

# What 45,000 seniors value about online social interaction

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## ABSTRACT

Laid on the foundations of Participatory Design and Contextual Design, are two new design methodologies; both examine ways of embedding values in the design process. These are Value Sensitive Design and Values at Play. Researchers in both areas have seen the need to equip designers with a library of analysis, that will guide their thinking as they incorporate values into the design of technology artifacts. A first step in the creation of such a library of analysis is the categorisation of values suggested in this paper, arising from research into the values expressed by seniors in an online community.

## 1. INTRODUCTION

Arising from gaming technology is a human computer interaction (HCI) design methodology known as Values at Play (VAP). Whilst initially only applied to the design of games, it has been more widely used in recent years. One new application for VAP is reported here, where it has been used to discover what Australian seniors value about interacting in an online community called GreyPath. GreyPath claims a membership of 45,000 seniors, mostly in Australia, with some participating from overseas.

VAP researchers have identified a gap in the literature, which they refer to as the need for a 'library of analysis'. This paper reports on the application of VAP to discover user values, and in the process suggests one tool that should be in such a library of analysis, namely a categorisation of values, that goes beyond categories previously considered in VAP research.

Well established approaches within user centred design (UCD), such as participatory design and contextual design, have led HCI researchers to considering the role values should have in technology design. VAP is a relatively new design methodology in the field of HCI [15]. There are still many aspects of the methodology that need refining, so that it can be effectively used in the design process. Though a great deal of work has already been undertaken, in the main this has been 'proof of concept' work, with projects designed and developed from the ground up [15, 16, 22]. In other words, until now HCI values researchers have set out to develop systems that incorporate values, to prove that such design is possible. For example, in their "cookies in the web browser" project, Friedman, Kahn and Borning [22] began their project knowing which values to include. Similarly Flanagan, Howe and Nissenbaum [16] determined values for the RAPUNSEL project (a game to teach young girls to program) at its inception.

To gain wider acceptance, VAP also needs to be applied in situations requiring the redesign of legacy systems. The study discussed in this paper attempts to do this by examining an existing online community. It sought to discover stakeholder values and the extent to which the current system supports or hinders those values. Therefore, unlike previous VAP research, there was no preconceived notion as to what stakeholders values should or might be. In the current study, field observations of online community members are the starting point for value identification. That is, the study was an empirical investigation which began with structured observation, followed by interviews. In Nissenbaum's terms, this is engaging in contextual inquiry, as part of a discovery process, involving both conceptual and empirical inquiry [16]. Only the observation phase of the study is reported in this paper.

The focus of the study was an online community for seniors. Seniors are a growing market in the virtual arena. Around the world the numbers of retiring baby boomers is expected to increase dramatically in coming years [8]. While many researchers have sought to discover the varying needs of seniors, this study is uniquely seeking to understand their *values*, that is, the things that are important to them individually and as a social group as they interact online. This has not previously been attempted anywhere. To date, an attempt to develop an understanding of values in design in the Australian context has occurred only once - in the context of electronic voting technology [12]. The project followed the Value Sensitive Design (VSD) approach, a complementary approach to VAP for exploring the role of values in the design process. There has also only been one other attempt to explore values in the design of an online community, this being in the context of school children in the USA, again following the VSD approach.

This paper begins by exploring the concept of values in design, in particular examining VAP, and in the process discusses its predecessors, such as VSD, participatory design and contextual design. The ethnographic approach adopted in this study is also discussed, as well as the particular technique used to gather the data that is reported here. The paper then goes on to discuss the particular online community where this study is based, placing this in the context of current theories of ageing, and, in particular, how our present understanding of ageing influences studies such as this one. The paper then concludes with suggested short-comings that currently exist in both VSD and VAP, and suggests a possible way forward, with a categorisation system.

## 2. VALUES IN DESIGN

The study reported in this paper sought to answer the question: "What do seniors value about online social interaction?" The initial work involved identifying stakeholder values, through observation. The next part of the study was to interview GreyPath members to confirm or deny findings from the observation phase, as well as to extend the understanding of seniors' values and the meanings they attach to them.

What are values? Values are things that are important. They can be things that are important to an individual or to a group. For many people they are linked to their sense of identity, and are often things to which the individual or group has an emotional attachment. Values can address issues of usability (such as ease of use), they can be commercial in orientation (such as profitability), and they can

be moral (such as trust). VSD researchers restrict their definition to 'values with moral import' [20]. VAP researchers restrict their definition to 'important social values' [15]. That is, in the context of values in design, the focus of VSD and VAP is not on commercial, market penetration, or usability considerations per se. VAP and VSD do not seek to replace conventional design approaches and researchers in both areas advocate that their approaches to incorporating values in design, are complementary to conventional approaches. That is, both methodologies are to be used in addition to conventional HCI design methods, in order to create effective systems. Therefore there is no need to focus on issues of profitability and usability, because such considerations are already dealt with by conventional approaches. Instead both approaches advocate the additional considerations of values, that is moral values in social contexts involving technology.

Whilst both VSD and VAP are complimentary to traditional HCI design approaches, prior VSD no explicit attempts had been made to discover values that impinge on design for technology artifacts [18]. Since that time numerous publications have arisen in related areas [12, 21, 22, 39]. Particularly pertinent to the study of values and the design of technical artifacts, has been research in this area in the fields of Computer Ethics [20, 26, 33], Social Informatics [27], Computer Supported Cooperative Work (CSCW) [23, 27], and in the human computer interaction field of Participatory Design [14, 32]. These various contributions to research into values and technology all follow a fundamental premise, namely that technology artifacts embody values. One departure from earlier literature evident in recent values research, is an additional premise that values may be embodied in technology artifacts by design [16]. This is a departure from prior work, in that it does not restrict morality to people, but rather says that the tools people use can influence their morality. Whether deliberate or not, social engineering takes place to some extent because of the constraints and boundaries of what software systems permit in terms of social interaction.

Flanagan and Nissenbaum [15] give examples of this from the gaming industry. Some games reinforce gender and other stereotypes. Some encourage competition, others cooperation. Some games are designed to deliberately incorporate social values, such as their RAPUNSEL project, which they describe as a girl-friendly game, through which young people learn to program.

Two main research avenues have been pursued in values research. Having started on the road to researching how values can and should be incorporated in design, Friedman and Nissenbaum, though sharing a common research purpose, have developed their research into incorporating values in the design process along different lines. Friedman has continued along the lines of VSD, expanding the methodology, defining it and together with other researchers, and has attempted to prove its efficacy in the design process [22]. Nissenbaum has built on the foundations laid by VSD to develop what she at first called "Values in Design" [16], and now calls Values at Play (VAP) [15]. Like Friedman, Nissenbaum has attempted to define the methodology involved and prove the concepts in design examples.

Flanagan, Howe and Nissenbaum [16] state their goal as supplementing existing, well-established design methodologies. They seek to have values considered as one part of what constitutes technical design excellence. They argue that current measures of excellence include terms such as reliability, usability, functional efficiency, and safety; values are not considered, but should be. Similarly Bowern [12] advocates that requirements specifications ought to address the values that should be provided by a system, so that acceptance testing can hold developers accountable on a contractual basis, to ensure that values identified during VSD have been successfully incorporated into the system design. In a related field, engineering design, Van Gorp [39, p13] argues that whilst there exists an extensive literature on ethics in engineering, "specific attention for ethical issues in design processes is relatively new." Elsewhere Van Gorp [39, p19] says that "little is known about the way engineers deal with ethical issues in daily engineering design"; similarly little is known about the way in which designers of online communities deal with ethical issues. These researchers believe that the current research into value considerations will one day see these form an integral part of the criteria for design excellence.

## 2.1 Foundations of values in design

VSD and VAP are built on a foundation of Participatory Design and Contextual Design. In Participatory Design users are co-designers, equal partners in the design process together with the developers of the ICT; users have active roles in many design activities. Participatory Design is a set of practices that draws on multiple disciplines, including user centred design (UCD), graphic design, software engineering, psychology, sociology and political science [32]. This multiplicity of disciplines has led to Participatory Design being a collection of approaches to design, rather than one unified theory. According to Muller most Participatory Design practitioners and researchers value workplace democracy, seen most notably in Participatory Design applied in situations to strengthen disempowered groups, including co-workers.

Participatory Design is seen as a hybrid space between software professionals and end-users. It is seen as a means to achieve mutual learning. Both sets of people have their own knowledge and practices. Muller [32] argued that failures in ICTs in the past have in part been due to the difficulty software professionals have had in bridging the gap that exists between them and the end-users of the technology they design. Software professionals have frequently not understood the needs of end-users. He argues that the traditional HCI approaches have been too focused on the work of the software professional, albeit by applying known techniques for improving usability. Participatory Design on the other hand has from its beginnings emphasized a democratic mutuality between software professionals and users.

Unlike other UCD techniques, Participatory Design requires that users come out of the work situation, to collaborate with designers [14]. Whilst this is described as an ethnographic technique, it differs from most other ethnographic approaches, in that Participatory Design approaches are not situated in the context of ICT use.

Another variant of UCD is that of Contextual Design, which grew out of a technique called Contextual Inquiry; now seen as the first of six steps in the Contextual Design process [10]. Contextual design is a front-end design process, that starts with gathering data about users in the field. Contextual design is a recognition that the environment of the user influences the way they see their world of work and their own role within it. It is an ecological approach to design, that treats the users as an important organism within a complex socio-technical environment. Contextual Design is a form of UCD that recognises that the environment of the user influences

the work they perform. Though the focus is on 'work practice', particularly the first step in the process (contextual inquiry), is relevant to many technologies, not merely work practice applications. Like Participatory Design, a central notion of contextual design is that of partnership, between the user and the developers [14]. Dix et al. describe contextual design as employing ethnographic techniques that seek to view the user in context. It is about collecting unbiased views of the user's work practice, including the organisational culture.

According to contextual design proponents, end-users develop a mental model, a world-view of how their organisation and the tasks they perform within it operate. To properly understand users, contextual inquiry advocates that designers attempt to see the world as the user sees it, by taking the context into account. Where Participatory Design brings the user to the designer, to aid in the design process, Contextual Inquiry advocates that the designer engage in field work, going to the places the user engages with the system to be designed. The user is observed operating in the environment in which the eventual or current system is to be utilised. In this way contextual variables, that cannot be learned any other way, can be observed and incorporated into the design of the ICT. The focus is on what people do, as discovered through observation and interviewing. Holtzblatt [25], speaking of redesigning ICT for work environments, says that unless work practice is understood in detail, achieving good ICT designs is not possible. She says:

You cannot simply ask people for design requirements, in part because they do not understand what technology is capable of, but more because they are not aware of what they really do. Because the things people do every day become habitual and unconscious, people are usually unable to articulate their work practice. [25, p944]

Beyer and Holtzblatt [10] describe Contextual Inquiry as a means of gathering the ongoing experience of users, rather than summary experiences as are brought by users to a Participatory Design session. As with the goal for UCD more generally, so for contextual design the end goal is the development of more usable products. However, contextual designers follow the philosophy that in order to produce usable products, designers need to find out what users really want (what goals they have in using the ICT), and what it is they do (task analysis). Holtzblatt [25] says that without knowing user practice, it is likely designers will miss achieving the goal of a usable product.

It is the first of these steps that is particularly relevant to the study reported here, where the focus is on social rather than work practice. The focus here is on an in-situ analysis of the values seniors have when they interact socially in an online community.

## 2.2 Values research

Having reviewed the underlying design principles for values research, the following sections look at the research incorporating values into design processes, in more detail. Given VAP builds on VSD, VSD is the first approach examined below.

### 2.2.1 Value Sensitive Design

VSD is not only built on Participatory and Contextual Design, but also draws on concepts such as design for universal usability (a common term to describe making technology artifacts accessible to all people) [35, 36], as well as philosophical and sociological research for the development of technical artifacts. VSD is concerned with value considerations throughout the entire system development life cycle, with a particular focus on the early stages in design. In this sense it differs from previous work on ethics in software engineering, which attempt to evaluate finished products in terms of their possible ethical implications (for example, the work of Gotterbarn on software development impact statements (SoDIS) [24], and the work of Schneiderman on social impact statements [36]). VSD captures the moral values of users, centering on values such as human well being, human dignity, justice, welfare and human rights (such as equality of access), in a principled and comprehensive manner, as part of the design process. This broadens the criteria for judging the quality of socio-technical information systems, to include ethical considerations in terms of user values.

VSD is a theoretically grounded approach to the design of technology artifacts, that accounts for human values as part of a systematic design process. It is described by Friedman, Kahn and Borning [22] as a tripartite methodology consisting of conceptual, empirical and technical investigations. These three perspectives are iteratively applied in the task of design.

Conceptual investigations are concerned with identifying stakeholders, values, and trade-off considerations. In particular, conceptual investigations involve developing a philosophical understanding of 'key' values. That is, during this phase key or critical values are identified (in the case of the study reported here, through field observations of the GreyPath community) and then the philosophical literature is explored to define how these identified values have traditionally been understood.

Empirical investigations build on the conceptual investigations, to consider the human and organisational context within which the information system will operate. That is, during conceptual investigation only key values were the focus, whereas during empirical investigation a more comprehensive approach to discovering values is taken. Also, during the conceptual investigation, philosophical definitions were the basis of understanding identified key values, whereas empirical investigation adds the context interpretation that stakeholders have of those values. Empirical investigations also enable investigators to discover how stakeholders weight different values, which becomes important later in the design process, when trade-offs between design choices may result in choosing between conflicting values. Having stakeholder weighting in such situations can help resolve which values should have priority in certain circumstances over others.

The technical investigations can involve two areas. Technical investigations can either be of an existing system, to see how it supports or hinders values with ethical import, or they can be pro-active investigations concerned with the design of a new system, where the intent is to find out how the technology can support the values identified in the conceptual and empirical investigations [22, 12]. The first form of these areas of technical investigation is particularly relevant to this current study, which involves the study of an existing online community for seniors. In that context it is important to establish not only what stakeholder values are, but also to determine the extent to which those values are supported or hindered by the design of the current system that supports the social interaction of

that community. Friedman, Kahn and Borning [22] say that while the first form of technical investigation is very similar to what is done during empirical investigation, what is being analysed is very different. During empirical investigation the focus is on individuals or groups who are affected by technology. During the first form of technical investigation, the focus is on the technology itself.

Friedman, Kahn and Borning [22] describe VSD in terms of eight features that have arisen from related approaches in other fields, particularly computer ethics, social informatics, computer supported cooperative work (CSCW) and Participatory Design. These eight features are as follows. First, VSD is a proactive attempt to influence technology design. Second, VSD expands value considerations beyond the workplace (as is the focus of CSCW in particular) to other areas; in the case of this current study the focus is on social interaction in a non-work use of an online system. Third, VSD iteratively employs a tripartite methodology. Fourth, VSD goes beyond CSCW and Participatory Design notions of values, to focus on values with moral import. Fifth, VSD distinguishes between usability and values. Sixth, VSD distinguishes stakeholders as either direct or indirect; this is a departure from related literature in value investigations, such as Van Gorp [39] who does not distinguish between different types of stakeholders. Further, Van Gorp includes organisations as stakeholders, whereas Friedman, Kahn and Borning appear to only view stakeholders as individual people. They define direct stakeholders as people who interact with the technology artifact, whereas indirect stakeholders refers to other people who are in some way affected by use of the technology artifact (in the case of this study, direct stakeholder are the seniors using the online system and indirect stakeholders could include carers of seniors, advertisers on the site, and site management). Seventh, VSD is an interactional theory; values are not embedded in technology, nor simply transmitted as social forces, but arise contextually in the interaction between the two. Eighth, VSD holds that there are certain universally held values, though these may be culturally and temporally interpreted.

### 2.2.2 *Values at Play*

VAP is both complementary to and builds on VSD. In addition it also draws on two other theories, Reflective Practice and Critical Technical Practice [15]. Like VSD, VAP also follows the premise that values are embedded in any design. Also like VSD, VAP departs from previous literature which sets forth the inclusion of values in design as an aspiration, to describing a methodology for accomplishing that aspiration.

Flanagan, Howe and Nissenbaum [16, p1] say that “we are still at the shaky beginnings of thinking systematically about the practice of designing with values in mind.” Similarly, Friedman, Kahn and Borning [22] saw research into values in design prior to the mid 1990s as piecemeal. Both VSD and VAP are relatively new approaches in the design space and significant research is still needed to better understand how design can incorporate values.

Flanagan, Howe and Nissenbaum [16] describe VAP as the systematic application of three activities: discovery, translation and verification. These three constitutive activities operate iteratively. During discovery the focus is on developing a list of values, by examining sources of values and defining which values are important in the particular context of the information system to be designed. Translation is divided into two parts, operationalization and implementation. Operationalization is concerned with taking the values identified as relevant during discovery and defining them, making them concrete. Implementation then completes the translation process, being concerned with specifying design features that correspond to these values. The constitutive activity of translation also involves the process of resolving conflicts amongst values, from a design viewpoint. That is, there may be trade-offs between certain values that were identified during the discovery process. This line of reasoning is supported by the work of Van de Poel [38], in the context of engineering design. Van de Poel argues that design choices involve trade-offs, which ought in part at least be based on moral values. Friedman, Kahn and Borning [22] cite examples based on their research into three information systems, where there were trade-offs between autonomy versus security, and anonymity versus trust. Design constraints at times mean that all values cannot be implemented, or at least not equally. To this end it is helpful to have a means of prioritising which values are more or less important, and in which situations. Such weightings of values can help designers in situations where trading off one value against another needs to be considered. Lastly, the constitutive activity of verification is concerned with assessing whether the project successfully implemented values, in a way that enhanced, not detracted from the design goals.

Flanagan, Howe and Nissenbaum [16] see two sets of factors contributing to an understanding of VAP, epistemological factors and practical factors. The epistemological concern has to do with the idea that in order for designers to incorporate values in design, they need to incorporate contextual knowledge about values, when such knowledge is not readily available to them, or outside their fields of expertise to acquire. An interpretation is required as to which values are relevant in particular contexts. Standard design methodologies do not provide a means of inquiry for discovering such values, nor for determining their relevance in particular contexts. Practical factors concern the fact that standard design methodologies do not make it explicit how values, once determined to be relevant, should be incorporated into the design of software systems. Flanagan, Howe and Nissenbaum see these two sets of factors as two dimensions of a single phenomenon, with neither taking priority.

Flanagan, Howe and Nissenbaum [16] describe the set of epistemological factors as involving three modes of inquiry. They use the metaphor of ‘balls in play’ to describe the idea that all three modes are needed, that any of them can be a starting or end point, and that this inquiry process is iterative. The three modes are the technical mode, the philosophical mode and the empirical mode. The technical mode requires that designers are familiar with state-of-the-art knowledge concerning the design space they are designing for. The philosophical mode requires investigation of the origin and scope of values relevant to the context and system being designed. They argue that the philosophical mode requires contextual inquiry [10, 33]. Lastly, the empirical mode investigates the relevance of values to a particular project. One advantage they see with the empirical mode is that of resolving conflicts between values. They argue that empirical inquiry, such as interviews and field observations, can help in this regard through the contextual understanding it brings to how values are relevant to a particular project.

### 2.2.3 *Library of analysis*

One area of potential confusion for designers, who have little or no training in philosophy, is that the values research to date has poorly articulated what values are and are not. As stated above, one approach advocates discovering values with moral import (VSD) and the other advocates discovering values that are socially important (VAP); though related, these are not necessarily the same.

There is also debate over the sources of values and, from a philosophical viewpoint, where values reside. Should the source of value definitions be purely in the philosophical literature, or purely with the stakeholders, or a mixture? Do the values reside with the people using the technology, or are they inherent in the technology (similar to the arguments about the morality of firearms and whether guns kill people, or people kill people).

Some researchers list values they have discovered in their research, and many share a common set of values. What remains to be seen by future research is whether there are certain universal values, or whether these are all culturally or contextually bound. Schneiderman [36], and Flanagan, Howe and Nissenbaum [16] give examples such as human well being, human dignity, justice, welfare and human rights (such as equality of access). In some cases the lists are identical, in other cases the lists of values vary.

Aside from supposedly universal values, other values that have been identified in the literature include the following: privacy [1, 12], ownership and property [29], physical welfare [28], freedom from bias [21], universal usability [35, 36], autonomy [37], informed consent [31], accountability [19], courtesy [43], identity and identity management [9, 12], calmness [20], environmental sustainability [42], and trust [17].

One observation that Flanagan, Howe and Nissenbaum [16] made while discussing the philosophical mode, was that something that would help designers was what they referred to as a *library of analysis*. They envisage this as a way of relieving the burden on designers to carry out philosophical inquiry, when often this was out of their field of expertise. If instead of having to grapple with abstract conceptions of values, designers were able to refer to a library of concrete definitions, that would help them significantly in the task of design.

Similarly Bowerman [12], critiqued VSD from the point of view of the difficulty that then existed for developers, with the current approach to values. He argued that developers were burdened by existing methods for developing systems and that there would be resistance to adopting yet further requirements, especially when value considerations are outside of the expertise of many developers.

These views echo those of Muller [32] described in the participatory design discussion above. Muller said that designers have difficulties understanding the needs of users. Values researchers argue this is true for designers' understanding of user values as well.

One tool such a library of analysis should include is a way of categorising values. As shown above, values researchers do not hold that all values are equal. Some are more important than others, some are temporally bound, some are contextually bound and others are universal. This paper brings together (below) what VAP, VSD and values researchers in non-technological fields have found to be categories that are meaningful, using examples from observations of the GreyPath community to illustrate the categories.

## 3. INTERPRETIVIST METHODOLOGY

Like Friedman, Kahn and Borning [22], Flanagan, Howe and Nissenbaum [16] advocate the need for understanding the context of use. Flanagan, Howe and Nissenbaum articulate the discovery process to a greater extent, but share the discovery framework with VSD [18]. This concern for contextual understanding arises from their Participatory and Contextual Design roots. Similarly, Clement [13] argued that the voice of the user needs to be heard in the design process, and that this is not a singular voice, but that users often represent a diverse group of people. Clement argued that users should be able to raise issues through asking questions, to permit and to prohibit certain design choices, to question the probity of what others in a multi-disciplinary design team advocate, and to express their attitudes and feelings. He said that systems specialists need to remember that it is not so much actual technologies that are critical for the successful design of systems, as a range of other, highly contextualised factors. Clement argued that Participatory and Contextual Design techniques help to discover what these factors are. For both VSD and VAP ethnographic inquiry is useful to draw out the contextual influences necessary to understanding stakeholder values.

The particular approach adopted for this study is a two-fold interpretivist one, involving first an eight month period of observing the GreyPath community, and then interviews with GreyPath members. This is effectively what VSD describes as the conceptual phase and what VAP describes as the discovery process.

The observation phase was two-fold, in both cases following a systematic approach to theory building. Observations took place 'periodically' (weekly, and in a few instances more than once during a given week), with the researcher making notes about the observation during and after it occurred [11]. The initial 3 months involved unstructured observation, looking for events, activities, and behaviours that are salient, guided by concepts developed in the available current literature on online communities [2, 3]. This stage enabled the researcher to become aware of the nature of the activities, the characteristics of participation and the general behaviour of the participants of the community. One aim of this stage is for the researcher to become 'familiar with the online culture of the community, its vocabulary, history, and people' [2, p67]. The following 5 months involved structured observation, during which the expressions of values were specifically sought. The observations took place from July 2006 to March 2007. All these observations were restricted to public spaces in the online community, that could be visited by any observer. That is, some parts of the online community are restricted to registered members only, while many parts of the community are freely available to the general public. It is only the latter that were part of the observation. In this way no members were aware that they were being observed. (Ethics approval for the observation phase of this research only required that GreyPath management give permission for this research to proceed.)

Observations involved all publically available community interaction. This included the various forums (these were threaded email discussions, one on issues important to members, another on jokes, another on daily life issues), online learning initiatives, message

boards, online community editorials, information on jobs for seniors, the types of advertising permitted on the site, site statistics, arts and crafts, links to related areas, house swaps, ePals, question and answer segments (such as computer help, gardening tips, exchange of recipes, and travel advice), messages from GreyPath management, site policies and more. Unlike the interviews, for which participants were selected, the observation involved the whole GreyPath community interaction.

Values were identified in various ways. Some arose from forum discussions. For instance, when a new member introduces themselves and asks a question. The discussion typically shows care, concern, a willingness to help others, respectful language (profanity on GreyPath is rare), and considered responses (seen in their length and the fact that rarely are abbreviations used that are common in other communities [such as lol for 'laugh out loud']). The rapidity and number of responses to such requests shows that new members are made to feel welcome. From such observations values can be inferred. Further observations and later the interviews with members, seek to confirm or deny inferred values.

Initially the structured observation sought to identify all values. Only through later reflection was it possible to isolate those values that have moral import and are important socially. For example, one could prematurely dismiss certain values as being only concerned with usability, if one was only on the lookout for values with moral import. However, some values cross boundaries and can be both socially important and usable (for example an aspect of HCI is accessible interfaces, which socially and morally is also an issue of equitable access), or important commercially and morally (such as some aspects of security). Therefore it was important in the first instance to identify many values and only later engage in the task of reducing the list to those that are morally and socially important.

The interpretivist philosophy employed studied GreyPath social interaction in its natural settings. The philosophy seeks to produce descriptive analyses that emphasise deep, interpretive understanding of the meanings within the social phenomenon under study. To understand a particular social action (such as online friendship, or mutual support), the inquirer must grasp the meanings that constitute that action. The work presented here is part of a larger ongoing study to discover what seniors value about their online social interaction. Given this is an interpretive study, the results cannot be used to say that all seniors share these values. But the study will help in the quest to understand user values, and particularly those of seniors interacting in the virtual space.

#### **4. SENIORS**

GreyPath is a not-for-profit organisation, which manages the portal [greypath.com.au](http://greypath.com.au). Membership is restricted to seniors, which it defines as anyone 55 years old or older. According to GreyPath management, most of the active members are in their late 70s and early 80s. Most members reside in Australia, though some reside overseas and many travel overseas, yet maintain contact with their friends through this online community. In sociological terms, participation is not spatially determined, as traditional communities have been [41], but ubiquitous [40]. It was created and is managed by a particular family. GreyPath has 30 volunteers who freely give of their time and skills to maintain the site.

Understanding the needs of seniors has grown in importance in recent years. One worldwide demographic trend that needs to be considered is the worldwide phenomena that the proportion of the population defined as old is increasing and is forecast to increase further. Belsky [8] says that only 4% of Americans were elderly in 1900, whilst by 1999 that figure had risen to 13%. In 1999 the proportion of elderly Americans was 1 in 8, and this is forecast to rise to 1 in 5 by 2030. This phenomenon says Belsky is the result of a significant rise in birth rates following World War II, for a group of people known as the 'baby boomers', who are people born between 1946 and 1964.

The baby boomers do not alone account for the increase in the number of people forecast to be amongst the aged in years to come. Another common trend in developing countries is that of decreasing fertility and decreasing mortality rates. That is, people are living longer and because they are having fewer babies, the proportion of older people is forecast to increase further.

The online social interaction and social networking aspects of the study draws on understandings from sociological and psychological models of ageing. That is, while particular behaviours of seniors are not being studied, psychological studies about cognitive processes may shed light on the value systems of seniors.

At the turn of this century, a theory of ageing that gained credibility was that of selective optimization with compensation (SOC) [4, 6, 7, 30]. It is a theory which focuses on maintaining functioning in a restricted period of one's life. SOC arose out of attempts by Baltes to develop a meta-theoretical framework, that combined ageing research in biological-evolutionary, as well as lifespan psychological perspectives [5, 6]. The evolutionary perspective shows that selection pressures have operated in the first half of an individual's lifespan, to ensure reproductive fitness, as well as effective parenting behaviours. According to this theory, progression to successful ageing means one has to go beyond reliance on evolutionary biology, to cultural influences. Successful ageing is less a function of biology and more one of increasing the culturally-based resources available to people to help them find supportive compensations for biological losses. SOC proceeds "from the assumption that the life course consists of a changing script in the means and goals of life" [6, p20]. In order to achieve these changes, changes need to occur in the allocation of resources. Early in the lifespan, resources are allocated to growth, later in the lifespan, resources are allocated to maintenance and repair.

SOC is a theory which takes an integrative approach to multiple factors affecting people in their Third and Fourth Age, combining individual, social and institutional perspectives. It distinguishes optimization in the Third Age (what is commonly understood as old age) and Fourth Age (the very old). For example, Baltes and Smith [6] argue that the Fourth Age (85 and over) has unique challenges, that comparatively little research has yet addressed. The research that has been done in this age group is mostly biological in nature. From a psychosocial viewpoint, significant research still needs to be carried out with this very old category. They argue that the Fourth Age is categorised by pathology much more than earlier age groups, and that this means the way people in the Fourth Age are to be understood differs considerably from people in other age groups.

Baltes and Smith [6] also say that the process of optimization is more difficult for people in the Fourth Age, than it is for the young old. They argue that in developed countries people maintain mental achievement levels until about age 70. However, for those in the Fourth Age new learning is severely impaired. They argue “that the Fourth Age tests the boundaries of human adaptability” [6, p13].

To illustrate SOC, Baltes and Smith [6, p21] cite an example of an 80 year old pianist, whom they interviewed in the course of their research, called Rubinstein.

“When Rubinstein was asked how he continued to be such an excellent concert pianist, he named three reasons. He played fewer pieces, but practiced them more often, and he used contrasts in tempo to simulate faster playing than he in the meantime could muster. Rubinstein reduced his repertoire (i.e., selection). This allowed him the opportunity to practice each piece more (i.e., optimization). And finally, he used contrasts in speed to hide his loss in mechanical finger speed, a case of compensation.”

#### 4.1 Implications for studying seniors in an online community

Given SOC, it is likely that new participants joining the online community will be people in various age groups up to age 85, but that given the learning impairment experienced by people in the Fourth Age, few new participants in the community are likely to come from that cohort. Instead Fourth Age participants in the study are likely to be long time members of the online community, people who have learnt to navigate the online structures and the processes involved in online social interaction. From a digital divide point of view, it is also likely that changes in online interaction technologies (hardware and/or software) alienate Fourth Age participants, due to the new learnings involved.

Baltes and Smith [6, p22] argue that cultures which “offer older persons ways of selecting, optimizing, and compensating are the cultures which assist best in maximizing the gains of older age.” They link this to the value of human dignity. That is, society is showing older people greater dignity, when it provides resources that enable people to maximise the gains of older age. From a HCI perspective, designers might achieve this by permitting the continuance of previous navigational structures, when new ones are introduced, so that older participants are not forced to engage (for them) in difficult new learnings.

### 5. CATEGORISING VALUES

As stated above, a library of analysis [12, 16] can be one means of helping designers to incorporate values into their designs. A step toward this is to categorise values. The closest values researchers have come to this, have been discussions of value trade-offs [16, 20, 22]. Only in descriptions of the RAPUNSEL game project is there an example of trade-offs between competing values that are socially important. In that project the trade-offs were between designer values about not reinforcing certain stereotypes about young girls, versus the values of the users of that game [15, 16].

As stated above, the structured observation of GreyPath initially yielded a long list of values. Flanagan, Howe and Nissenbaum [16] advocate culling the initial list to a shorter one of those values that are socially important. However, designers should not simply be given a list of values and expected to somehow incorporate those into their designs. Better would be some form of guidelines to systematically think through values issues. One way of achieving that is with a categorisation scheme for the values identified. That is, values can be grouped along themes, or identified as belonging to certain groupings. Current literature says to look through one’s list of values for the important ones. However, when one categorises values, then a further distinction is possible. It becomes possible to identify which values within certain categories are more important than others.

In the literature it is apparent that some researchers do think in terms of categories for values, though not in consistent and systematic ways. They use terms such as dimensions or factors, or they use descriptors that suggest temporal relationships or some form of abstraction, or higher and lower levels of values. Table 1 (below) attempts to capture the disparate aspects of values definitions in the literature. The section following the table then goes on to cite examples of these categories, both from the literature and from observations of the GreyPath community.

**Table 1: Values Categories**

Descriptor	Definition
Direction	Toward and away-from values.
Expression	Some values are explicit in the way a system operates. Other values are less obvious, but are implicitly inherent in the design of a system.
Order	Higher and lower orders allow for abstraction hierarchies of values.
Purpose	Means and ends values.
Scope	Scope can be thin or thick. Thin is for the current user group, thick for the wider group.
Temporal	Descriptions of immediate effects of values, and longer term effects.
Type	Two types of values need to be considered, those of the stakeholders, and those of the designers.

The following discussion gives examples of each of the descriptors from the literature and the study of seniors online, to illustrate what each category is about.

### *Direction*

Robbins [34] describes values in terms of their *direction*. The observation of the GreyPath community revealed mostly toward values. Examples of human dignity are seen in such things as open calls for respectful language, and that the use of profanity on the site is very rare; examples of privacy are seen in that some social interaction takes place in publicly open forums, whilst other interaction takes place in moderated chat rooms only available to registered members. However, away-from values are more difficult to discover through observation. It is the interview phase that is expected to reveal these in greater detail. These are values such as avoiding being embarrassed. Such values can be inferred, such as by observing how supportive the online community is, and how participants avoid hurtful, put-down comments. It is acceptable to ask 'dumb questions', because the questioner will not be put in an embarrassing position, but will instead be supported through the learning process. This is particularly evident in observations about learning to work with computers – an important learning activity, for people wanting to participate in an online community, which by definition requires certain minimum computing skills.

### *Expression*

Some values are *expressed* explicitly and other implicitly. Explicit values, such as privacy protection, can be seen with a chat room for seniors suffering depression, that restricted entry to registered members and was carefully moderated. Other values are less obvious, but are implicitly inherent in the design of a system. Flanagan, Howe and Nissenbaum [16], use the term 'explicit' for values such as 'preserving privacy' and 'enhancing security'. In their descriptions of the design of the RAPUNSEL game, they spoke of the self-image of game players that could be implicitly influenced by the type of agents these players could create to represent themselves; should they be non-descript geometric shapes or sexy female characters?

### *Order*

*Order* allows for abstraction hierarchies of values. Flanagan, Howe and Nissenbaum [16, p12] use the term 'higher order' for values such as equity, autonomy and liberation, and [16, p14] cooperation and fair representation. Bowers [12] sees trust as an 'overarching' value, with related (lower order) values associated with it. This could be limiting and perhaps a better view of trust is in degree of trust. For instance, parts of GreyPath require authentication and moderation, other parts require only a username, which could be fictitious. This appears to indicate different levels of trust. Interview data appears to confirm this too. GreyPath members use chat facilities for discussions with trusted others, whereas they are less trusting of discussions in the public forums.

### *Purpose*

Robbins [34] addresses *purpose*, when he distinguishes between means values and ends values. An example he uses to illustrate this distinction is that a person may say they value their car, but when pressed, it is the freedom that driving the car affords them, that the person really values. The car then is the means value, and freedom is the end value. An example of this on GreyPath is the use of usernames. Some seniors sign their postings with their first or full name. Most however do not sign their postings, such that only the username is shown. The username is therefore a 'means' employed to achieve an 'end' of anonymity. Though inferred from observations, this was borne out in later interviews, where GreyPath members expressed their desire for privacy and that using a non-identifying username, helped achieve that.

### *Scope*

Thick values include those described as universal, their scope encompasses a larger group. In the context of this study, thick values include values generally held by most Australians. Thin values are those held by a particular group or certain individuals, that either conflict with thick values, or are redefinitions of those values. Further differentiations may be necessary too. Early interview data analysis suggests that GreyPath members over 80, though sharing many (thick) values with other GreyPath members, have unique (thin) values, distinctive to them. These were people born before the great depression and who were adults during World War II, as opposed to younger GreyPath members, who were children at the time of World War II.

### *Temporal*

Another way of conceptualising values, is to think of their *temporal* nature. Flanagan, Howe and Nissenbaum [16] describe some values as 'emergent', such as game players developing a value of subversion, in which they deliberately break the rules of the game. Other values are experienced immediately. Bowers [12] sees identity management in temporal terms, as people's self-understanding changes over time. Online identity can also be seen as a value in the GreyPath community, where over time people form relationships online that they consider important; those relationships are with online identities such as Koko, Jennywren, Gaspresser, Jean4, Pam/QLD – user names first adopted for perhaps no great reason, which become their online persona, the way they are identified within the community. Friedman, Kahn and Borning [22] also use temporal terms to describe VSD as an approach concerned with designing systems that account for 'enduring' values.

### *Type*

Type distinguishes the values of stakeholders and designers. A possible short-coming of VAP is that the purpose of the discovery phase of the values research, is to discover the values of stakeholders, not including those of the designers. The consideration of value type addresses this short-coming. Flanagan, Howe and Nissenbaum [16] give an example from the RAPUNSEL game, for 11-13 year old girls, in which the users (the girls) wanted sexy character representations, but the designers refused to accommodate this, because they felt it would reinforce stereotypical views of girls. Effectively they mount an argument in favour of being able to veto user values discovered. That is, whilst most values research advocates discovering user values and embedding those in the design of systems, rather than the designers' values, here the argument is that professional judgment may at times override the implementation of some user values. In this instance, the designers iterated from geometric shapes that users didn't want, to agents that while looking like

young girls, were not stereotypical sexy depictions; in other words, a compromise was reached, between the designers and this particular group of stakeholders.

This categorisation of values is an attempt to address the need for a library of analysis. Further research may reveal the need to add more categories, or to redefine category choices in Table 1 above.

## 6. CONCLUSION

As stated above, the research into the GreyPath community is on-going. The observation phase was but the first step. Both VSD and VAP advocate that once key values have been discovered, a process of defining those values is required. Following the interpretive approach of this study, defining values discovered during observation will result from getting user interpretations of their meanings through in-depth interviews of GreyPath members.

Work to date on this project has highlighted the need to be able to think in terms of values categories. Previous values research has shown the need to help designers, who frequently have no expertise in philosophy, to think through the issues involved in incorporating values into the design process. It has been suggested that what is needed is the creation of a library of analysis. Such a library would be a tool to help analyse how values can be incorporated in design. Table 1 above is a step in that direction. Rather than arbitrarily attempting to somehow incorporate a value that has been identified as important, designers can use the categories table to help them analyse ways to incorporate that value. For instance, should the value be explicitly expressed in a technology artifact, or should it be implicitly present in the system as a whole? Should the value be a onetime expression, or is it an enduring value?

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