you can click here [the author clicks on the tab titled ‘Products’]. In this page set, the Products page set, there’s information on the individual’s favourite products, the products he finds problematic and so on. This Products page set is another area that I will ask you to discuss later.

If I quickly return to the Search page [the author clicks on the tab titled ‘Search’] and this time click on the words ‘United Kingdom’ rather than an individual’s name, the software will take me to a different part of the resource. [The author clicks on the words ‘United Kingdom’]. Now we are in the Information Pages section of the resource. This is affirmed by the word ‘Information’ which can be seen under the resource’s logo where the word ‘Individuals’ was.
As you can see, the Information Pages look somewhat similar to Wikipedia. There are, however, a lot of differences. Perhaps the biggest difference is that the Information Pages are design biased. This means that there’s lots of information on user related issues but none on topics such as tachyons and the Piltdown Man! Other differences include: the data can’t be altered by anyone; the data are never very technical; the data are never too deep – just deep enough to move the design process forward; the data are presented visually whenever possible; and the pages offer advice as well as information.

Another difference is that the Information Pages are designed to work in conjunction with the Individuals’ Lives pages. So, let’s say you are looking at an Information Page on ‘Driving in India’, somewhere on the page there will be links to Indian people who drive. Click on one of these individuals and you’ll be taken to the Individuals’ Lives section of the resource where you can learn about the individual you clicked on.

Just like the Individuals’ Lives pages, you can browse around the Information Pages by clicking on things. If I click here [the author clicks on the word ‘Christmas’ in the Information Page shown], we can read a little about Christmas and watch a video to see how it’s celebrated in the United Kingdom. This might be useful to designers outside the United Kingdom who do not celebrate or know much about Christmas. There are also links to external web pages to help designers find more specific information that might be of interest.

To recap: the Individuals’ Lives pages contain information on individuals and the Information Pages contain information on general user related topics. So, a designer interested in finding out how an individual manages a medical condition would use the Individuals’ Lives section of the resource; whereas a designer wanting general information on a medical condition, such as how many people it affects, would use the Information Pages section of the resource. The two sections, Individuals’ Lives and Information Pages are interconnected so a designer can easily move between the two.
That’s the resource. I hope you all have an understanding of what it’s about and what’s in it. If anyone’s unsure about anything just stop me.

OK, I’ll move on to the discussion topics. These are:

Topic 1: Information categorisation
Topic 2: Information format
Topic 3: Intangible information
Topic 4: Resource functionality

Please don’t get too worried about not fully understanding the topics at this stage. In each case videos will be shown to clarify what the topic is about. For those of you who are wondering what I mean by intangible information, I simply mean information that is somewhat abstract and difficult to show: such as brands, ethics and so on.

**Topic 1: Information categorisation**
Earlier I showed you the categorisation system that I am using to organise information. For your convenience I have pasted it here [reader, see image below]. The categories are: *Details, Living space, Interests & activities,* and *Products.* There are also sub-categories; however, I’ve not shown them here as for now I’d like you to concentrate only on the top-level category headings.

![Category Categorization System](image)

The slide shown to introduce the categories

I have tried to keep the categorisation system as flexible as possible so that it works for everyone; however, there is an ‘issue’ with it that I’d like us to discuss. This issue is that of category overlap. You’ll see what it is in the following video.

[The video is started]. Category overlap: some information can be assigned to more than one category. This video clip shows a woman straightening her hair. She’s doing so in her kitchen as being there allows her to keep an eye on her young children. Her children are playing while waiting to go to school.
Now, this clip could be assigned to three categories. She’s in the kitchen, so the clip could be assigned to the *Living space* category; she doing an activity, straightening her hair, so the clip could be assigned to the *Interests & activities* category; and the hair straighteners are a product, so this information could be assigned to the *Products* category. So, which category or categories should the clip be assigned to?

---

**Member 1**

I don’t have a problem with the categories you’ve got. However, it occurs to me that if you’ve got a video clip that could come under three categories, why not just put it under three categories? I know it is duplication, but so what? You could use links but I may decide not to use them... I think there are many ways I might want to use this resource. For example, I might want to look at multiple people but only their interests. I might decide to pick a whole bunch of people from a certain population and just go kitchen-kitchen-kitchen-kitchen because I’m designing something for the kitchen. If everything that’s related to the kitchen is in the kitchen section, then I don’t have to go looking for anything. Constantly looking for things would be irritating. So, although from a software architecture point of view duplicated information might be considered redundant, from a user point of view I’d prefer it.

**Member 2**

But you wouldn’t have to duplicate information if you clicked a link and went to another page.

**Member 3**

At the moment, when you go on the site could you go to *living space* first without clicking on an individual?

**Member 4**

I agree. Duplicated information could become annoying; you’d end up seeing the same stuff time and time again.
The author

At present, everything is flexible. Ideally, what I’d like from this focus group are your opinions. Hopefully as we go through the meeting you’ll start to understand the resource better and decide what you’d want from it and how you’d possibly use it.

Member 1

Going back to categories, I don’t have any problem with the categories across the top, they’re fine. But I’d probably have one more… something like ‘culture’.

Member 4

I disagree. Doesn’t ‘culture’ include everything? Don’t you think culture covers everything you do?

Member 1

I could say that my living space is cultural, but the size of my kitchen is not necessarily cultural.

Member 4

But what you do in it might be cultural.

Member 1

Yes.

Member 5

I don’t think a ‘cultural’ category would be appropriate. The kind of whole idea of the resource is to find out about other people’s culture.

Member 1

Yes, but I wouldn’t be using this to look at people from the UK. I’d be using this to look at people I don’t know.

The author

OK. I’m going to come in here as I think this is something that I should clarify before I try and steer the conversation back to categories! Yes the idea of the resource is to look at cultures, but in a wider sense than just national cultures. So let’s say you were asked to design a product for teenagers who liked rap music, you could use the resource find out about this culture. How do they decorate their rooms? What do they think is cool? What’s important to them?

OK, returning to categories, can anyone suggest a better or different way to help designers find information instead of the four categories shown?

Member 5

I think the way that I would want to use the resource, potentially, is to choose a country and choose, perhaps from a long list of check boxes, various categories. The videos could be tagged so that a video like the one we’ve just seen, the kitchen one, could have tags to ‘personal hygiene’ and ‘kitchen’ and ‘children’. So if you chose the category ‘children’, the kitchen video would come up. I don’t know whether I’d want look at everything about one person. I don’t think I’d want to use it that way.

Member 3

I think the problem I have is that the resource is trying to do two things. On one hand it’s trying to show very general information about a population and on the other very specific information about a person. However, the person you look at may not really be like the rest of the population… Now, what I really don’t understand is what someone would gain from using a site to look at one specific person of a population? Do you know what I mean?

Member 1

Well, I could foresee some designers using the resource to create realistic personas.

The author

It’s a fair comment that a designer won’t understand a population by looking at just one individual, but this isn’t really expected as there should be lots of people on the resource that belong to that population. Having said that, it could be argued that even if a designer only looked at a few videos it’s likely he’ll know more about the user group than if he looked at none.

Member 1

You’d need to be able to search for the persona. You’d need to be able to look for specifics, such as 30 to 40 year old housewives and get a list. On a different thread, another thing that strikes me is that under the category Living space, you could have something as simple as a floor plan of each room. They would be very informative.
The author | OK, the other thing I would like to discuss is the *Products* category. As I explained earlier, this page set would contain information on a people’s favourite products, their most problematic products, etc. What thoughts do you have with regards to providing this type of information? Do you even think there should be a separate category called *Products*?

Member 1 | I like the ‘problematic’ category. That category would probably be more informative than anything else.

Member 5 | I think what you’ve listed is what designers would want. They’d want to see people’s favourite products and the things they have problems with. As far as whether they should be integrated into the other headings, why not? Why not have a category called *Products* and also show these products in other categories. As said earlier, duplication isn’t a problem. I don’t think you’d want to categorise products under their own headings like ‘car phone’ and ‘watch’ as a designer not designing a car phone or a watch may not think to look at these things.

Member 4 | You don’t really know what a designer is looking for do you?

Member 1 | I’m thinking I wouldn’t use the resource like this. I wouldn’t use the resource to look for people’s favourite mobile phones. I’d be looking for their domestic situation, their living space.

Member 5 | But you’d want to know what they liked about things?

Member 1 | Yes.

Member 4 | This is like an ethnographic type of thing isn’t it? And companies that specialise in ethnography make their money from analysing the data. This is like the collection of the data but you’re asking the designer to do the analysis of it. Now, although I prefer the idea of using just a few categories, I was just thinking you could just make the thing run like a photo search where you have tick boxes and loads of categories. After all, it’s just a giant database. Each image could be categorised as being ‘cool’, ‘sexy’, ‘black and white’ and so on.

Member 2 | [Talking to the author] I get the sense from how you are talking that you want to categorise everything. I think it might work better if there are hundreds of categories and you build your own categories by ticking or whatever.

The author | What do others think?

Member 1 | I think a categorisation system is potentially useful. One of the dangers of designers being presented with a page that just asks them to tick stuff would be that they’d miss a lot – like context. You absorb a lot of extra detail when browsing.

Member 5 | In a way tick boxes are categories. And arguably they’ll still need to be categorised in some way, otherwise you can’t find the right tick box!

Member 3 | I think tick boxes are a pain. If I had so many tick boxes in front of me, especially if they expanded out, I’d just lose interest. I think the best way is to start with your four categories and let designers ‘drill down’ if they want to. It’s more intuitive and easier.

Member 1 | I agree. Let’s say I wanted to create a persona, then hundreds and hundreds of different categories, or tick boxes, wouldn’t help me do that.

Member 4 | OK, you’re going along the persona route.

Member 1 | Yes, I probably would. I can’t imagine looking for a particular person.

Member 4 | That depends if you are designing for a particular person.

Member 1 | Yes, but I think that would be the only reason you’d use this. I don’t think you’d use this to design a particular product.
<table>
<thead>
<tr>
<th>Member 4</th>
<th>If you were designing, for example, some sort of new breakfast product, you could use the resource but you wouldn’t necessarily need to create a persona would you?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member 1</td>
<td>You could still use the power of personas.</td>
</tr>
<tr>
<td>Member 3</td>
<td>Alternatively you could use the search thing, depending on how you developed it, to bring up information about breakfasts. You could then look at the people associated with this information.</td>
</tr>
<tr>
<td>Member 2</td>
<td>Maybe it depends on whether you see people browsing the resource or using it as a tool.</td>
</tr>
<tr>
<td>Member 4</td>
<td>[Speaking to the author] Can you narrow it down? What will designers use it for? At the moment it seems very open; it seems designers could use it for anything.</td>
</tr>
<tr>
<td>The author</td>
<td>The main purpose of this section – Individuals’ Lives – is to allow designers to look into the lives of people who belong to a certain target group. However, it would be nice if the resource could be used in a number of ways, especially as the data are there to do so.</td>
</tr>
<tr>
<td>Member 4</td>
<td>But it is really about ethnography rather than products?</td>
</tr>
<tr>
<td>The author</td>
<td>Yes, it is biased towards people. It’s about putting people at the centre of design process.</td>
</tr>
<tr>
<td>Member 1</td>
<td>As I said, I don’t think I would use this resource to look at the kitchen. I’d probably search it using a type of person. I’d put in an age group: a female, over 50, let’s say</td>
</tr>
<tr>
<td>Member 5</td>
<td>I’d probably want to use it right at the beginning of the design process to find a few interesting things that made me think – be they videos, images, floor plans, whatever. And then I’d just want to keep these things and refer back to them occasionally when designing. So looking at a page that relates to an individual isn’t how I’d use it… I would want to have videos etc. from different people.</td>
</tr>
<tr>
<td>Member 1</td>
<td>Another thing that occurs to me is that it would be useful to have some comments to go with the video clips. In the video of the woman with her hair straighteners in the kitchen….</td>
</tr>
<tr>
<td>The author</td>
<td>[Interrupting] Sorry to stop you, but what you’re saying is really what the next discussion topic is about.</td>
</tr>
<tr>
<td>Member 1</td>
<td>Oops, sorry. However, if you said she did this because she wants to keep an eye on her kids, then suddenly the clip becomes a whole lot more useful.</td>
</tr>
<tr>
<td>Member 2</td>
<td>Can I just ask whether you see this resource as something that a design team buys or whether you see it as being open source?</td>
</tr>
<tr>
<td>The author</td>
<td>Ah, the commercial side! This is primarily PhD research but I think it is important to acknowledge there is a world outside academia. I imagine it could work in many different ways: designers could buy population sets, or take out subscriptions etc. Alternatively, there could be different packages that offer different levels of immersion. For example, some packages might offer designers access to a chat room where they can talk directly to individuals on the resource.</td>
</tr>
<tr>
<td>Member 2</td>
<td>I just ask because there are things that are quite similar to this based on trends. With some you pay huge amounts, but with others it’s quite open source. You can access almost everything; it’s just the formal reports you have to pay for.</td>
</tr>
<tr>
<td>Member 1</td>
<td>I imagine it is the kind of thing that you could modulise. You could just sell specific populations. From a manufacturer’s point of view, you might not sell to China so why buy information that relates to China?</td>
</tr>
</tbody>
</table>
Member 4 | Going back a bit, what interests me is the report. That’s analysis isn’t it?
---|---
Member 2 | Yes – there are different commercial models. But from the vendor’s point of view anything that’s free is considered advertising. A customer buys the report because someone has analysed it and taken out 90% of the crap.
Member 4 | That’s the whole point. You need some sort of analysis. If I were paying for this I would want some analysis, or as you were saying [talking to Member 1] comments like: “She’s doing her hair in the kitchen as she is watching her kids”.
Member 2 | I agree you’d want background information, but I don’t think browsing the resource would be the right thing to do if you’re looking for a particular answer or want deep analysis. The right thing to do would be your own research. I think you’d use this if you want to get a feel for something.
The author | Yes, it’s really just to get a feel. If you want to know whether two year olds can talk then the resource will tell you.
Member 2 | I don’t think you have to say, “just a feel”; it doesn’t have to be shallow; it can also be quite deep. It’s not one specific thing.
The author | OK, unfortunately time is short so we’ll move on to the next topic:

**Topic 2: Information format**

We are going to talk about five different sections here: ‘typical day’ videos, ‘virtual tours’, presenting and answering questions, thinking aloud and languages, and music and visual effects. I’ll explain each section a little more as we get to it, and for each section I’ll show a short video.

1. **Typical day videos**
   A ‘typical day’ video is a video that designers can watch to get an idea of what an individual does in a typical day of his or her life. I’ll run this video and I think you’ll understand. [The author starts the video – the video is about six minutes long].

(i) A ‘typical day’ video

**Topic 2: Information format**

A frame from the ‘typical day’ video shown
OK this video shows a day in the life of a British man who works as an installer of wood burning stoves. As you can see, he gets up... has breakfast... travels to work on the Tube... meets his work colleagues... measures and cuts some flue liners... goes to a café for a coffee break... returns from his break... climbs up onto the ridge of a roof... starts fitting the flue... has lunch... finishes fitting the flue... finishes work... goes home... has a wash... has something to eat... goes out to the pub... then returns home and goes to bed.

So, that’s the video. They’re just to give designers a quick glimpse into someone’s daily life.

My first question is: how long do you think these videos should be? The video I’ve just shown is about six minutes long.

Member 3 I think six minutes is fine.

Member 1 About six minutes seems perfectly reasonable to me.

Member 2 I think it depends on whether you think you need to look at a lot of people or not. Because if you are have the right people then you don’t have to look at many.

Member 1 You wouldn’t look at 100 people and say, “I now know everything I need to know about this user group”; you’d look at ten, absolute tops. So I don’t think it matters if the videos are six, seven, or even eight minutes long.

Member 5 I think you could compress it; especially if you had some form of narration. It would save designers some time.

Member 2 I’ve done something similar to this in Japan with teenagers. We made videos that were around an hour. We did 20 people. Of course nobody sat down and watched every film. But the thing is people watched the films for different reasons. They were looking for different things. When you make the resource you don’t really know what people will be looking for. As soon as you start editing things out, you prevent people from discovering things.

Member 1 I think you have to ask, “What’s the purpose of it?” For me, who knows nothing about installing stoves, it’s given me a flavour of what’s involved. If you’re expecting some kind of in-depth ethnographic understanding then six minutes is not going to do it. But I don’t think this is why you’d use this tool.

Member 3 The resource is never going to replace serious ethnography. Am I right in believing that you’d still have specific videos in addition to this one?

The author Yes, there are lot of other videos in the resource.

Member 3 So, this is just really an overview video to give you a rough idea?

The author That’s right. So keeping that in mind, do any of you have any ideas how these videos could be improved?

Member 1 Again, if there were some little facts about him on the same page that you can see while the video is playing. Little captions stating where he works, where he is going, at what time. That would be really useful. You’d only need one liners.

Member 5 You could have the individual narrating, but the language barrier would be a problem if the person didn’t speak English.

Member 4 The thing about design is that you don’t have time to spend ages analysing and sitting through loads of videos. You just want a snapshot to get information as quickly as possible.

Member 1 So if you had the video with these little notes underneath...

Member 4 Or even a timeline. He eats at this time, exercises at this time.
<table>
<thead>
<tr>
<th>Member 5</th>
<th>Yes, that would be really nice. You could click on the bits of the day that interest you. Yes, that would be really nice.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member 4</td>
<td>You might, for example, just want to know about eating rituals. In which case you could just click on the clips when he is having a meal.</td>
</tr>
<tr>
<td>Member 1</td>
<td>It could be lots of short videos… or a long video with a jumpable timeline.</td>
</tr>
<tr>
<td>Member 5</td>
<td>Yes, you could have a graphic that shows the day in hours. You could then click on the parts you want to see.</td>
</tr>
<tr>
<td>The author</td>
<td>OK, now I’m going to go on to the next section, which is ‘virtual tours’.</td>
</tr>
</tbody>
</table>

**ii. Virtual tours**

‘Virtual tours’ are tours around people’s living environments; designers showed great interest in them when interviewed. As with all these sections, there’s a short video. Hopefully this will give you an idea of what I am talking about and will act as a starting point for our discussions. The video shows just a few ways in which a virtual tour could be done; I’d appreciate your comments and suggestions. [The author starts the video which comprises four clips; they are shown in succession]. All these clips involve the kitchen.

**Video clip 1**

As you can see, in this first clip the individual is acting as a guide; he is showing us around his kitchen.

![Virtual tours: the individual acting as a guide](image)

**Video clip 2**

Here the individual has gone, and the tour takes the form of a 360° cinematic pan of a room.

**Video clip 3**

This next clip isn’t actually a video as such, but more of an illustration of the room using photos. You can click on the products shown in the photos to learn a little more about them. This kitchen is actually in Taiwan.
So which approach/approaches, if any, do you think are the most appropriate? Or perhaps you have ideas of your own?

Member 1
I like the scan around the room and the one which you could click on stuff. I think they are the most informative. As I’ve said before, I think a floor plan would also be interesting; because if you compared a kitchen in Tokyo with a kitchen in a suburb in England, they would be vastly different. The kitchen in Tokyo would probably be about the size of a coffee table! A floor plan would quickly give a designer an idea of overall size, what’s in the room and what there’s space for.

Member 4
Yes, I like the guy in the first clip talking about his limited space. It was like proper ethnography when he opened the cupboard and started talking.

Member 5
I definitely like the one where you got a tour.

Member 3
Again they all offer different information. Good information. It’s really difficult to choose, it’s really difficult. You’re trying to create a massive database and approach so many different areas; I wouldn’t know where to start!

Member 1
The only problem with the person showing you around the kitchen would be the language barrier, if they didn’t speak English.

The author
Yes, we’ll be talking about languages in a minute.

Member 2
When you ask someone to give a tour, there are good and bad things. They tell you what they think is important. A tour might give designers a sense of the user, but what they miss out might be what designers are interested in. It’s difficult to judge!

Member 1
From a practical point of view, I’d be interested in the size and space of a room, and what’s in there. Many Americans are very surprised that we keep our washing machines in the kitchen. They think it insane, unbelievable. A simple scan of a room would show them that we do!

The author
Do you think the scans of the room should be silent?

Member 1
The only reason I can see the need for sound, narration, would be if there was something in the room that you couldn’t see. In a modern UK kitchen all you’d see is cupboard doors. You need some narration just to tell you that behind that cupboard door is the fridge and behind that one is the washing machine. The narration wouldn’t need to be sound, it could be annotation. It could be a little arrow popping up with a message, or text below. But it would be important. If someone from abroad saw my kitchen they might think that I didn’t own a fridge, whereas I’ve actually got three!

The author
Yes, you might have noticed that the Taiwanese kitchen shown was actually quite big. That’s because it’s an industrial kitchen. However as the kitchen is the only one they family have, they also use it to cook their own meals.

Member 1
Now, that’s interesting. And it would only take a couple of lines of text to explain that.

Member 4
Yes, it needs some extra info to explain what’s not visually apparent.

The author
OK. The next section of the topic is about ‘presenting and answering’ questions.

### iii. Presenting and answering questions

This section is probably going to be very quick; you might even choose to answer: “I like this method” or “I don’t like this method”. The video will show you some of the different ways in which information can be shown. In some cases information is elicited from an individual, in others the individual just speaks. I’d appreciate your comments, especially if you think any method is inappropriate or you’ve got ideas of your own. In all the clips a student discusses her experiences of taking the bus to university.
[The author starts the video; the footage comprises three clips]

**Video clip 1**
This first clip shows an informal interview. The individual is basically chatting with the interviewer about certain issues to do with her journey to university.

![Video Clip 1](image1)

**(iii) Presenting and answering questions**

**Topic 2: Information format**

**Presenting and answering questions: informal interview**

**Video clip 2**
This next clip shows the participant being asked questions. It is arguably a more formal approach compared to the last one.

**Video clip 3**
In this final clip, the participant just speaks. She knows what she wants to say and just says it.

<table>
<thead>
<tr>
<th>Member 1</th>
<th>Before we start, can I confirm that this has nothing to do with categories?</th>
</tr>
</thead>
<tbody>
<tr>
<td>The author</td>
<td>That’s right. Basically if someone is discussing an issue, or a product, there may come a point when it seems beneficial to ask a question. For example, if a guy owns a camera the interviewer could ask: “So what do you use your camera for?” Now, you may prefer that these questions are not asked; you may prefer that he has rehearsed what he is to say and just says it.</td>
</tr>
<tr>
<td>Member 1</td>
<td>Ahh… I’m with you!</td>
</tr>
<tr>
<td>Member 4</td>
<td>For me, I’d like the question written. If a lot of questions need to be asked they could be written below the video as a list. Then designer could click on the question he is interested in and it could take him to the point in the video where the question is being answered. Or alternatively have the answer to the question written below as well. Yes, especially if the answer is short like “I would”. There’s no point seeing a video if you can read it in a second.</td>
</tr>
<tr>
<td>Member 3</td>
<td>The Guardian website, or a website like that, often transcribes their videos. So, if you want you can watch the video or quickly read the transcript.</td>
</tr>
<tr>
<td>Member 4</td>
<td>It’s to do with time again, or the lack of it!</td>
</tr>
</tbody>
</table>
Member 1 | I think having text makes sense – if you’re in a hurry you can scan read.
---|---
The author | Does anyone have a particular dislike to any of the approaches shown in the video?
Member 1 | I don’t. However, the first clip, the one showing an informal unrehearsed interview, is more natural. If you are going to watch it, it seems more natural.
The author | OK, the next section of this topic is ‘thinking aloud and languages’.

### iv. Thinking aloud and languages

[The author starts a video] This guy is Taiwanese. For now, please ignore the fact that you can’t understand what he is saying. He’s making a cup of coffee – in a Japanese way – it takes about ten minutes. While he’s doing this, he’s talking: he’s thinking aloud… Now, I don’t really want to discuss thinking aloud too much as there are a lot of papers that discuss the pros and cons of the technique. However, I would like to ask whether you think thinking aloud is appropriate in a resource like this?

Member 1 | I think if he’s explaining why he’s doing what he’s doing then that’s fine. But if he’s just rambling then no.

Member 4 | There’s a well known Procter and Gamble incident where they were looking at how much washing powder people used. In the focus group people said that they used exactly what it recommended on the box. But when they were watched it was found not to be the case: people were using more powder if they thought an item they were washing had a stain… So, it’s interesting if they talk you through… However, you might get someone on camera who says: “This is what I always do” and measures the powder exactly, when in reality they bung an unmeasured quantity in.

Member 3 | I think it depends on what category and what you are trying to capture. If someone showing what they do and there is no need to talk about it, then don’t let them talk! If they are doing something more involved, or perhaps something you can’t fully see, then they need to talk about it… I don’t think you can standardise all the videos. What’s necessary is what’s necessary.

Member 5 | Yes, I’d be happy with that kind of presentation, the presentation in the clip.
The author

The next area I wish to discuss is people speaking in a foreign language. Now, the Taiwanese guy in the video I've just shown can actually speak English. So, my first question is: “Should I just let people who can speak English speak English?”… Now, regardless of whether you think they should or not, there are going to be individuals who don’t speak English. So my second question is: “What should be done about language issues? Do you think there should be subtitles, dubbing, or what?”

<table>
<thead>
<tr>
<th>Member 1</th>
<th>Subtitles would be fine. I’d have no problem with that. In fact, dubbing would also be OK; I don’t have a great preference between subtitles or dubbing.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member 5</td>
<td>Personally, I just think you have to have subtitles. People in office environments don’t always turn their speakers on.</td>
</tr>
<tr>
<td>Member 3</td>
<td>I know that’s such a minor thing but with subtitling you’d always be able to get the information… Dubbing takes something away, it’s a huge distraction. I end up watching the lip sync! I’d never personally go and see a foreign movie if it were dubbed, the voices seem false and always lack emotion.</td>
</tr>
<tr>
<td>Member 1</td>
<td>Subtitles are much better.</td>
</tr>
<tr>
<td>Member 5</td>
<td>Yes.</td>
</tr>
<tr>
<td>Member 2</td>
<td>I don’t know whether this resource is just for your study, but I’m sure that Taiwanese designers would want to hear the Chinese. This would be difficult if someone was talking over the top! You’re kind of assuming that the only people who are going to use it are English.</td>
</tr>
<tr>
<td>Member 1</td>
<td>I don’t think those that can speak English should speak English. Yes, it’s easier for us to understand but for what about the designers who can understand the language the person is talking? There’s also the issue of how well they can speak English.</td>
</tr>
</tbody>
</table>

The author

OK. The next section is ‘music and visual effects’.

**v. Music and visual effects**

[The author starts a video].

(v) Music and visual effects

Topic 2: Information format

A frame from the video showing music and visual effects
What we are watching is the start of a Taiwanese wedding. It is taking place outside in the road and it's very early in the morning. The music and visual effects have been added to make it more dramatic and engaging. My question is: “When, if ever, is it appropriate to use music and visual effects?”

Member 1: I don’t think it helps.

Member 5: I’d want to hear if there are traffic noises.

Member 3: How would you know you’re not stereotyping? If you’re selecting the music, aren’t you in danger of picking something that's completely inappropriate?

Member 5: I hate to think what someone would play over my special day!

The author: Perhaps I should say, this is actually someone’s personal wedding video. I haven’t edited it, it’s the real thing.

Member 5: Now that’s interesting! In which case use it but tell people. It would need to be labelled as such.

Member 2: Yes, that’s different if it’s a genuine wedding video.

The author: What do you think about the use of music and visual effects generally?

Member 1: The only effect I think might be sometimes useful, as I have said before, would be annotation. Perhaps pointing out something that’s hidden.

Member 4: Yes.

Member 5: Yes.

The author: How about using an effect to shorten time?

Member 1: Yes, that would be acceptable.

Member 5: I agree.

The author: Now a completely new topic.

**Topic 3. How should intangible information be handled?**

For those of you might have forgotten what I mean by ‘intangible’ information, it’s information that’s difficult to show: such as brands and ethics. I’ll introduce this topic by reading something that was said to me by one of the designers I interviewed. He said:

“Knowing how different people are is interesting, knowing that they are existing in a different environments and they surround themselves with different goods and that their family relationships may have an impact on what they buy…. It’s all interesting, however it doesn’t really tell you about peer group pressure, style, or the affects of the media on what people buy – like how things advertised here, or in the States or Europe. These things have probably more of an impact on what people buy than just bare lifestyle.”

Although my project is not about marketing, and I certainly wouldn’t claim to be very knowledgeable in this area, so many designers spoke about brands and other intangible issues that I feel it would be wrong of me to totally ignore this area. At the moment I intend to place brand related information in the Details category.

[The author starts a video. The video is made of three clips that play one after the other].

**Video clip 1**

Here we see a woman choosing a handbag. She’s explaining her decision process and chatting about the different brands available and how they play...
a role in her life… OK, this is a day later. She’s bought her branded handbag and we are now following her to see how she interacts with it. A guy at Seymour Powell was really interested in this sort of thing – how people live with their brands. However, the question is: how do you show such information? How do you maintain focus on the brand and not the product?

**Video clip 2**
In this clip a Taiwanese man is discussing the environment. He runs a fast food restaurant and he is telling us about the number of wooden chopsticks that are thrown away each day… He is explaining that he has started to supply washable metal chopsticks to his eat-in customers as he feels so guilty about it.

**Video clip 3**
Here we see a woman discussing animal welfare. She is explaining why she chooses not to buy leather goods.

---

**A frame from the video showing an individual with her branded handbag**

<table>
<thead>
<tr>
<th>Member 1</th>
<th>I don't any reason why ‘brands’ couldn’t be a sub-category of <em>Products</em>.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member 3</td>
<td>Yes.</td>
</tr>
<tr>
<td>Member 5</td>
<td>Yes.</td>
</tr>
<tr>
<td>The author</td>
<td>I’ve been looking at that, but I was thinking that some people’s favourite brands might actually be services rather than products. What do others think?</td>
</tr>
<tr>
<td>Member 5</td>
<td>I don’t think it matters. I think ‘brands’ should be in <em>Products</em>.</td>
</tr>
<tr>
<td>The author</td>
<td>At the moment it is in <em>Details</em>.</td>
</tr>
<tr>
<td>Member 1</td>
<td>I would go for <em>Products</em>.</td>
</tr>
<tr>
<td>Member 5</td>
<td>You could have their favourite products, brands that they buy often, and products that they have problems with... The other thing that might be useful is to show adverts of the things people buy. So you get to see what they get bombarded with.</td>
</tr>
<tr>
<td>Member 1</td>
<td>If you had an advert for that handbag – just a jpeg, you could relate her to that possession and the advert of that product. That would be quite interesting.</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Member 2</td>
<td>The problem with brands is that unless you are talking to someone who has an understanding of branding they don’t realise why they have bought something. They always try and describe their decision in terms of functionality – but it hardly ever is!</td>
</tr>
<tr>
<td>Member 5</td>
<td>Most people would say that they are not a slave to brands…</td>
</tr>
<tr>
<td>Member 1</td>
<td>But they are!</td>
</tr>
<tr>
<td>Member 3</td>
<td>And they're buying the same brand again and again and again!</td>
</tr>
<tr>
<td>Member 5</td>
<td>That's the interesting bit: what brands they've bought, not what they think about brands.</td>
</tr>
<tr>
<td>Member 1</td>
<td>You're not in a position where you can analyse it all. You're going to have to stick something up and let the designers decide whether it is useful or not.</td>
</tr>
<tr>
<td>The author</td>
<td>How do you think you’d show something like peer group pressure or ethical and environmental beliefs?</td>
</tr>
<tr>
<td>Member 4</td>
<td>It’s a very difficult thing to do.</td>
</tr>
<tr>
<td>Member 1</td>
<td>The only way I can see that you could show ethical and environmental things is to ask people. I think the ethical thing is increasingly important – sustainability, Fairtrade and all that. It would be very interesting as it would be different in different populations.</td>
</tr>
<tr>
<td>Member 5</td>
<td>Again, you could go into their kitchen and look at what brands they buy. If they actually care about these sorts of things you will soon become aware of this by what they have bought. You don’t necessarily have to sit them down and say: “What do you think about the environment?”</td>
</tr>
<tr>
<td>Member 1</td>
<td>It’s very interesting as it could be a major differentiator between populations. I don’t want to stereotype, but there maybe people living in China who feel: “Screw the environment. The West has polluted the planet for over 250 years, now it’s our turn. Stuff it! I want my air conditioning full on”. Meanwhile, people like my wife go to Waitrose to buy organic free range eggs because they don’t like the idea that a poor little chicken has had a terrible life.</td>
</tr>
<tr>
<td>The author</td>
<td>And how would you get this information over? In the video an interview was used.</td>
</tr>
<tr>
<td>Member 1</td>
<td>I can’t think of another way but it’s such an important area that you can’t just ignore it.</td>
</tr>
<tr>
<td>Member 5</td>
<td>We were talking earlier about duplicating information. So, let people talk about the environment or ethics when they are discussing their possessions or whatever. Just make sure you tag it and that it’s searchable.</td>
</tr>
<tr>
<td>Member 1</td>
<td>Perhaps there should be an extra heading for people who are passionate about the environment?</td>
</tr>
<tr>
<td>Member 5</td>
<td>I think that’s just an issue of how the tabs across the top are done. You could use a drop down menu with the categories that are relevant for that individual. It wouldn't matter how many categories are in that list.</td>
</tr>
<tr>
<td>Member 1</td>
<td>Yes, you could have lots and lots of categories that are cross referenced… Thinking about it, I suppose there is no real reason why a designer couldn’t customise his own toolbar: “These are the headings I am interested in, forget the rest”.</td>
</tr>
<tr>
<td>The author</td>
<td>OK, this discussion is leading nicely into the last topic.</td>
</tr>
</tbody>
</table>
**Topic 4: Resource functionality**

Here’s the video. What you’re discussing is exactly the sort of thing that I am interested in. [The video shows a designer working individually and in a team. It asks how the resource should function].

<table>
<thead>
<tr>
<th>Member 3</th>
<th>Maybe a designer could set up their own profile page and save the pages they like. Then maybe when new content is added this could be flagged up to them. You could also perhaps ask them whether they want mainly videos or transcripts to read.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member 4</td>
<td>… Going back to finding images, some websites have a thing called a light box. You can grab the images you want and store them in something a bit like a virtual shopping basket. So you can go back and look at them at any time.</td>
</tr>
<tr>
<td>Member 1</td>
<td>Like Microsoft’s ‘my favorites’.</td>
</tr>
<tr>
<td>Member 4</td>
<td>Yes, like ‘my favorites’ but it’s altogether… And the other thing is how you display images. I don’t think designers would want one picture up at a time; they would probably want a few so they can try and see patterns.</td>
</tr>
<tr>
<td>Member 3</td>
<td>It could operate like a virtual shopping experience where you pick up products and put them in a shopping basket as you go along. You could do the same with videos. You could put them in a basket, then at the end of the day click on the basket to see what you’ve got.</td>
</tr>
<tr>
<td>Member 1</td>
<td>I like that idea, it’s a good idea.</td>
</tr>
<tr>
<td>Member 5</td>
<td>Yes.</td>
</tr>
<tr>
<td>Member 1</td>
<td>You could just look at a few people and pull out a few kitchen bits. You could then just go away and look at kitchens for half an hour.</td>
</tr>
<tr>
<td>Member 3</td>
<td>I was wondering whether a designer should be able to add to the resource.</td>
</tr>
<tr>
<td>The author</td>
<td>What do others think about this?</td>
</tr>
<tr>
<td>Member 5</td>
<td>We’re talking about videos, with possibly timelines and explanations. I’m thinking how is that packaged as a bundle and given a name? It also needs to be tagged to a person and various categories, and be able to be labelled</td>
</tr>
</tbody>
</table>
as ‘my favourite’. If you are talking about people adding their own pieces of information, then the problem is: are they going to create the right bundle of information? I think that might be quite difficult to do. I suppose you could have a research group contributing certain information to it.

The author  Just to keep you all informed, we have about another five minutes left.

Member 4  I think the videos shouldn’t be too long. Everything should be designed around getting information quickly. Time is money, and then there’s the fact that you’ve always got clients breathing down the back of your neck. You don’t want to spend all your time finding material, especially if you have to book your time against the project.

Member 5  Again, using a video timeline would allow you to get the bit you want quickly.

The author  I know a lot of what has been said about timelines and subtitling relates to both sections of the resource, but has anyone got anything specific to say about the Information Pages?

Member 3  The good thing is that it’s easy to understand. Most people have used Wikipedia. The question is where do you stop? I mean, do you have an Information Page on everything?

Member 1  I don’t think the information needs to be too deep; it just needs to make designers aware of the main issues... if further research needs to be done, it needs to be done. The resource can’t contain everything.

The author  So as we enter these final minutes, I must ask: “Have we missed anything?”

Member 2  [Talking to the author] We’ve mainly discussed the resource as if a lone designer is using it. Whereas if it’s a team they’ll want to collaborate. What I was thinking is that designers might want to put tags on the information. So if someone in their team found something that they thought was interesting another team member could easily find it. Like on Flickr, you can tag certain areas of an image or the whole image. This might also help solve the category issue as you would leave this up to the people who are looking.

Member 1  There are practical limits. Like what are you actually capable of achieving in the time that you have got?

The author  This is true. However, at the moment I am sort of working on my own assumptions of what designers want. That’s why it’s good to hear your opinions. Finally, do any of you have suggestions of websites that would be beneficial to look at?

Member 4  Getty Images is a useful site to look at as far as tick boxes, the light-box and the shopping basket are concerned… In fact, I’ve done this sort of thing before but with flat images rather than video.

The author  OK, that’ it; my time’s up! I’d just like to thank you all for both your time and your comments. Today has been very useful. Thank you.
Appendix G

Focus group: the coding frame
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat</td>
<td>Information categorisation</td>
</tr>
<tr>
<td>Cat-Auth</td>
<td>Author's categories</td>
</tr>
<tr>
<td>Cat-Build</td>
<td>&quot;Build your own categories&quot;</td>
</tr>
<tr>
<td>Cat-Cat</td>
<td>Categorise or not categorise</td>
</tr>
<tr>
<td>Cat-Dup</td>
<td>&quot;Duplication&quot; v non-duplication</td>
</tr>
<tr>
<td>Cat-Nam</td>
<td>Category name/content</td>
</tr>
<tr>
<td>Cat-Sel</td>
<td>Selectable categories</td>
</tr>
<tr>
<td>For</td>
<td>Information format</td>
</tr>
<tr>
<td>For-Exp</td>
<td>Explanation, background facts, &quot;annotation&quot;, &quot;analysis&quot;</td>
</tr>
<tr>
<td>For-Lang</td>
<td>Languages</td>
</tr>
<tr>
<td>For-Mus</td>
<td>Music</td>
</tr>
<tr>
<td>For-Nat</td>
<td>“Natural”, staged</td>
</tr>
<tr>
<td>For-Q&amp;A</td>
<td>Questioning &amp; answering</td>
</tr>
<tr>
<td>For-Raw</td>
<td>Cut footage v raw footage</td>
</tr>
<tr>
<td>For-Sdn</td>
<td>“Subtitles”, “dubbing”, “narration”</td>
</tr>
<tr>
<td>For-Sfx</td>
<td>Visual effects</td>
</tr>
<tr>
<td>For-Ta</td>
<td>Thinking aloud</td>
</tr>
<tr>
<td>For-Trans</td>
<td>&quot;Transcript&quot;</td>
</tr>
<tr>
<td>For-Ty</td>
<td>Typical day videos</td>
</tr>
<tr>
<td>For-Ty-Lth</td>
<td>Length of videos</td>
</tr>
<tr>
<td>For-Vt</td>
<td>Virtual tours</td>
</tr>
<tr>
<td>For-Vt-Gui</td>
<td>Guided tours</td>
</tr>
<tr>
<td>For-Vt-Ph</td>
<td>Photo/illustration of room</td>
</tr>
<tr>
<td>For-Vt-Sca</td>
<td>Room scans</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Int</td>
<td>Intangible information</td>
</tr>
<tr>
<td>Int-Brd</td>
<td>Brands</td>
</tr>
<tr>
<td>Int-Eth</td>
<td>Ethics and environment</td>
</tr>
<tr>
<td>Fun</td>
<td>Functionality (&amp; features)</td>
</tr>
<tr>
<td>Fun-Comp</td>
<td>Comparing information</td>
</tr>
<tr>
<td>Fun-Fpl</td>
<td>“Floor plan”</td>
</tr>
<tr>
<td>Fun-Stor</td>
<td>Storage</td>
</tr>
<tr>
<td>Fun-Tag</td>
<td>“Tag”</td>
</tr>
<tr>
<td>Fun-Til</td>
<td>“Timeline”, video segmentation</td>
</tr>
<tr>
<td>Fun-Time</td>
<td>Time-saving features</td>
</tr>
<tr>
<td>Fun-Oth</td>
<td>Other features</td>
</tr>
</tbody>
</table>

- **General codes**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bsl</td>
<td>Browsing, searching and links</td>
</tr>
<tr>
<td>Com</td>
<td>Commercial</td>
</tr>
<tr>
<td>Dep</td>
<td>Depth of information</td>
</tr>
<tr>
<td>Htu</td>
<td>How resource might be used</td>
</tr>
<tr>
<td>I&amp;G</td>
<td>Exploring individual users and exploring across user groups</td>
</tr>
<tr>
<td>Lim</td>
<td>Recognised limitations</td>
</tr>
<tr>
<td>Tim</td>
<td>“Time is short”, speed</td>
</tr>
</tbody>
</table>

*In Vivo* codes are shown in inverted commas
Appendix H
The design specification for the resource
<table>
<thead>
<tr>
<th>Aspect</th>
<th>Specification</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>The resource must give designers a broad understanding of the worlds and lives of users dissimilar to themselves</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The resource must be Internet based</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The resource must be quick to use</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The resource should be easy and economical to use</td>
<td>The resource should conform to standard usability guidelines unless a superior alternative is available</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The resource should be simple for designers and non-designers to use and understand</td>
</tr>
<tr>
<td></td>
<td>The resource must not suggest, in any way, that it is a replacement for user research</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The resource must be easy to update</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The resource should help clients understand the kind of user information designers need</td>
<td></td>
</tr>
<tr>
<td>Resource</td>
<td>The information in the resource must be reliable</td>
<td>Where possible, sources should be given</td>
</tr>
<tr>
<td>content</td>
<td>The resource should contain information similar to that found in the resource shown to the focus group (i.e. the second mock-up).</td>
<td>The resource should contain information relating to specific individuals such as: anthropometric data, ‘typical day’ videos, ‘tasks’, ‘virtual tours’, ‘favourite product’ videos and ‘favourite brands’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The resource should contain information on a broad range of general user-related topics such as: medical conditions, population ageing, disabilities and how to conduct user research</td>
</tr>
<tr>
<td></td>
<td>The resource should contain emotional data on individuals</td>
<td>Designers should be able to see the frustrations and delights of individuals</td>
</tr>
<tr>
<td></td>
<td>The resource should contain information on peoples’ latent needs and the kind of marketing material individuals are exposed to</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The information in the resource should focus solely on informing designers of the key facts of a topic</td>
<td>Links should be provided to supplementary information.</td>
</tr>
<tr>
<td><strong>Content arrangement</strong></td>
<td><strong>The resource’s main content should be divided into two parts: Individuals’ Lives and Information Pages</strong>&lt;br&gt;The <em>Individuals’ Lives</em> part of the resource should focus on information related to specific individuals. The <em>Information Pages</em> part of the resource should focus on general user-related topics.</td>
<td><strong>The resource should allow a designer to investigate topics, such as asthma, from a personal point of view and from a general point of view.</strong>&lt;br&gt;The information in the <em>Individuals’ Lives</em> part of the resource should be categorised under the headings: Details, Living space, Activities &amp; interests and Products.</td>
</tr>
<tr>
<td><strong>Content format</strong></td>
<td><strong>Information should primarily be presented in a visual format</strong></td>
<td><strong>Videos should be used in preference to photographs</strong>&lt;br&gt;Videos of more than a few minutes duration should have some form of ‘navigable’ timeline.</td>
</tr>
<tr>
<td></td>
<td><strong>Videos should be accompanied by transcripts and should be subtitled</strong>&lt;br&gt;‘Virtual tours’ should include a guided tour, a 360° pan, an interactive photo montage and a floor plan.</td>
<td><strong>Floor plans should contain enough information to give designers an idea of how space in a room is used</strong>&lt;br&gt;Designers should be able to ‘click’ on items in a room to learn more about them.</td>
</tr>
<tr>
<td></td>
<td><strong>Individuals on the resource should present intangible information (abstract information such as ethics) verbally</strong>&lt;br&gt;Information in the resource should show the date it was collected.</td>
<td><strong>Individuals on the resource should think aloud only when it adds value</strong>&lt;br&gt;(‘Intangible information’ relates to abstract information such as ethics and values).</td>
</tr>
<tr>
<td><strong>Features</strong></td>
<td>The resource must have a feature that allows designers to explore trends in a population</td>
<td>Designers must be able to create their own population sets and examine them for possible trends</td>
</tr>
<tr>
<td></td>
<td>The resource must have a search engine</td>
<td></td>
</tr>
<tr>
<td></td>
<td>It should be possible to browse the Individuals’ Lives section of the resource in various ways. A designer should be able to look at all the information on one individual; and to look at specific information, such as kitchen layouts, across a user group</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The resource must allow information to be tagged and stored</td>
<td>Designers should be able to set up their own profile page in which they can store information. Any new content that relates to these pages should automatically be flagged up to them</td>
</tr>
<tr>
<td></td>
<td>Designers should have the ability to login to an account and add content to the resource</td>
<td>Information added by designers should not alter the resource per se. It should only appear when the designer is logged in to his/her own account. People, other than account holders, should not be able to modify the resource in any way</td>
</tr>
<tr>
<td></td>
<td>The resource should enable different pieces of information to be compared side-by-side</td>
<td></td>
</tr>
</tbody>
</table>
Appendix I

Heuristic inspection: the details of the inspectors
<table>
<thead>
<tr>
<th>Inspector number</th>
<th>Sex</th>
<th>Age group</th>
<th>Status</th>
<th>Years in design</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M</td>
<td>21 – 35 years</td>
<td>research student</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>21 – 35 years</td>
<td>research student</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>21 – 35 years</td>
<td>research student</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>36 – 50 years</td>
<td>research student</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>M</td>
<td>21 – 35 years</td>
<td>research student</td>
<td>1</td>
</tr>
</tbody>
</table>
Appendix J

Heuristic inspection: inspector's record sheet
<table>
<thead>
<tr>
<th>#</th>
<th>Problem found</th>
<th>Where/when</th>
<th>Possible solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>The button for the third part of the video (i.e. Question 3) is missing.</td>
<td>Allotment gardening &gt; Interview</td>
<td>Add the missing button for the third part of the video.</td>
</tr>
<tr>
<td>11</td>
<td>The ‘logout’ button is too small</td>
<td>The button can been seen when the video clock registers: 1 min 25 secs</td>
<td>Make it bigger (perhaps twice the size).</td>
</tr>
</tbody>
</table>
Appendix K

Heuristic inspection: the usability issues found
<table>
<thead>
<tr>
<th>Problem number</th>
<th>Usability issue</th>
<th>Inspectors/Heuristic violated</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No clear start point for new visitors</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>People might ignore the pop-up and input search terms in the wrong case</td>
<td>3 3</td>
</tr>
<tr>
<td>3</td>
<td>Not enough differentiation between the buttons ‘search tools and tips’ and ‘open saved search results’</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>The line used in the table are too dark</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>The ‘sort by’ menu clutters the page. (The results should be reordered by clicking on the table headers)</td>
<td>11</td>
</tr>
<tr>
<td>6</td>
<td>The button labelled ‘compare selected’ is inappropriately named</td>
<td>8</td>
</tr>
<tr>
<td>7</td>
<td>The pages should automatically open in new tabs</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>The ‘results’ tabs are confusing, they look too much like browser tabs</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>It’s not obvious how to rename the tabs in the ‘results’ panel</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>The codes relating to the Information Pages are confusing</td>
<td>10</td>
</tr>
<tr>
<td>11</td>
<td>When the ‘results’ pages are closed the page looks too bare</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>There should be a link to ‘overview’ on the location maps</td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>Clicking the individual’s photo should take you to his/her ‘details’ page</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>The small font size used for some of the some titles suggests they are sub-headings when they are main headings</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>It’s illogical to put interviews and demonstrations together</td>
<td>7</td>
</tr>
<tr>
<td>16</td>
<td>It’s unclear what the faces on the menus are for</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>It’s illogical that only some of the products on the menus have faces</td>
<td>3 4</td>
</tr>
<tr>
<td>18</td>
<td>The text is difficult to read as the line spacing is too small</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>The arrow icons on the menus do not clearly show whether the sub-menus are open or closed</td>
<td>3 7 7</td>
</tr>
<tr>
<td>20</td>
<td>The way the buttons expand on the ‘typical day’ page isn’t nice</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>The lack of ‘back to top’ buttons makes scrolling tiresome</td>
<td>2</td>
</tr>
<tr>
<td>22</td>
<td>The word ‘Links’ on the links panels is too small (it incorrectly suggests that the panel is a child element of something else)</td>
<td>4</td>
</tr>
<tr>
<td>23</td>
<td>The word ‘Links’ on the links panels is not descriptive enough</td>
<td>3</td>
</tr>
<tr>
<td>24</td>
<td>The positions of the links panels often suggests that they don’t relate to the whole page</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Scrolling is difficult in the links panel as there are no scrolling arrows</td>
<td>2</td>
</tr>
<tr>
<td>26</td>
<td>It’s not obvious that the ‘information page’ menus are interactive</td>
<td>2</td>
</tr>
<tr>
<td>27</td>
<td>The pop-ups materialise too far away from the clicked links</td>
<td>11</td>
</tr>
</tbody>
</table>

Note: In the table the letters A, B, C, D and E relate to the five evaluators and the numbers below them relate to the heuristics that were violated.

The usability issues found in the heuristic inspection and the inspectors who found them
(this page should be read in conjunction with the sheets shown on pages 305 – 308)
Problems found on the Home Page

Problem 1
There’s no clear start point for new visitors.

Problem 2
People might ignore this notice and input search terms in the wrong case.

Problem 3
There’s not enough differentiation between these two buttons.

Problems found on the Results pages

Problem 4
The lines used in the table are too dark.

Problem 5
The ‘sort by’ menu clutters the page. (The results should be reordered by clicking on the table headers).

Problem 6
The button labelled ‘compare selected’ is inappropriately named.

Problem 7
The ‘Individual Lives’ and ‘Information Pages’ should automatically open in new tabs. (The web-user shouldn’t have to left click and choose: ‘Open in New Link’).
Problem 8
The tabs are confusing as they look too much like browser tabs.

Problem 9
It's not obvious how to rename the tabs.

Problem 10
The codes (e.g. #6182-HAI) are confusing.

Problem 11
When the tabs on the Results page are closed the page looks too bare.

Problems found on the ‘Individual’s Lives’ and ‘Information Pages’

Problem 12
There's should be a link to ‘Living Space > Overview’ on the location maps.
Problem 13
Clicking this image should take you to the individual’s ‘Details’ pages. It doesn’t.

Problem 14
The small font size suggests that this title is a sub-heading not a main heading. It’s not.

Problem 15
It’s illogical to put interviews and demonstrations together.

Problem 16
It’s unclear what these faces are for.

Problem 17
It’s illogical that some of the products have faces and others don’t.

Problem 18
The text is difficult to read as the line spacing is too small.

Problem 19
The arrow is difficult to understand. (Is the panel open or closed?)

Problem 20
The way these boxes expand (when the cursor is placed over them) isn’t nice.
Problem 21  
No 'back to top' button makes scrolling tiresome on long pages.

Problem 22  
The font size is too small. (It incorrectly suggests that the links panel is a child element of something else).

Problem 23  
The word 'Links' is not descriptive enough for what the panel contains.

Problem 24  
The position of the links panel often suggests that it doesn’t relate to the whole page.

Problem 25  
Scrolling is difficult as there are no scrolling arrows on the scroll bar.

Problem 26  
It’s not obvious that this menu is interactive.

Problem 27  
The pop-ups materialise too far away from the clicked link.
Appendix L

Heuristic inspection: the severity rating form
(given to the three severity rating inspectors)
People’s Lives

Heuristic inspection - severity rating form

According to Nielsen (2005b), the severity of a usability problem depends on a combination of three factors. These are:

1. Its **frequency**: how often it occurs
2. Its **impact**: how difficult it is to overcome
3. Its **persistence**: whether it’s a one-time problem that can be overcome or a problem that will not go away

Keeping the above in mind, please rate the severity of the 27 usability problems found in the heuristic inspection. To do this, please use the severity scale and the tables below. The problems are shown on the attached sheets.

(The scale below is taken from Nielsen, 2005b)

**The severity scale**

0 = I don’t agree this is a usability problem at all
1 = Cosmetic problem only: need not be fixed unless extra time is available
2 = Minor usability problem: fixing this should be given a low priority
3 = Major usability problem: important to fix, should be given a high priority
4 = Usability catastrophe: imperative to fix

**The rating tables**

<table>
<thead>
<tr>
<th>Problem No.</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Problem No.</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>11</td>
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<tr>
<td>12</td>
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<tr>
<td>13</td>
<td></td>
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<td>14</td>
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<td>15</td>
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<tr>
<td>16</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Problem No.</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
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<tr>
<td>21</td>
<td></td>
</tr>
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<td>25</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td></td>
</tr>
</tbody>
</table>

**Reference:**
Available at http://www.useit.com/papers/heuristic/severityrating.html
[Accessed 18 Nov. 2011]
Appendix M

Heuristic inspection: the severity rating scores
(given by the three severity rating inspectors)
<table>
<thead>
<tr>
<th>Problem number</th>
<th>Usability issue</th>
<th>Inspectors/Severity rating</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No clear start point for new visitors</td>
<td></td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>1.7</td>
</tr>
<tr>
<td>2</td>
<td>People might ignore the pop-up and input search terms in the wrong case</td>
<td></td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2.3</td>
</tr>
<tr>
<td>3</td>
<td>Not enough differentiation between the buttons ‘search tools and tips’ and ‘open saved search results’</td>
<td></td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>4</td>
<td>The line used in the table are too dark</td>
<td></td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0.7</td>
</tr>
<tr>
<td>5</td>
<td>The ‘sort by’ menu clutters the page. (The results should be reordered by clicking on the table headers)</td>
<td></td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>1.3</td>
</tr>
<tr>
<td>6</td>
<td>The button labelled ‘compare selected’ is inappropriately named</td>
<td></td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1.7</td>
</tr>
<tr>
<td>7</td>
<td>The pages should automatically open in new tabs</td>
<td></td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>The ‘results’ tabs are confusing, they look too much like browser tabs</td>
<td></td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>It’s not obvious how to rename the tabs in the ‘results’ panel</td>
<td></td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1.7</td>
</tr>
<tr>
<td>10</td>
<td>The codes relating to the Information Pages are confusing</td>
<td></td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1.7</td>
</tr>
<tr>
<td>11</td>
<td>When the ‘results’ pages are closed the page looks too bare</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>There should be a link to ‘overview’ on the location maps</td>
<td></td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>13</td>
<td>Clicking the individual’s photo should take you to his/her ‘details’ page</td>
<td></td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>14</td>
<td>The small font size used for some of the some titles suggests they are sub-headings when they are main headings</td>
<td></td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1.7</td>
</tr>
<tr>
<td>15</td>
<td>It’s illogical to put interviews and demonstrations together</td>
<td></td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>1.3</td>
</tr>
<tr>
<td>16</td>
<td>It’s unclear what the faces on the menus are for</td>
<td></td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>It’s illogical that only some of the products on the menus have faces</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>18</td>
<td>The text is difficult to read as the line spacing is too small</td>
<td></td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>19</td>
<td>The arrow icons on the menus do not clearly show whether the sub-menus are open or closed</td>
<td></td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>20</td>
<td>The way the buttons expand on the ‘typical day’ page isn’t nice</td>
<td></td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>21</td>
<td>The lack of ‘back to top’ buttons make scrolling tiresome</td>
<td></td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>22</td>
<td>The word ‘Links’ on the links panels is too small (it incorrectly suggests that the panel is a child element of something else)</td>
<td></td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1.7</td>
</tr>
<tr>
<td>23</td>
<td>The word ‘Links’ on the links panels is not descriptive enough</td>
<td></td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>24</td>
<td>The positions of the links panels often suggests that they don’t relate to the whole page</td>
<td></td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2.7</td>
</tr>
<tr>
<td>25</td>
<td>Scrolling is difficult in the links panel as there are no scrolling arrows</td>
<td></td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>26</td>
<td>It’s not obvious that the ‘information page’ menus are interactive</td>
<td></td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1.7</td>
</tr>
<tr>
<td>27</td>
<td>The pop-ups materialise too far away from the clicked links</td>
<td></td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1.7</td>
</tr>
</tbody>
</table>

Key to colour coding
- Green: I don’t agree this is a usability problem at all
- Blue: Cosmetic problem only: need not be fixed unless extra time is available
- Yellow: Minor usability problem: fixing this should be given a low priority

The severity ratings for the usability issues found in the heuristic inspection
(this page should be read in conjunction with the sheets shown on pages 305 - 308)
Appendix N

Evaluation: the details of the design professionals
<table>
<thead>
<tr>
<th>Participant number</th>
<th>Sex</th>
<th>Age group</th>
<th>Job title</th>
<th>Years in design</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M</td>
<td>51 years &amp; over</td>
<td>product designer</td>
<td>32</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>20 years &amp; younger</td>
<td>product designer (placement student)</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>21 – 35 years</td>
<td>junior product designer</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>21 – 35 years</td>
<td>product designer (manager)</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>M</td>
<td>51 years &amp; over</td>
<td>industrial designer (director)</td>
<td>35</td>
</tr>
<tr>
<td>6</td>
<td>M</td>
<td>51 years &amp; over</td>
<td>product designer (director)</td>
<td>30</td>
</tr>
<tr>
<td>7</td>
<td>M</td>
<td>21 – 35 years</td>
<td>product designer</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>M</td>
<td>36 – 50 years</td>
<td>product designer (director)</td>
<td>12</td>
</tr>
<tr>
<td>9</td>
<td>F</td>
<td>21 – 35 years</td>
<td>human factors &amp; usability consultant</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>M</td>
<td>21 – 35 years</td>
<td>product designer (manager)</td>
<td>15</td>
</tr>
</tbody>
</table>

The design professionals were drawn from the following companies:

Design Futures, Industrial Design Consultancy (IDC), PDD Group, Rapitypes Limited, Smallfry, The Alloy, Vax, WOW Toys
Appendix O

Evaluation: the task sheets
(used by the author when conducting the usability test)
<table>
<thead>
<tr>
<th>Section of resource</th>
<th>Task</th>
<th>Feature being tested</th>
<th>Level of success</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individuals’ Lives: Details &gt; Personal information</td>
<td>Navigate to ‘A typical day’</td>
<td>Menu</td>
<td>☐ No problem</td>
<td>☐ Minor problem</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☐ Major problem</td>
<td>☐ Failure/gave up</td>
</tr>
<tr>
<td>Individuals’ Lives: Details &gt; A typical day</td>
<td>What does the individual typically do at around 5:50 am?</td>
<td>Video segment buttons</td>
<td>☐ No problem</td>
<td>☐ Minor problem</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☐ Major problem</td>
<td>☐ Failure/gave up</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Video controls</td>
<td>☐ No problem</td>
<td>☐ Minor problem</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☐ Major problem</td>
<td>☐ Failure/gave up</td>
</tr>
<tr>
<td>Individuals’ Lives: Details &gt; Human characteristics</td>
<td>What is the individual’s height?</td>
<td>Anthropometric icons</td>
<td>☐ No problem</td>
<td>☐ Minor problem</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☐ Major problem</td>
<td>☐ Failure/gave up</td>
</tr>
<tr>
<td>Individuals’ Lives: Living space &gt; Overview</td>
<td>What are the pavements like in the individual’s neighbourhood?</td>
<td>Photo array</td>
<td>☐ No problem</td>
<td>☐ Minor problem</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interactive plan of property</td>
<td>☐ Major problem</td>
<td>☐ Failure/gave up</td>
</tr>
<tr>
<td></td>
<td>Go to the bedroom without using the menu</td>
<td>Interactive floor plan (location map)</td>
<td>☐ No problem</td>
<td>☐ Minor problem</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☐ Major problem</td>
<td>☐ Failure/gave up</td>
</tr>
<tr>
<td>Individuals’ Lives: Living space &gt; First floor &gt; Bedroom</td>
<td>Go to the ancestral shrine without using the menu</td>
<td>Interactive floor plan (location map)</td>
<td>☐ No problem</td>
<td>☐ Minor problem</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☐ Major problem</td>
<td>☐ Failure/gave up</td>
</tr>
<tr>
<td>Individuals’ Lives: Living space &gt; First floor &gt; Ancestral shrine</td>
<td>Explore the room in as many ways possible</td>
<td>Scan of room</td>
<td>☐ No problem</td>
<td>☐ Minor problem</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☐ Major problem</td>
<td>☐ Failure/gave up</td>
</tr>
<tr>
<td></td>
<td>Tour of room</td>
<td>Interactive room plan</td>
<td>☐ No problem</td>
<td>☐ Minor problem</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☐ Major problem</td>
<td>☐ Failure/gave up</td>
</tr>
</tbody>
</table>
## Section of resource
<table>
<thead>
<tr>
<th>Task</th>
<th>Feature being tested</th>
<th>Level of success</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individuals’ Lives:</strong> Living space &gt; First floor &gt; Ancestral shrine</td>
<td>Go to the Information Page on ‘divination blocks’ without using the ‘Links’ panel</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Text link</td>
<td></td>
<td>No problem</td>
</tr>
<tr>
<td></td>
<td>‘Links’ pop-up</td>
<td></td>
<td>No problem</td>
</tr>
<tr>
<td><strong>Information Pages:</strong> Divination Blocks</td>
<td>Navigate to ‘Image 4’ in the ‘Overview’ section</td>
<td></td>
<td>No problem</td>
</tr>
<tr>
<td></td>
<td>Image viewer</td>
<td></td>
<td>No problem</td>
</tr>
<tr>
<td></td>
<td>Without scrolling, go to the section titled ‘Traditional use’.</td>
<td></td>
<td>No problem</td>
</tr>
<tr>
<td></td>
<td>Jump menu</td>
<td></td>
<td>No problem</td>
</tr>
<tr>
<td></td>
<td>Go to ‘Stage 3’. What does it mean if both blocks land with their round sides up?</td>
<td></td>
<td>No problem</td>
</tr>
<tr>
<td></td>
<td>Rollover thumbnails</td>
<td></td>
<td>No problem</td>
</tr>
<tr>
<td></td>
<td>Return to the individual you were originally looking at using the ‘Sources &amp; Links’ panel</td>
<td></td>
<td>No problem</td>
</tr>
<tr>
<td></td>
<td>‘Sources &amp; Links’ scrollbar</td>
<td></td>
<td>No problem</td>
</tr>
<tr>
<td></td>
<td>Individuals’ Lives link</td>
<td></td>
<td>No problem</td>
</tr>
<tr>
<td><strong>Individuals’ Lives:</strong> Activities &amp; interests &gt; Allotment gardening</td>
<td>Click the ‘chicken’ link. Explain what you think ‘Go to list of Links’ is for?</td>
<td></td>
<td>No problem</td>
</tr>
<tr>
<td></td>
<td>‘Go to list of Links’ button</td>
<td></td>
<td>No problem</td>
</tr>
<tr>
<td></td>
<td>What do you think happens if you click on ‘Coop’?</td>
<td></td>
<td>No problem</td>
</tr>
<tr>
<td></td>
<td>Direct link to a page relating to the individual</td>
<td></td>
<td>No problem</td>
</tr>
<tr>
<td></td>
<td>In the ‘Links’ panel what do you think the arrows are for?</td>
<td></td>
<td>No problem</td>
</tr>
<tr>
<td></td>
<td>Reverse look-up button</td>
<td></td>
<td>No problem</td>
</tr>
<tr>
<td>Section of resource</td>
<td>Task</td>
<td>Feature being tested</td>
<td>Level of success</td>
</tr>
<tr>
<td>---------------------</td>
<td>------</td>
<td>----------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Individuals’ Lives</td>
<td>Using the menu, navigate to the ‘Task’ called ‘Cleaning an air-conditioner’</td>
<td>Submenu</td>
<td>□ No problem □ Minor problem □ Major problem □ Failure/gave up</td>
</tr>
<tr>
<td>Individuals’ Lives: Activities &amp; interests &gt; Tasks &gt; Cleaning air-con</td>
<td>Watch ‘Segment 1’ at four times its normal speed</td>
<td>4X faster button</td>
<td>□ No problem □ Minor problem □ Major problem □ Failure/gave up</td>
</tr>
<tr>
<td>Individuals’ Lives: Activities &amp; interests &gt; Rituals &gt; Burning joss paper</td>
<td>Read the video transcript</td>
<td>Transcript panel</td>
<td>□ No problem □ Minor problem □ Major problem □ Failure/gave up</td>
</tr>
<tr>
<td>Individuals’ Lives: Products &gt; Brands &gt; La New</td>
<td>How many other products by La New does the individual own?</td>
<td>Scrolling image viewer</td>
<td>□ No problem □ Minor problem □ Major problem □ Failure/gave up</td>
</tr>
<tr>
<td>Individuals’ Lives</td>
<td>Return to the ‘Personal information’ without using the menu</td>
<td>The individual’s interactive photograph</td>
<td>□ No problem □ Minor problem □ Major problem □ Failure/gave up</td>
</tr>
</tbody>
</table>
## The System Usability Scale

Participant:  
Company:  
Date:  

<table>
<thead>
<tr>
<th></th>
<th>I think that I would like to use this system frequently</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Strongly disagree</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>I found the system unnecessarily complex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I thought the system was easy to use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I think that I would need the support of a technical person to use this system</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I found the various functions in the system were well integrated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I thought there was too much inconsistency in the system</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I would imagine that most people would learn to use this system very quickly</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I found the system very awkward to use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>I felt very confident using the system</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>I needed to learn a lot of things before I could get going with this system</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Appendix Q

Evaluation: the interview outline
<table>
<thead>
<tr>
<th>Aspect</th>
<th>Theme</th>
<th>Prompts</th>
</tr>
</thead>
</table>
| Functionality | What do you think of the level of functionality in the home page and the results pages? | - Are any functions missing or not needed?  
- Were there any functions you particularly liked or disliked? |
|               | What do you think of the level of functionality in the Individuals' Lives and the Information Pages? | - Are any functions missing or not needed?  
- Were there any functions you particularly liked or disliked? |
| Usability     | How long do you think the resource would take to learn?               | - How easy or difficult do you think it would be for a novice to use the resource?  
- Do you think instruction/documentation would or wouldn't be needed to use the resource?  
- If a designer didn't use the resource for a while, how long do you think it would take him or her to re-establish proficiency? |
|               | How easy or difficult are the features to use?                        | - Were any of the features frustrating to use?  
- Do any of the features need improvement?  
- Was it easy or difficult to recover from errors?  
- What did you think of the search engine? |
|               | Does any part of the design invite errors or confusion?               | - How confident did you feel that you could explore without getting into problems?  
- Do any of the functions not make sense?  
- Are the meanings of the interface elements clear or unclear? |
|               | How enjoyable or disagreeable was the resource to use?               | - Was there anything about the resource that you particularly liked or disliked? |
| Content       | What are your thoughts with regard to the aesthetics of the resource? | - Does it look fit for purpose or not?  
- What are your feelings towards the quality of the pictures and videos? |
| presentation  | What are your thoughts on the quality of the text?                   | - How wordy did you find it?  
- Was it understandable or not? |
|               | What are your thoughts with regards to how the information in the resource is structured? | - Is it logical or illogical?  
- Is information easy or difficult to find?  
- What are your thoughts on how the information in the resource is layered? |
|               | Do you think the information is of the right depth or not?            | - In what parts of the resource would you want to see deeper/shallower information? |
|               | How engaging did you or didn't you find the content?                 | - Video, text, images  
- Which parts were the most/least engaging? |
|               | Can you comment on the quality of the information found in the Individuals’ Lives pages | - What were the most/least useful parts?  
- Which offer the most insight?  
- What are your thoughts on the potential usefulness/applicability of the information? |
<table>
<thead>
<tr>
<th>Aspect</th>
<th>Theme</th>
<th>Prompts</th>
</tr>
</thead>
</table>
| Content presentation (continued) | Can you comment on the quality of the information found in the ‘Information Pages’ | ● What were the most/least useful parts?  
● Which offer the most insight?  
● What are your thoughts on the potential usefulness/applicability of the information? |
|        | Is there any information that isn’t in the resource that should be?   |                                                                                                                                                                                                          |
|        | Is there any information in the resource that shouldn’t be?           |                                                                                                                                                                                                          |
| Value to the design process | Do you think the information in the resource would be of value to the design process? | ● At what point in the design process do you think the information would be of most benefit?  
● How do you think the information would be used?  
● What are your thoughts with regards to the effectiveness of the information in helping designers understand the lives and worlds of users? |
|        | Would you or would you not use the resource alongside other user research tools and methods? |                                                                                                                                                                                                          |
|        | Do you think using the resource would be worthwhile in terms of time and effort? |                                                                                                                                                                                                          |
|        | What information in the resource is the more useful, that in Individuals’ Lives or Information Pages? |                                                                                                                                                                                                          |
|        | Do you have any concerns?                                             |                                                                                                                                                                                                          |
|        | If a resource containing information such as this existed do you think you would use it? |                                                                                                                                                                                                          |
Appendix R

Evaluation: a transcript of one of the interviews
Participant 1

<table>
<thead>
<tr>
<th>Functionality</th>
<th>Interviewer</th>
<th>First I’m going to ask you a few questions on functionality. What are your thoughts with regards to the level of functionality on the home page and the results pages?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>I think the level of functionality is about right. I think the one thing – it might be a big ask – but it would be nice if the search was a bit more ‘live’. I have to admit that I was totally taken by the Facebook programme that was on the telly last night, especially the bit about adverts. What happens is that someone wanting to place an ad inputs keywords that relate to their target audience and makes various selections. While doing this Facebook constantly keeps them informed as to how their choices affect the number of people the ad will target.</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>Were there any functions you particularly liked or disliked on these pages?</td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>Not really, there was nothing that jumped out. It was all the usual stuff… Apart form the search engine which could probably do with improving.</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>If I may, I’ll come to that in a minute. But for now, could you tell me what you thought of the level of functionality in the other pages: the Individuals’ Lives and the Information Pages?</td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>Again, it all looked there. It’s difficult to say for sure as I didn’t use it; but as far as I could tell, everything looked fine.</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>Were any functions missing or not needed?</td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>Not that I could see. That said, what would be really good is if you could contact some of the people on the resource. We like to talk to people when we are designing things, to get feedback from them on the ideas we have. The magic of design is the ‘cranking of the handle’: learning what the core of the product should be. Doing the styling and the mechanics is easy. So if you could talk to some of the people on the resource this would be a real benefit.</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>Were there any functions you particularly liked or disliked?</td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>I definitely like the fact that you have the ability to flip between the Information Pages and the Individuals’ Live pages. I think that’s good. I can imagine myself spending a lot of time jumping between the two. As a designer you are always interested in learning more about products and services and the context in which stuff is used.</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>Now I’ve got a few questions on usability. How long do you think it would take a novice to learn how to use the resource?</td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>I imagine that if you fixed some of the small things that are wrong with it, people would be able to learn it very quickly. I don’t think it's complicated.</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>Do you think the resource needs documentation or instruction to use?</td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>No, I don’t think so.</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>If the resource wasn’t used for a while how long do you think it would take to re-establish proficiency?</td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>I think it would be very quick, except for the search.</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>How easy or difficult were the features to use?</td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>The only feature that really caught me out was the arrow thing, the within page link [the ‘reverse-lookup’ button]. That confused me at first. The action is common in lots of websites - it puts the thing you are looking for at the top of the page. But what I tend to do is look in the centre of the page especially if there’s a strong image like there was here.</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>Do you think that any of the functions need to be improved?</td>
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<td>-------------</td>
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</tr>
<tr>
<td>Participant 1</td>
<td>I think you could build the search a bit better.</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>Please explain more.</td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>Well, it's kind of non-standard in the sense of that you rarely come across case-sensitive things. I suppose there is a distinction between learning something that's a resource versus something that isn't.</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>Do you think it would be a problem?</td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>No not really, but people are used to using commas and speech marks. There is a fairly standard set of symbols people use to search. It may be useful looking at some of them.</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>You spoke earlier that the search feature might cause you problems when returning to the resource after a while of not using it.</td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>Yes, I think it'd be a barrier. I think it would frustrate me quickly as it wouldn't come up with what I wanted. In my work I'd probably use this resource every two to six months. I suppose it's a bit like when you return to using CAD after using Illustrator for a while: you struggle as the programs do similar things differently. However, in this case, the content is useful so I'd probably persevere.</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>Could I ask how you think it could be improved so that it worked better?</td>
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</tr>
<tr>
<td>Participant 1</td>
<td>Perhaps it could work like an advanced search. You could type what you wanted in several fields in any case [uppercase or lowercase]. You wouldn't have to type in all the boxes every time - it would depend what you were looking for.</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>How difficult or easy did you find it to recover from errors?</td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>I didn't experience anything that frightened me. It was just, using upper and lower case words to search. I'm just not used to that. It's unfamiliar.</td>
<td></td>
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<tr>
<td>Interviewer</td>
<td>How confident were you to explore?</td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>Yes, confident. I was happy to explore.</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>And what were you feelings towards recovering from errors?</td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>Easy.</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>And the meaning of the interface elements - the icons and so on - what did you think of them?</td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>Fine.</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>Did you find the resource enjoyable to use?</td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>Yes. It's great to think that I might be able to get this sort of information.</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>The next few questions are about content. What are your feelings with regard to the aesthetics of the resource?</td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>It looks bloggy and conversational, which I think is a positive thing. I like the fact that you can zip around and view things quickly. The bloggyness seems like a good thing to me as it makes you curious.</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>Do you think it looks fit for purpose?</td>
<td></td>
</tr>
<tr>
<td>Participant 1</td>
<td>Yes. It's reasonably consistent; however, you could probably make it even more consistent.</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>What are your thoughts on the quality of the pictures and videos in the resource?</td>
<td></td>
</tr>
<tr>
<td>Interviewer</td>
<td>What are your thoughts on the text? How wordy did you find it?</td>
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<td>-------------</td>
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</tr>
<tr>
<td>Participant 1</td>
<td>The photos are well shot. The videos, understandably, are not high res’ but I think this is acceptable. They’re shot in people’s homes. I understand that and wouldn’t expect anything more.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interviewer</th>
<th>Was the text clear or unclear?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>It’s difficult to say due to the short time I’ve used the resource. Perhaps it could do with less prose and more bullet points. It’s difficult to say. Sometimes you want the detail whereas at other times you just want the high-level stuff.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interviewer</th>
<th>What are your thoughts with regards to the way in which the information in the resource is structured? Did you find it logical or illogical?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>It’s good. You’ve got the menu here which allows me to quickly go and investigate something then come back. So let’s say I’ve searched for people who have rucksacks and I’ve got 20 people, I can look at a few of these people then move out to see what other products they own or what else they do. While watching a video you might hear one of them say, “I’ve got all this stuff and nowhere to put it.” The great thing is that you can then go and look at his house and see how he stores things. If I hear a number of Taiwanese people complaining about storage and I notice that their houses are small, I’ve then got an argument that the product I’m designing needs to collapse or zip-up small. I’ve got a reason for it. As a designer you need to build up a lot of knowledge about something – a topic, a service or whatever, then condense this information down to a conclusion that you can apply to a product.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interviewer</th>
<th>Please tell me your thoughts on how the information is layered.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>Yes, I liked it. As a designer you might be looking for a piece of information and then see something else. The links let you dig deeper.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interviewer</th>
<th>What are your thoughts with regards to the depth of the information?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>It’s hard to say considering the amount of time I’ve spent with the resource, but probably it’s about the right depth for most things. However, I know that if I had a specific thing I was researching I would end up wanting to learn about a million things about other stuff that I found while browsing. I know it’s a paradoxical answer.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interviewer</th>
<th>How engaging did you or didn’t you find the content?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>Very. If there were thousands of people on the database, I imagine I’d get rather addicted to looking at it! I think there’s a bit of a risk I’d waste all my lunch times!</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interviewer</th>
<th>Can you quickly comment on the quality of the content of the pages you looked at. You looked at the ‘personal information’ and ‘the coop’.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>There was definitely enough information there for me to form an opinion about him [the individual]. Yes, there was certainly a lot of background information around that was interesting. However, it’s possible that upon finding what I was looking for I might want more!</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interviewer</th>
<th>You also looked at the ‘Rituals’ page. What are you thoughts with regard to the content found there?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>I was happy that it was translated. I like that it told me about the background to the ritual: what he’s doing and why he’s doing it. That’s useful. It mirrors stuff that I’ve done in the past, things that have involved looking at aspects of life in China. Often I’ve had to turn to Wikipedia.</td>
</tr>
<tr>
<td>Interviewer</td>
<td>Which type of information offers the most insight?</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Participant 1</td>
<td>The tours, scans and room plans. They are very interesting. Being able to see people's houses and possessions is very interesting.</td>
</tr>
<tr>
<td>Interviewer</td>
<td>And your thoughts on the Information Page?</td>
</tr>
<tr>
<td>Participant 1</td>
<td>Good. All this information at the end of the day is only useful for one thing. It's for creating an understanding that informs a concept, how something should behave or what feature a product should have. That's the magic bit. The bit where you make the money. It's building pictures from the information that's important.</td>
</tr>
<tr>
<td>Interviewer</td>
<td>Which part offered the most insight?</td>
</tr>
<tr>
<td>Participant 1</td>
<td>It's difficult to say. There was a nice information mix: history, adverts etc.</td>
</tr>
<tr>
<td>Interviewer</td>
<td>Do you think there is anything in the resource that is missing?</td>
</tr>
<tr>
<td>Participant 1</td>
<td>That's kind of difficult to comment on as I haven't explored it deeply. But nothing is obviously missing.</td>
</tr>
<tr>
<td>Interviewer</td>
<td>Do you think there's any information in the resource that shouldn't be?</td>
</tr>
<tr>
<td>Participant 1</td>
<td>No. I think removing stuff might be a bad thing. You don't know what people are looking for. People would be looking for different information.</td>
</tr>
<tr>
<td>Interviewer</td>
<td>Now my final set of questions. Do you think that the resource would be of value to the design process?</td>
</tr>
<tr>
<td>Participant 1</td>
<td>Yes. However, I will put a proviso on this. You would need some way to store the stuff that you thought was interesting in a place where you could find it quickly. Like in some sort of grab-bag. Basically you would want to keep all your findings together, in a folder or something.</td>
</tr>
<tr>
<td>Interviewer</td>
<td>At what point would you see the resource being used in the design process?</td>
</tr>
<tr>
<td>Participant 1</td>
<td>Personally, I'd probably use it throughout. But predominately at the beginning when we are trying to decide what we are actually designing. I'd probably start by looking for something in detail first rather than general. So I'd probably start by looking at 'stuff': a product, a service or even a ritual. It's detail that I'm really interested in. Once I'd found this detail I'd then work up to the more general.</td>
</tr>
<tr>
<td>Interviewer</td>
<td>How do you think you'd use the resource?</td>
</tr>
<tr>
<td>Participant 1</td>
<td>I think that I'd use it personally. I'd probably like to bookmark or tag things and put things in a folder. What I tend to do is make folders on my desktop and put things in them. I create a new folder every time I find something new.</td>
</tr>
<tr>
<td>Interviewer</td>
<td>What are your thoughts with regards to the effectiveness of the resource in helping designers understand the lives and worlds of users?</td>
</tr>
<tr>
<td>Participant 1</td>
<td>I think it would be good... I bet I'd come across a few individuals that I'd find really interesting. People who I'd love to speak to and learn what they feel about something. Yes, I think it'd be a great tool for gaining a broad understanding of a topic.</td>
</tr>
<tr>
<td>Interviewer</td>
<td>Would you or would you not use the resource alongside other user research tools and methods?</td>
</tr>
<tr>
<td>Participant 1</td>
<td>We'd still carry on doing our own research. We wouldn't just use it on its own.</td>
</tr>
<tr>
<td>Interviewer</td>
<td>Do you think using the resource would be worthwhile in terms of time and effort?</td>
</tr>
<tr>
<td>Value to the design process (continued)</td>
<td>Participant 1</td>
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<tr>
<td>--------------------------------------</td>
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<tr>
<td>Interviewer</td>
<td>Participant 1</td>
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<td>Participant 1</td>
<td>Interviewer</td>
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<td>Participant 1</td>
<td>Interviewer</td>
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</tbody>
</table>
Appendix S

The DVD (contains files relating to People’s Lives)

SEE ATTACHED FOLDER LABELLED ‘APPENDIX S’