RECIPROCITY: CONSTRUCTION OF IDENTITY AND SOCIAL EXPERIENCES IN ONLINE ENVIRONMENTS

by

C. Andrew (Drew) Paulin
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Approval

Name: C. Andrew Paulin
Degree: Master of Science
Title of Thesis: ReciproCity: Construction of identity and social experiences in online environments

Examining Committee:

Chair:

Dr. John Bowes
Professor, Director, School of Interactive Arts and Technology

Dr. Lyn Bartram
Senior Supervisor
Assistant Professor, School of Interactive Arts and Technology

Dr. Janet McCracken
Supervisor
Assistant Professor, School of Interactive Arts and Technology

Dr. Kirstie Hawkey
Supervisor
Postdoctoral Research Fellow, Department of Electrical and Computer Engineering; Department of Computer Science, University of British Columbia

Dr. Richard Smith
External Examiner
Professor, School of Communication
Simon Fraser University

Date Defended/Approved: ________________December 2, 2009__________________
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Abstract

In natural communication, people are able to present and perceive social cues through many channels in order to aid the social processes of identity formation and impression management. Many online social environments are poorly equipped for the exchange of social cues, and offer relatively few channels of expression to aid users in these social processes. The focus of this thesis is to gain an understanding of the relationship between online social experience, identity, reputation and representation. This research aims towards the successful design of online social environments that enable identity formation and impression management, and support rich social interaction amongst users.

To this aim, this thesis included an online survey that details how 219 participants present themselves and perceive others in five popular online environments. The result of this research was the design of ReciproCity, an abstract graphical chat prototype that provides persistent reputation cues that are socially constructed and are accrued over time. The design of ReciproCity was evaluated through a user study that focused on users’ experiences.

Keywords: Social interaction; computer mediated communication; online environments; online identity; design; reputation; experience; proxemics; abstract graphical chat.
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1: Introduction

Since its inception and throughout its rise towards ubiquity, the internet has been used as a social apparatus founded on the concept of exchange. From the data that flows from one computer to another, to the messages that are contained therein, communication is fundamental to this medium. However, many online social environments specifically tailored for interpersonal communication are ineffective structures for social interaction. In face-to-face communication, people present social cues that provide information about themselves to others, and construct a social performance of the identity they wish others to see. These cues and social performances inform social interaction, allowing people to monitor and adjust communicative behaviour according to the situation and to the perceived identity and response of others so that it is appropriate for the social context and for the audience.

Most online chat environments are poorly equipped for the exchange of these social cues, which can initiate a lack of social awareness. Although online communicators may perceive that they are interacting with ‘someone,’ they are often unable to understand the nuances of whom they are interacting with, and often are not offered any sort of social feedback to help them monitor and adjust their behaviour. This can be framed as a design problem: the user representations offered by the interface are inadequate to successfully support rich social interaction.

This work proposes a design strategy that expands the traditional online
messaging approach by focusing on activity and relational awareness, proximity as a channel for the exchange of meaning, and the provision of persistent impression management and reputation cues that are socially constructed and accrued over time. This approach will provide explicit social cues to communicators in order to aid the self-monitoring process, and to improve awareness, impression management and identity formation.

Several studies and design approaches (e.g., Erickson & Kellogg, 2000; 2003; Erickson, Smith, Kellogg, Laff, Richards & Bradner, 1999; Erickson, Kellogg, Laff, Sussman, Wolf, Halverson & Edwards, 2006; Viégas & Donath, 1999; Donath & Viégas, 2002; Smith, Farnham & Drucker, 2000; boyd, 2002) have addressed the lack of social information, nonverbal cues, and support for impression management and identity formation in online communication environments. Online metaworlds and massively multiplayer online games, such as Second Life and World of Warcraft, represent users as full-bodied avatars that offer enhanced identity information in a fully featured 3D world.

However, these environments are often too immersive, are fantasy or game-based experiences rather than communication tools, and raise issues of identity misrepresentation through the use of mimetic avatars. Other studies and abstract graphical communication environment design approaches that inform this work deal directly with identity, representation and usage history, but do not attempt to incorporate persistent reputation systems or accrued experience ratings into the representation of users, nor do they explore the relationship between online social
experience, identity, reputation and representation using both explicit and implicit user data.

Expanding the traditional chat approach to improve social awareness and afford identity formation may provide a richer social experience for online communicators, and could support relationship and community formation. By contextualizing the social exchanges that take place in an online environment, people are able to defer to emergent social norms and rules, and structure their behaviour appropriately. This work seeks to add to the existing body of research in abstract graphical communication environment design. The lightweight features that are presented in this design approach could also be used to inform the design of online social environments, collaborative and communicative groupware or information management tools.

The primary objective of this research is to explore and gain an understanding of the relationship between online social experience, identity, reputation and representation. The study will focus on both the experiences of online communicators, and the social order and organization of the environments in which such experiences occur. This work aims towards the successful design of online social environments that enable identity formation and impression management, allow for the exchange of social information and behaviours, and support rich social interaction amongst communicators.
1.1 The role of the researcher

The qualitative approach of this research focuses not only on the experiences, bias and perspective of participants, but also of myself as the primary data collection and analysis tool. The investigator’s contribution to the research setting can be useful and positive rather than detrimental, but also necessitates the identification of personal values, assumptions and biases at the outset of the study (Locke, Spirduso & Silverman, 2000). My own familiarity with concepts and literature in sociology and communication goes beyond the literature review and secondary research that I have involved myself in throughout my experiences in graduate school to my undergraduate education. My perceptions and perspective were shaped there, largely through a humanities-based hermeneutic approach that valued the subjective, socially constructed nature of knowledge and meaning through the critical analysis of media artifacts and texts from a socio-cultural viewpoint. My undergraduate education also gave me experiences to draw from in terms of interaction design, and design theories. I completed two undergraduate theses, one focused on the analysis of online social experiences from a sociological perspective, the other a design project that produced a working synchronous multiuser environment. I have also been an active participant in several online communities for a number of years, which has shaped my perception of the interaction and design issues that need attention and would benefit from research such as this study.

Although I will attempt to remain as objective as possible in the collection and analysis of data, the biases I bring to this study may shape the way I view and
understand the data I collect, and the way I interpret both my own and participants’ experiences. My role as a researcher and my role as a participant and communicator will be blended, and my actions and behaviour in the environment will reflect this dichotomy. While I believe that much of my findings will confirm and support my own expectations and hypotheses found in the literature, I also hope that there will be some unanticipated results and that my findings will suggest new areas of investigation for further research beyond the scope of this project.

1.2 Thesis structure

This thesis will review relevant literature and theory of social interaction, identity and impression management in both natural, real-world situations and in online environments. The focus of this research will then turn to the design of online social environments, and how users are able to perform and perceive identity through the structural elements of online spaces. This project will also include a survey in order to better understand how users present themselves and perceive others, and the scope of their use of five popular online social environments.

In order to explore design issues surrounding identity and social experience in online environments, this thesis then focuses on the design and implementation of ReciproCity, a synchronous, multiuser environment prototype that emphasizes the expression and exchange of social cues and identity through user representation. The design and deployment of this environment will be evaluated through a user study that will draw on methods and traditions from ethnography and participatory design. The
user study will allow the collection of data that includes observational data, screen capture video, recorded discussions, questionnaire results and system logs detailing participants’ use of the environment. This evaluation will focus on the user experience within the structure of the environment. Finally, the ideas, concepts, and data discussed throughout the thesis will be integrated to offer an approach for the design of online social environments, and to demonstrate the need for further research.
2: Social interaction, identity and context

2.1 Introduction

Throughout our lives, we are all deeply immersed in a process of socialization that allows us to understand our social reality and how we fit into it. As a result, we are all experts in natural, or face-to-face communication, and we all have extensive experience in navigating the procedures and sub-routines that are inherent to social interaction.

Throughout these processes, situational and contextual cues that are inherent to the physical and social setting play a pivotal role. Our ability to perceive, interpret, and act socially is predicated on the structure of the physical environment and the nature of the social relationships that we are immersed in everyday. How we perceive ourselves and how we understand, behave and communicate with others are ongoing processes influenced by a number of interdependent factors.

However, many studies in communication have adopted a linear understanding of social interactions. A prototypical example of this perspective is the transmission model of communication, developed by Shannon and Weaver (1949). This model involves a conduit approach, in which messages originating from an information source such as a person speaking, are encoded into language or action, and are then transmitted along a channel. The message is then received and decoded by a
destination such as a person listening. Shannon and Weaver’s model is a useful analogy for technical and quantitative pursuits in communication and computing research. However, while it is an easily understood representation of how meaning is exchanged between people, it does not accurately depict the structure of interpersonal communication. It reduces the communicative process into a simplified, linear understanding of social interaction that largely neglects the importance of relationships between communicators, and does not account for situational, environmental and socio-cultural contexts that influence and guide interpersonal communication.

Because of the contextual influences prevalent in social interaction, it is difficult to describe the communication process as having a start point and end point. Wilbur Schramm and Charles Osgood argued against depicting communication using a linear approach, and instead offered a circular model of communication that viewed communication as an ongoing iterative process where communicators are “little switchboard centres handling and rerouting the great endless current of information” (Osgood & Schramm, 1955, p.10). Osgood and Schramm’s model of communication removes the distinction between sender and receiver, and accounts for feedback and the simultaneous, reciprocal nature of communicative exchanges. Schramm describes communication as “the effort on the part of the individual to connect with someone’s ideas or attitudes. In doing so, the participants attempt to achieve some measure of commonality through this sharing of information” (Schramm & Porter, 1982, p.13). This sentiment is echoed by Herbert Clark’s notion of common ground in language use (Clark, 1996). Clark views face-to-face communication as a joint action between two or more
people that requires coordinating devices such as mutually understood information and social conventions. The effect of communication is to test, reformulate and add to a common ground of shared understanding and shared knowledge that results in a reduction of misunderstanding and increased efficiency in communication. The assumptions that one makes about common ground with others is largely based on the perceived identity of those other individuals: what groups they belong to, what languages they speak, their nationality, gender, age, occupation, as well as the interests, experiences and beliefs that they have. Understanding common ground, then, is predicated on the understanding of self and of those with whom we communicate. Schramm also describes communication as a subjective process that involves the perception of identity. “In the exchange of information, the individuals’ subjective viewpoint is always at play. The communication exchange is riddled with not only the feelings of the individuals themselves, but also how each views the image of the other” (Schramm & Porter, 1982, p.21).

2.2 Understanding identity

Interpreting and forming meaning about other people’s actions is a complex subjective process that can be viewed in many different ways. According to symbolic interactionism, the use and interpretation of symbols in communication and interaction are both key parts of communicative action that enable flexible, adjustable social processes (Blumer, 1969). Communicators interpret or define each other’s actions, rather than merely react to each other’s actions. Their responses are not made directly
to the actions of one another, but instead are based on the meaning that they attach to such actions. In this sense, human interaction is negotiated by the use of symbols, by interpretation, or by ascertaining the meaning of one another's actions (Mead, 1934).

The history, culture, and forms of communication can be traced through symbols and it is through symbols that meaning is associated with interpretation, action, and interaction. Although the social meaning that people attach to symbols may appear static, the symbolic interaction perspective emphasizes the shifting, flexible, and creative manner in which people use symbols. The processes of adjustment and change involve individual interactions and larger scale features such as norms and order (Blumer, 1969; Mead, 1934). Using this perspective, it is easy to see the influential and dynamic role that context plays in how one perceives other people, and in how one presents themselves to others in social situations.

Erving Goffman employed the symbolic interactionist perspective to examine the ‘interaction order,’ or those social situations where two or more people are in one another’s presence (Goffman, 1959). Goffman used the analogy of the theatre to explain how we develop and present ourselves to others. This dramaturgical approach focuses on the ways that people create, manage and perform self-identity, convey impressions of this self to others, and how the impressions of others form identities. An identity is a complex social construction that allows us to understand ourselves and others in a social environment. Identities are based on one’s perception of themselves, how one wants other people to perceive them, and how people actually perceive them.
2.3 Understanding the self

While there are many different approaches and perspectives on the nature of self-identity, this chapter aligns with danah boyd’s (2002) approach of a duality of self – one’s internal self-identity and one’s social self-identity – that echoes Mead’s (1934) dualistic assertion of ‘me’ and ‘I’ in the understanding of self. One’s internal identity refers to an individual’s self-perception in relation to their experiences and the world. One’s social identity is what they use to interact with and relate to others, and is meant to be perceived externally (boyd, 2002). Mead (1934) posits self as a product of social symbolic interaction that exists as two dualistic phases. The first phase, ‘me,’ is an organized set of attitudes or roles that one internalizes and assumes. The second phase, ‘I,’ is a creative response to the generalized other that is formed through social interaction and is manifested as a response to the perceived attitudes of other people. While the characteristics of ‘me’ are able to be known to an individual, the ‘I’ is much more difficult for one to predetermine – the action of the ‘I’ is highly dependent on social situations in which one is presently placed, and implies the restructuring of the ‘me.’ The ‘me’ and the ‘I’ exist in a dynamic relation to another. People choose which aspects of their internal self-identity that they will attempt to project into their social self-identity during social interaction. In turn, the processes and actions that occur during this projection of their social self will affect their internal self-identity. In this way, ‘me’ offers a number of different approaches or responses for the ‘I’ to assume in a given social situation. After the ‘I’ has acted, one is able to reflect on their outward
actions in relation to the total collective of their social activity, and restructure their understanding of ‘me’ accordingly.

2.4 Negotiating identity in social groups: Impression management

Understanding of self also relies on the existing relationships, behaviours and expectations of the people with whom one is communicating:

Social consciousness, or awareness of society, is inseparable from self-consciousness, because we can hardly think of ourselves excepting with reference to a social group of some sort, or of the group except with reference to ourselves. The two things go together, and what we are really aware of is a more or less complex personal or social whole, of which now the particular, now the general, aspect is emphasized (Cooley, 1909, p.5).

The self is a reflection of specific social relations that are active within a given social group. Goffman (1959) saw all social interactions as reciprocal performances in which actors present a role or ‘face’ that attends to both the actor’s own perception of self, and to the actor’s assumptions about what behaviour is acceptable and expected by the actor’s audience in the current social or environmental situation. The purpose of these performances is to create specific impressions so that others will see the actor in a way that the actor wishes to be perceived. The actors adjust their behaviour and appearance as they receive feedback from the people that they are interacting with, or as their understanding of the social or environmental situation changes. Identities – both self-identity, and the perceptions that one has of other individuals - are formed.
through a process of interpreting the actions and behaviours of others. Goffman describes these impressions, or exchanged social information, as either *impressions given - voluntary, outward displays of one’s own self identity, or impressions given off*—social information that one signals unconsciously, either through ‘blunders’ in their performative social roles, or through self-evident, inferential information such as appearance or affiliation (Goffman, 1959). How we perceive others, how we perceive ourselves, and how we perceive others to perceive us affects how we behave, and determines the social role that we will perform. Goffman’s dramaturgical approach, which sees communicators as actors and audiences, implies that impression management is intentional and duplicitous. People present different facets of their internal self-identity based on the context of the interaction. For example, we may act very differently with co-workers in a formal business meeting than we would relaxing with family at home, even though both ‘versions’ of self are entirely genuine.

Identity is performed through multiple channels of expression. People know how to use their bodies to convey nuanced details and attitudes, and also know how to read subtle cues and evaluate people’s bodies (boyd, 2002). While communication seems to be predicated on the exchange of language, much of the information that communicators rely on in social interaction is beyond the realm of language. In his early nonverbal communication research, Mehrabian concluded that language often makes up for as little as seven percent of meaning that can be construed in a communicative exchange (Mehrabian, 1969). Mehrabian described such nonverbal communicative behaviours as immediacy cues, or “communication behaviours that enhance closeness
to and nonverbal interaction with another” (Mehrabian, 1969, p.213). Facial expression, eye contact, gestures, vocal intonation and inflection, proximity and body positioning - these all serve to enhance and augment meaning, and lead to more affective and immediate interaction than linguistic channels alone. Of course, if these channels of expression are not available to communicators due to constraints of the physical environment, the capacity for the exchange of meaning is reduced. People look not only to the behaviours and reactions of others to guide their impression management, but also to contextual information and social norms that constrain and conduct social interaction.

### 2.5 Situating interaction: Context and social norms

Interaction is always embedded in a particular environment and situation that guides our behavioural expectations and influences our interpretation of actions and behaviours. Context, or this set of conditions in which social interaction unfolds, can be understood according to the perspective of self-identity, relationships to others and to the physical environment.

Subjective context refers to a person’s internal self-identity, or Mead’s concept of ‘me.’ Our own needs, beliefs, values, desires, perspectives, personality and current mood all inherently affect behaviour and interpretation.

Relational context refers to the influence of existing relationships and previous interactions and experiences that co-interactors have shared. These relationships may have implicit significance, such as the social dynamics that exist in both larger social
groupings, and in relationships between friends and family members. They may also have explicit influences, such as the relationships between people in various layers of an organizational hierarchy that exists in professional situations.

Environmental context describes the physical affordances and limitations that are inherent to the physical setting of interactions. The location, temperature, season, time of day, whether co-communicators are visible and audible to another, and even furniture or other elements of the physical setting are all environmental factors that can affect behaviour and interpretation.

Situational context refers to the social and psychological influence that the setting has on one’s behaviour. For example, social interactions that take place in a library are quite different from those that take place in a pub.

Cultural context refers to differences in learned behaviours and rules that people assimilate as a result of their repeated experiences and acclimation within a specific culture. A wide range of comfort levels and assumptions of normative social behaviours such as eye contact and conversational proximity exists across cultures.

These various aspects of context demonstrate the influences and interdependency through which social processes unfold. While we, as seasoned communicators, tend to downplay the significance of the constraints and factors that encompass our interactions due to our ability to recognize and socially adapt to everyday situations, it is important to note the complex interplay of context and conduct.
The ever-present influence of context in social interaction leads to shared understandings, expectations and conventions across social groups that come to underpin interaction and govern social conduct. This shared frame of reference, which can be understood as a collection of social norms, has proven to be difficult to properly define. Bierstedt (1963) defined a norm as a rule, standard or societal expectation to which we are expected to conform, whether we actually do so or not. Homans (1961) viewed norms as statements made by a number of members – but not necessarily all members – of a group that everyone ought to behave in certain ways in certain circumstances. Johnson (1960) described norms as abstract mental patterns that set behavioural limits that one could either consent to or reject depending on whether they felt the norm was worthy of following in a given social situation. There is a wide range of interpretations of social norms that characterize the extent to which they are accepted as just, the degree to which they are universally applied, the degree to which they are enforced and internalized, and how they are formed and transmitted.

However, Gibbs (1965) identified a generic understanding of norms that encompasses all the various and divergent definitions of norms. First, they are a collective evaluation of behaviour in terms of what behaviour ought to be. Second, they represent a collective expectation of what behaviour will actually be. Finally, norms imply particular reactions to behaviours, including attempts to apply sanctions or consequences, or otherwise induce a particular kind of conduct. Norms, then, imply a shared understanding of, and an active, collective need to conform to mechanisms that regulate social interactions.
2.6 Subjective responses to norms: Self-monitoring and self-verification

While it is true that all members of a social group generally understand and feel some compulsion to follow norms and maintain social order, it is apparent that inconsistencies exist with respect to adherence to norms among social groups. In the negotiation of identity and management of impressions that takes place in social interaction, people engage in a process of observation and self-control that is guided by situation cues towards social appropriateness. This process is called self-monitoring (Snyder, 1974). Snyder proposed that differences in personality and perspective among individuals establish the importance and degree of conformity that one will actually enact while engaged in impression management. For example, some people are more likely to explicitly communicate or present their emotional state, while others are more likely to conceal it, or to present an emotional state that is less or more appropriate to the situation, but incongruent to the individual’s actual emotional state. Snyder also presents the layers of complexity that different channels and modalities of expression bring to the self-monitoring process. What may be communicated by one channel can be very different from what is communicated by another channel. Possible differences and consistencies across channels help express a wide variety of social meaning. Often, inconsistencies across channels of expression, such as vocal or facial expression, are deliberate in order to convey humour or sarcasm, or to augment meaning in some way. Other times, these inconsistencies are accidental or are a result of poorly developed self-monitoring skills. This aspect of Snyder’s concept of self-monitoring supports
Goffman’s (1959) differentiation between *impressions given* and *impressions given off*, or the intended, explicit and inferential, implicit social meanings that one can gather from another’s actions and behaviour. For example, one can conceal their sadness by putting on a happy face but inadvertently disrupt their intended deception by forgetting to use a happy voice.

Social norms and the expectations of a social group sometimes clash with the internal self-identity of individuals. In these situations, people often struggle with the negotiation and presentation of their social identity. Often, people are more driven to be known and understood in a way that accurately reflects their own beliefs, self-concepts and self-esteem (Swann & Read, 1981). This theory, known as self-verification, asserts that individuals who are members of a social group should actively externalize their self-views, rather than deemphasize them, in response to conflicting social pressures (Swann, 1983). The core assumption of this theory is that people want others to see them as they see themselves. Although this sometimes means that people will not conform to norms and expectations, there are possible benefits that obtaining self-verification may improve social interaction in group settings. Individuals who feel well-understood by a social group also feel a better connection and sense of inclusion to the group as a whole, and are more likely to immerse themselves in group activities. When group members are convinced that they are embedded in a ‘self-verifying niche,’ they are able to behave authentically and feel more comfortable assuming a natural social role or face. They may also be emboldened to advance a wide array of potential inventive roles or creative behaviours that are focused on improving group outcomes.
(Swann, Kwan, Polzer, Milton, 2003). For these reasons, self-verification processes can be conducive to social situations such as group performances, collaboration and creative tasks.

### 2.7 Summation

People are continually engaged in the iterative process of negotiating their own identity and presenting their identity to others, building dynamic understanding of the identities of others, adjusting their presentation according to other’s expectations and reactions, and evaluating the social norms that are shared within a social group.

Throughout this process, situational and contextual cues that are inherent to the physical and social setting play a pivotal role. Our ability to perceive, interpret, and act socially is predicated on the structure of the physical environment and the nature of the social relationships that we are immersed in everyday.

When communication occurs online, the structure and nature of the communicative environment are very different. Our experiences, grounded in the natural world, can be misleading in mediated communication. The differences offered by an online environment imply considerable differences in social interactions, and in our ability to recognize and understand social order. In the next chapter, our focus will move towards online environments and to the social interaction that takes place in these digital realms.
3: Online social interaction

3.1 Introduction

When we go online, we attempt to understand the various environments of the internet and their effect on our communication through what we already know and are most familiar with: natural communication in the physical world. We use metaphors derived from our real-world physical and social interactions to attempt to comprehend the online world. Unfortunately, this can be misleading for people. The structural differences between physical and virtual environments render behaviour that would be fitting for one quite inappropriate for the other. The social, cultural and relational context that informs our social activity is dependent on the affordances and constraints of that particular setting and situation. These issues in online social interaction increasingly become more of a concern as the internet progresses towards ubiquity.

The internet has not simply diffused across society in the developed world. It has been swiftly and deeply embedded in our organizations, institutions, and most aspects of our personal lives. The distributed, many-to-many networked structure of the internet has granted interaction affordances that are unprecedented by past communication media with similar levels of ubiquity. Online content tends to reflect the interests of the population, as internet users are both producers and consumers of content. Recent rhetoric and support of Web 2.0 ideals and the rise of user-generated content sites that leverage an architecture of participation to add value to their services
reinforce the inclusive, social nature of the internet (Hinchcliffe, 2006; O’Reilly, 2004; O’Reilly, 2005; Vossen & Hagemann, 2007). Some have argued that the internet offers an abundance of identity-negotiation opportunities to its users. Uploaded videos and content, shared personal information on tastes in music, film, television, interests and opinions shared in blogs, forums and personal pages – the ‘digital footprints’ that online activity create - offer impressions that aid in identity formation. However, many of the prevalent online communicative environments are viewed as ineffective structures for social interaction because they strip away the social cues of identity that we rely on in natural communication. Gender, race, age, socioeconomic status, and non-verbal (or rather, non-lingual) channels are often missing or ambiguous in online encounters. And yet, online social activity not only persists, but is thriving (Pew, 2008).

### 3.2 Online social environments

The pastiche of ‘environments’ that comprise the internet have long been thought of in terms of space. The idioms and designations that are used to describe the internet – cyberspace, the “information superhighway” that connects people to chat rooms, web sites, forums, and so on – all rely on our spatial understanding of the physical world. Gunkel and Gunkel (1997) believe that the practice of naming is not an arbitrary matter of mere words, but is a process of appropriation and control in which existing frames of reference are perpetuated much more than new ways of understanding are introduced. People use existing knowledge to relate and integrate new ideas and concepts. However, existing knowledge does not always map on to new
concepts accurately. In this way, the spatial metaphors that are inherent in our understanding of the internet may be misleading. People may be led to believe that they should act online in a comparable manner to face-to-face situations, and will receive feedback as they do in natural communication. Because of the structural differences between physical environments and the virtual environments of the internet, a tension is created between the expectations that an individual has and the reality of their online social experiences (boyd, 2002).

While many internet users have a firm grasp on the many differences between the spatial metaphors used to describe online environments and the realities of those environments in practice, the spatial metaphor that is rooted in the terms and labels that characterize a general understanding of the internet persists. Harrison and Dourish (1996) argue that this focus on spatial models is misplaced, and that the way that people act – the behavioural framing that people observe and encounter in real-world settings – does not come from one’s sense of space, but from a sense of place. The key principle that Harrison and Dourish (1996) use to describe the relationship between space and place is that “space is the opportunity; place is the understood reality” (p.69). Place describes not only an understanding of the setting in which interaction takes place, but also an understanding of the cultural, social and relational context that informs one’s actions and perception of appropriate behaviour (Dourish, 2006). How we act in a given environment is framed by our understanding of behavioural appropriateness for that place. While Dourish (2006) later argues that both space and place are products of social practice, he describes the notion of place as “the ways in
which our encounters with specific locales, our interpretations of their borders, and our
behavioural responses draw on social and cultural foundations” (p. 306). And of course,
the numerous environments available online all offer different spatial and ‘platial’
properties that emerge and become established through social use.

Online social environments are online spaces geared towards social uses such as
discussion, collaboration and competition. Wallace (1999) notes that the different
fundamental characteristics of the various online environments seem to affect the way
we behave when we experience them. Although there is a wide range of variation in
online environments, there are several recognizable categories or forms under which
most online environments fall.

The most widely recognized online environment is the world wide web (WWW) –
a global hypertext system that serves as an abstract space for information. The web is
composed of commercial, personal, educational and artistic sites where one can find
documents, sounds, videos and other forms of information and media. The web also
acts as a portal to other online environments.

Email is the most used online environment for communication (Horrigan &
Smith, 2007). People use email to communicate with friends, family and colleagues. For
many businesses and organizations, email is the primary form of contact with colleagues
and clients.

Another popular online social space is the vast collection of discussion forums, or
bulletin boards, in which participants contribute to discussions through topics or
‘threads.’ Forums are usually organized around a specific topic or field of interest.

Forums are considered asynchronous environments – meaning that there is no real-time interaction between users – however many people use forums in an intentionally synchronous manner to house discussions about a currently-unfolding event, such as a sporting event or a television program. Forums are considered asynchronous because participants are able to read and contribute to previous posts and threads at any time. Many discussions go on for weeks and months. Generally, these groups allow people to form online communities with others who share similar interests from all over the world. Asynchronous discussion forums also include mailing lists, which essentially uses email to house ongoing discussions. Comments are sent to a single email address, which is then forwarded to all subscribers. Newsgroups like Usenet, WELL and ECHO also fit into this category, and are the earliest form of virtual community (Rheingold, 1993).

Synchronous chats, which include chat room sites and instant messaging applications like ICQ, Meebo, QQ, Jabber or MSN Messenger, are another social environment found online. Synchronous environments such as these allow for immediacy in interaction and contact with co-communicators. Some chat rooms have hundreds of people having many conversations simultaneously, while other rooms and applications are geared towards much smaller groups or one-on-one conversations. While instant messaging programs are generally used for communication between people with pre-existing relationships, chat rooms allow for the discovery process of finding new people and forming new relationships.
Text-based virtual environments such as MUDs (Multiuser Dungeon), MOOs (MUD, Object-Oriented) and MUSHs (Mutituser Shared Hallucinations) generally create a strong sense of place and community among the users. Generally, these environments are game-based, as their origins lie in the role playing game *Dungeons and Dragons*. Players create characters and interact with the environment and with each other through objects and descriptions. Most MUDs have several communicative possibilities, including ‘whispering’ (synchronous chatting privately with one other user), ‘yelling’ (sending a message to all people in the MUD), posting to discussion forums, or using in-game email. Although there are still many active MUDs and MUD variants available online, MUDs have now lost much of their popularity since earlier days of the Internet. This is primarily because of the technological advances and heightened broadband connectivity rates that have transpired in the past decade that have allowed gamers to move away from text-based environments towards more immersive, graphically-rich environments.

Such progressions have allowed another online social environment to emerge: the metaworld or metaverse (Wallace, 1999). Metaworlds are the descendants of MUDs. The main differences between the two are the multimedia possibilities that have been realized in metaworlds. Graphical and auditory representations of both users and environments enable a range of communicative and behavioural exchanges to metaworld participants. There is a vast variety of metaworlds on the Internet, ranging from simple avatar chats – chat applications that include graphical representations of both participants and the environment – to ever-expanding, fully explorative virtual
worlds. Some metaworlds, such as There or Second Life, emphasize social and economic interaction and exploration of their virtual worlds, while others are more geared towards combative and collaborative gameplay, such as MMORPGs (Massively Multiplayer Online Role Playing Game) that include World of Warcraft and Runescape.

Wikis are online collaborative information spaces where people are able to add, remove and edit content. Wikis are well-suited to collaborative tasks and workgroups as a tool for collecting and organizing information collectively. The information on a wiki is dynamic – its content and organization changes and evolves over time. A wiki can consist of a single page or can be a complex architecture that spans hundreds of interlinked pages. Wikis offer a history function that allows users to track changes, and rollback or revert to previous versions.

Blogs, another online environment, are frequently updated webpages with a series of archived posts, typically in reverse chronological order (Nardi, Schiano & Gumbrecht, 2004). A blog serves as a personal publishing system that one can use as a medium of expression directed towards a conceptualized audience. While blogs were initially viewed as online diaries or personal journals, they have become difficult to succinctly define because of a wide variance in not only blog content, but also in blogging practices and purposes. Blogging is a diverse set of active, cumulative practices of expression that result in the production of diverse content on top of a medium that are called blogs (boyd, 2006). Blogs are generally constructed with an audience in mind. Comment sections that follow each blog post allow for discussion to take place. Blogs also often contain links to other blogs. The resulting network of blogs, known as the
blogosphere, connect to each other and create a conversational, intertwined and often immediate tone of communication. While the blogosphere enjoys a prominent visibility on the world wide web, the number of people who actively participate in the practice of blogging is relatively small.

In contrast, millions of people have turned to social network sites (SNSs), such as MySpace and Facebook, to express aspects of themselves online, to view the expressive contributions of other people, and to engage in a variety of social activities offered by social networking sites. Social network sites are web-based services that allow people to form and display a public profile that contains information about themselves. Profiles are the online representation of one’s self-identity, the information that is shared reflects how one wants others to perceive them. Profile pages also include a list of other users with whom one shares a connection or affiliation. Social network sites allow users to view and interact with other people and content found in the chain of connections of their social network. Interaction is performed through a number of different methods and affordances (for example, through commenting systems and image galleries) that vary across different SNSs (boyd & Ellison, 2007). With a few notable exceptions, such as dating sites, SNSs are not used with the intention of meeting new people and discovering new relationships, but rather to map on to and maintain pre-existing relationships in one’s extended social network.

The social environments that make up the Internet hint at the motivations of people who are online. For example, one could infer that people looking to meet people and socialize may be drawn to chat rooms, while other people looking for information or
discussions focused around a particular topic may spend their time on forums and bulletin boards. The most common reason for people to go online is to access information. Other people use the internet as a social support exchange, joining virtual communities because of the sense of belonging, emotional support and encouragement they offer. Others are online seeking personal relationships and friends that they can ‘hang out’ with, online and possibly offline. People also participate in social environments for the recreation and entertainment they provide (Ridings & Gefen, 2004). The Internet is also used as a place to do work, to collaborate, or house meetings with groups who are physically distant from each other.

The range of motivations for going online support the notion that people seek out others to form social connections and groups that offer a source of information, help in achieving goals, and opportunities to exchange rewards (Watson & Johnson, 1972). People also rely on social connections and groups to form a social self-identity of attitudes and values, and to understand group norms and notions of expected behaviour (Hogg, 1996). When one extends their performance of self-identity into the digital realm, they naturally seek out any social information that the environment offers in order to inform their interactions with others.

3.3 The internet as an impersonal medium: Reduced social context cues and social presence

One’s understanding of appropriate behaviour is framed by the social context cues that the environment offers. Typically, when social context cues are abundant and strong, behaviour tends to be controlled and people are able to focus on others, and on
the social norms of a given place. When social context cues are weak and sparse, people’s sense of anonymity tend to produce relatively self-centred, extreme, impulsive and unregulated behaviour, and are not concerned with making a good appearance towards others or adhering to social norms (Cottrell, Wack, Sekerak & Rittle, 1968; Diener, Fraser, Beamon & Kelem, 1976). A logical extension of this line of thought is that online social environments, offering a sparse set of context cues relative to the rich physical environments of face-to-face communication, would leave interactors socially clueless. Investigating the use of online social environments such as email in professional organizations, Sproull and Kiesler (1991) posited that the lack of social context cues has a significant effect on social behaviour in mediated communication. In their studies, participants were more likely to display uninhibited, rude or inappropriate behaviour when communicating through modes having weak social context cues. This corresponds with earlier hypotheses that reduced social cues result in feelings of anonymity, a reduced sense of self-identity, and a reduced ability to regulate oneself in relation to norms and expectations (Kiesler, Siegel, & McGuire, 1984). Communicative environments that offer a reduced set of social context cues create perceptions of impersonal exchanges and impersonal interpretations of meaning.

Social actions and behaviours are not only influenced by the setting around us, but are also informed by the people with whom we are interacting. The reduction of cues about co-communicators can lead to impersonal perceptions and a reduced capacity for social interaction. Social presence theory developed from an attempt to determine the discrepancies between different communication media (Short, Williams,
Social presence theory suggests that different media convey different degrees of social connection. The degree of the connection is based on the amount of nonverbal or contextual information available to communicators. Short, Williams and Christie (1976) understood social presence as the degree of salience of the other person in a mediated communication, and the consequent salience of their interpersonal interactions. Presence-related research has proliferated across many fields, and there are numerous definitions and interpretation of what exactly social presence entails. Social presence can be viewed as a user’s subjective judgment or mental set towards a particular medium, and its affordances and limitations with respect to identity negotiation. It can also be viewed as the perceptual illusion of non-mediation in mediated communication (Lombard & Ditton, 1997). Being subjective in nature, social presence can also refer to the feelings, attitudes and behaviour of the user, the degree to which a person is perceived as a ‘real person’ in mediated communication, and to a quality of the medium itself that determines the way that individuals interact. Biocca, Harms, and Burgoon (2003) define social presence as pertaining to the user, but also relate it to the interaction and the medium. They see social presence as a temporary judgment of the nature of interaction with the other, as limited or augmented by the medium. All accounts of social presence can be categorized into three themes: co-presence and mutual awareness, psychological involvement with others, and the behavioural engagement and interaction through which social presence is realized.

Goffman’s (1959; 1963) concept of co-presence is based on the sensory awareness of other people in a physical environment. Each individual can see that he or
she is being experienced in some way, and will guide his or her conduct according to the perceived identity and response of others. Goffman also stresses that co-presence implies a sense of mutual awareness between communicators. Individuals are aware of others, and are also aware that others are aware of them. Each person is accessible, available and subject to other people. With respect to computer mediated communication environments, co-presence implies that the recognition and the reaction of the other to the user validates that they are there and aware of them (Biocca, Harms & Burgoon, 2003).

Psychological involvement with others extends the concept of mutual awareness to emphasize the sense that one has access to another identity or intelligence. Social presence is activated as soon as a user believes that an “entity of the environment displays some minimal intelligence in its reactions to the environment and the user” (Biocca, Harms & Burgoon, 2003, p. 464). Similarly, Gunawardena (1995) describes social presence in terms of how other beings in a mediated environment are perceived as real people. Short, Williams and Christie’s definition of social presence, the extent of the salience of the interpersonal relationship, also alludes to the psychological involvement of people engaged in mediated communication (1976). This aspect of social presence describes a subjective explication of a person’s feeling of being involved in the interaction and process in which interpersonal relationships are formed, both intellectually and affectively. Psychological involvement is a significant concept in understanding the relationship between mediated communication and identity. In order to be perceived by another intelligence, another ‘real person,’ one must be able to
project their identity, their sense of self, through the environment. They must also
generate a sense of the identity of others, who have also projected their own sense of
self through the environment. In this context, social presence refers not only to the
user’s perceived ability to access another individual, but also refers to the ability of the
medium to enable users to project their identity to others, and to present the identities
of others.

Social presence also includes a behavioural component that addresses the
process in which individuals engage to form interpersonal relationships. In interpersonal
communication, the negotiation of identity occurs through verbal interactions and
immediacy behaviours such as gestures and facial expressions. In virtual environments,
social presence denotes the possibility of an exchange of behaviours between
individuals. The reaction and reciprocation of others towards an individual’s behaviour
allows one to form impressions which in turn influence further interactions.

Social presence can be viewed as the ‘sense of being with others’ that a medium
elicits upon its users, as well as a measure of the medium’s ability to enable users to
engage with other people. Each medium has a fixed set of characteristics and
affordances in terms of interactivity and social context. However, the interpretation of
social presence is also largely determined by the subjective experiences and perceptions
of the individual, and by the extent of one’s sensitivity to and awareness of context cues
and social organization that are present in a given environment. In relation to other
media for social interaction, then, the lean, disembodied environments of computer
mediated communication should provide less presence.
3.4 The internet as an interpersonal medium: Relational theories of computer mediated communication

Early investigations of how people use CMC systems found that people would choose a particular mode of communication based on how appropriate its degree of social presence was to the completion of the task at hand (Rice, 1987). Some primarily social tasks, such as resolving disagreements, or group discussions and deliberations, were considered inappropriate for online communication modes. Other tasks, such as requesting and exchanging information, required much less social presence to accomplish and were considered suitable uses for online social environments (Culnan, 1985). People do not necessarily use online environments for the same purposes as they use face-to-face communication. This perspective on computer mediated communication modes views the internet and the physical environment not as functional alternatives, but rather as specialized channels that people choose in order to best accommodate specific needs or tasks (Flaherty, Pearce & Rubin, 1998). While many perspectives on CMC view the internet as a poor choice for social interaction, the current abundance and popularity of online metaverses and multiplayer games, social networking and online dating sites, chat rooms, forums and instant messaging programs provide a stark contradiction to the notion that the internet is not a sociable place.

While some early theories (Kiesler, Siegel & McGuire, 1984; Siegel, Dubrovsky, Kiesler & McGuire, 1986; Sproull & Kiesler, 1986; 1991) in computer mediated communication maintained that the lack of social context cues made forming relationships online impossible, others claimed that online relationships were
achievable. According to the social information processing (SIP) perspective of Walther (1992), communicators will adapt to the remaining cues of the environment in order to form impressions of others. Donath (1999) also found this to be true, noting that online interactors often look to small, less explicit cues such as homepage links or email addresses to develop impressions. SIP asserts that relationships will take much longer to form because the source and available channels for social input in the digital realm are limited. Early work that was focused on the impersonal nature of the internet viewed the asynchronous, text-based CMC systems that displayed messages onscreen to be devoid of nonverbal signals, and unable to convey elements of interaction considered essential for developing and maintaining relationships (Sproull & Kiesler, 1991; Lea & Spears, 1995). However, much of this early research was situated in the workplace, and based on observations of professional organizations that often had specific task-driven orientations. These settings offered limited opportunities for non-work related social interactions through mediated communication channels, and as a result, very little of the research focused on the social uses of computer mediated communication.

Metz (1994) believed that this resulted in a bias present in the theories of the time to view the internet as a task-oriented medium rather than a socially oriented medium, and argued that in online social environments, people had established a new method for conveying affective meaning through their textual exchanges. Emoticons can be considered paralinguistic constructs that have evolved to substitute non-verbal cues and enrich social presence. An entire affective language has developed that can be used in conjunction with normal written language to modify or enhance the socio-
emotional content of the message. For instance, a scathing comment, easily construed as an insult, can be softened if it is followed by a ‘wink,’ ;‐). The ‘wink’ allows the reader to understand that the comment was just a tease, joke, or sarcastic remark intended to be humorous or not taken seriously. While emoticons can be viewed as metaphors that simply serve as pointers to pre-existing nonverbal cues found in natural communication, it is difficult to dismiss the fact that they carry out the same function as their physical-world counterparts – they provide valuable social context cues to co-communicators.

Lea and Spears (1991) suggested that online relationships were certainly emerging, but that the current understanding of what a relationship is and how it can be formed had to be expanded beyond the biases of natural communication in order to recognize online relationships. According to their (1991; Postmes, Spears & Lea, 1998) social identification/deindividuation effects (SIDE) model, online social interaction actually has a greater tendency to support group-based or social behaviours than natural interactions in the physical world. In the physical world, one seeks to strike a balance between presenting elements of their internal self-identity to others, and responding to social norms and expectations of others. The SIDE model posits that in online environments with a reduced set of available context cues, people are more active in seeking out norms and responding appropriately in order to feel accepted by a social group (Lea & Spears, 1991; Postmes, Spears & Lea, 1998). Generally, interactors meet in online social environments because of a common interest. In the absence of contrasting cues, along with feelings of anonymity and immersion in the group, they
develop an exaggerated sense of similarity and group solidarity. Deindividuation occurs because personal identity is diminished in favour of a social identity that is similar or acceptable to the larger social group. People feel themselves to be more likely to be able to develop relationships and be accepted by others if they are perceived as similar or belonging to the social group they are interacting with.

Much of the social activity taking place online is between people who have pre-existing relationships. Many of the social spaces on the internet are mapped on to existing social structures by users. Birnie and Horvath (2002) suggest that people use online social spaces to complement or extend their communicative efforts and opportunities in maintaining existing relationships. This notion is reflected by recent research on social network sites that suggests most social network sites primarily support pre-existing relationships (boyd & Ellison, 2007; Ellison, Steinfeld & Lampe, 2007; Lenhart & Madden, 2007). People expend considerable energy and effort managing their own personal social networks. This can be a difficult task because of the fluid, dynamic nature of relationships, and because it requires tracking individuals – especially those who may be important but are not contacted frequently – and remembering personal details and connections and relationships between people in their network (Nardi, Whittaker, Isaacs, Creech, Johnson & Hainsworth, 2002). For this reason, people look to online communication as a way to aid them in managing their social network.

Using the view that online social spaces are used to extend and expand social capabilities, we might predict that online communication would be used more heavily
by people who are very socially active. This logic contradicts conventional stereotypes that view internet users as introverted, shy and socially awkward. Walther’s (1992; 1996) theory of hyperpersonal communication provides a possible explanation of why such stereotypes emerged, positing that many people found it much easier to express themselves in online environments than in real world situations. Walther attributed this improved sense of expression to greater control over self-presentation due to the benefits of asynchronous communication in allowing for deliberate, prepared exchanges, and to the over-attribution of desired characteristics or traits in others (as discussed in the SIDE model) that online communicators were likely to engage in.

However, Birnie and Horvath’s (2002) research indicates that online communication is more likely to be used to manage social relationships by sociable people than as a “compensatory mechanism for shy or socially anxious [people] with infrequent or superficial social contacts.” This research also rejects the notion of the internet as an impersonal medium, demonstrating how personal relationships are developed and can persist in online environments.

3.5 Exploring the online self: Behaviour in online social environments

People often behave differently online than they do in person. Sherry Turkle (1995) suggested that people who lack confidence in face-to-face situations often become more confident online and lose their inhibitions. A sense of security can be garnered from the anonymity and physical separation from the virtual environment that social interactions take place in: one can simply close the window, or turn off their
computer. Physical appearance is also less important in most online social spaces. Gender switching and online ‘identity masks’ are common in many Internet environments. Lisa Nakamura (2001) posits that “users represent themselves solely through the medium of keystrokes and mouse clicks, and through this medium they can describe themselves and their physical bodies any way they like; they perform their bodies as text” (p. 226).

The anonymity of the Internet has allowed for users to experiment with their own identity, to explore facets of their identity that are not revealed in real world interactions. This phenomenon supports the postmodern notion that the self is fragmented and decentred. Turkle (1995) believes that the internet has become a significant social laboratory for experimenting with the constructions and reconstructions of self that characterize postmodern life: “In its virtual reality, we self-fashion and self-create” (Turkle, 1995, p.180). People are able to fulfill identity fantasies online, assuming identities much different from their own real-life identities. However, Slavoj Žižek (1997) notes that these ‘online masks’ that users wear are more than just role-playing or forays into identity tourism. These assumed identities can be viewed as a window to the id, revealing latent characteristics and desires that people are unable to admit to in real life. People are able to indulge their id and engage in behaviour online that they would normally repress in real life. boyd (2002) notes that people often maintain multiple personas online in order to manage context online, by only revealing those particular aspects of their identity that are relevant to the social setting or social group that inhabits of a particular environment. For example, one may project a very
different facet of their identity on Facebook – a social network site geared towards friends and acquaintances – than on LinkedIn – a social network site focused on professional contacts and career-related networks. While very different, both of these projected identities may be accurate depictions of an individual in different contexts.

Žižek (1997) views the internet as an indicator of “the move from the modernist culture of calculation to the postmodernist culture of simulation” (p. 131). The lives carried out onscreen and the life that one carries out in reality may be dissimilar, but they are inseparable. Žižek warns that we should not fall into either trap: to view reality as a separate, unrelated entity to cyberspace, or to view reality as ‘just another window.’ It seems that many users have difficulty navigating this conceptual line.

Users often think that the relationships formed in these online environments are much more ‘real’ than they actually are. In Life On The Screen, Turkle (1995) gives several examples of personal relationships that are successful online, but fail when the jump to real life is attempted. The simulacrum of virtuality forces users to construct relationships in their own minds, often without any grounding – a relationship that is just as much between one’s self identity and one’s construction of the identity of the other as it is between two people. Often, relationships wholly constructed online seem to develop much more quickly. Users often engage in superficial, reciprocal affective exchanges that encourage self-disclosure, intimacy and a sense of familiarity. Turkle (1995) describes this experience as “the excitement of a rapidly deepening relationship and the sense that time itself is speeding up” (p.206). Moving such a relationship into
reality often exposes its shortcomings. It can be difficult to get a complete view of another person online, and often people see what they want to see.

On the other side of this line are those who have trouble understanding that there are people, real people, on the receiving end of their behaviour and actions in these environments. The deviant behaviour that many users present in virtual environments is behaviour that they would not engage in under conventional interpersonal communicative situations. It is clear that they have trouble with the relationship between reality and virtual reality. Real people who are represented in the virtual are perceived as just another part of the simulation, and the actions that one decides to take has much more to do with themselves than it has to do with anybody else.

Argumentative exchanges, inappropriate behaviour and other forms of ‘flaming’ are prevalent in online social environments, much more so than in real world social interactions. Although aggression is a part of human nature, the Internet seems to bring out hostile behaviour in users, many of whom would be considered calm, non-aggressive or peaceful in face-to-face circumstances. Anonymity and distance are contributing factors to this type of online behaviour (Wallace, 1999). It is easier to attack someone if they are out of sight and far away. The absence of social context cues makes it difficult for users to perceive and adapt to the social order, social structures, roles and norms of social interactions. Users feel anonymous and distant from others. These feelings tend to produce self-centered and unregulated behaviour. Users become somewhat less concerned about making a good appearance or acting within a range of
social expectations (Sproull & Kiesler, 1991). But other characteristics of the virtual world, aside from anonymity and distance, contribute to hostile behaviour.

Users experience much aggression-causing frustration from long load times, slow connections, malfunctioning websites, ‘lag,’ and other technical problems that infringe on their normal, or expected online experiences. Frustrated people do not act rationally, and many initial attacks are caused by the ‘hair trigger’ effect that frustration can cause (Wallace, 1999). Frustrated users are also more likely to react aggressively to events that may seem relatively harmless in other situations. Misinterpretation and misunderstanding, arguably because of the nonverbal communicative cues that online communication is lacking, are often at the heart of retaliatory arguments and ‘flame wars’ that can erupt in online social environments.

3.6 Summation

When people approach online communication with expectations that are rooted in face-to-face communication, issues of tension, miscommunication and misrepresentation can result. For this reason, there has been a proliferation of research focused on the feasibility of supporting social interaction and relationship-formation in online environments.

Much of this work viewed the internet as an impersonal medium that was better suited towards tasks and information management due to a reduced set of social context cues. Rich social interaction was curtailed, because people were not able to
properly project and perceive identities, felt too much anonymity, and were unable to regulate themselves in relation to missing norms and social expectations.

Others argued against this approach, positing that people were able to process any social information that was available to form social cues and negotiate identity, and would subversively use whatever means of exchange was afforded to them to enrich their social awareness. Early work that focused on the impersonal nature of computer mediated communication was criticized for implementing a bias in viewing the internet as a task-oriented medium rather than a social one, and expanded the setting for studies beyond the workplace to investigate relationships and social behaviours that were taking place online.

Of course, it is important to reiterate the importance of the specific structure of a social environment and the effect that structure will have on social interaction. People can only convey and perceive social information in the ways that are afforded to them by the communicative environment. Online, how one projects themself and perceives others is dependent on the representational and interactive possibilities of the environment in which social exchanges are situated. In the next chapter, we explore how people express and project their notions of self in online environments, and how people convey and perceive identity online.
4: Performing identity in online environments

4.1 Introduction

“When technological change creates new social situations, traditional expectations and norms lose their power. People invent new ways of behaving” (Sproull & Kiesler, 1991, p.39).

The proliferation of personal relationships and social activity online suggests that people are able to adapt to a range of social environments and available channels of meaning. People naturally attempt to express their own identity and perceive others through available channels of expression in a social environment. Social activity is framed by the representational affordances and constraints that a social environment presents. How one is able to convey impressions of themselves and their ideas, perceive others, perceive how they appear to others, and interact with the environment will greatly affect interaction and behaviour. In face-to-face communication, body language, facial expression and gestures are all used as channels of expression and social information. Online, users are still able to signal affiliation, create closeness, express feelings, greet others and act playfully. However, users must express and embody themselves through any textual descriptions, images, avatars or other forms of user representation that an online environment affords. Understanding how the functional and representational structure of an environment will be used to perform identity in an online place allows us to focus not only on online social interaction, but
also on the design of online environments. We are interested in exploring ways in which users construct, perform and perceive identity through specific environments in order to gain an understanding of how the design of online environments foster and enable such social processes. To this aim, this chapter discusses many of the design strategies – the functional and representational structures – employed by various online environments through which users perform and perceive identity.

4.2 Embodiment: constructing identity through representation and interaction

Interactive and representational affordances vary across online social environments. These forms of embodiment allow one to construct an identity by participating and interacting in the environment. Embodiment is how we encounter and interact with the reality of everyday life, both physically and socially. Paul Dourish (2001) describes embodiment as the “property of our engagement with the world that allows us to make it meaningful,” and describes embodied interaction as “the creation, manipulation and sharing of meaning through engaged interaction with artifacts” (p. 126). One’s social activity is embedded in the environment and in the interactive opportunities offered to the user. The setting and social circumstance in which interaction takes place influences the significance and meaning that social actions can convey to individuals. Users rely on their understanding of the interaction affordances of their environment and existing social structure when interpreting available information. While all online social environments offer some form of embodiment, many do not make it clear how one is represented to others. Users must be aware of
how to properly present themselves through interactions with the environment, and how social cues are presented and exchanged in the environment. Many online environments are poorly suited for social interaction and communication because they do not provide this fundamental social information to users, which is pivotal in establishing self-awareness. Other environments are criticized because the social information they may offer about an individual has been carefully orchestrated and explicitly articulated, and may not be a reliable depiction of that individual’s identity.

4.2.1 Embodiment through text

The ubiquity of text as a primary means of expression and communication in most online social environments has made language the principal vehicle through which users perform their identities online. Giese (1998) notes that in addition to textual self-descriptions, identity can be conveyed and recognized through a number of linguistic markers such as writing style, signatures, and whether one adheres or diverges from established social codes surrounding textual exchanges in online environments. For example, typing in all capital letters is considered ‘shouting,’ and is deemed to be rude or inappropriate behaviour in most circumstances. Writing style is particularly recognizable as a personal marker of identity. In forum and bulletin board communities, ‘sockpuppet’ accounts, or multiple alternative accounts created and used deceptively by a single person to conceal their identity, are often found out because of identifiable posting habits across accounts: odd capitalization schemes, reliance on a certain phrase, repeated errors in spelling or grammar, etc. The affective, paralingual use of emoticons also demonstrates how users creatively represent themselves through text. However,
interfaces that constrain embodiment solely to textual means are relatively limited in their ability to serve as social environments. They offer very few social cues about users who are not actively communicating through text, obfuscate the role of listeners, heighten anonymity, and provide little visual appeal and few stylistic cues (Donath & Viégas, 2002).

### 4.2.2 Embodiment through graphical representation

Many online environments also afford embodiment through graphical representation, or ‘avatars’ that visualize otherwise unavailable social information and allow for multiple forms of expression in addition to text. Avatars vary according to the environment. In many MMORGs and metaworlds, avatars are three-dimensional, anthropomorphic models through which one interacts with the environment and with others. In many forums and blogs, avatars are two-dimensional images that simply accompany the posted messages of the user. The graphical representations that are found online generally employ one of three strategies.

*Realistic* representation relies on photographs or video to embody users. Videoconferencing applications offer users many embodiment affordances as they are able to project their own physical bodies into the virtual environment. Participants are able to easily express understanding or agreement, forecast responses, enhance verbal descriptions manage extended pauses in conversation and express attitudes through their posture and facial expressions. However, it is difficult for users to manage turn-taking, control or take lead of conversations through physical position and eye gaze,
have side conversations, or to physically reference or make use of deictic gestures towards objects in each other’s physical spaces, and surprisingly, videoconferencing does not produce a greater amount of social presence than other collaborative environments (Isaacs & Tang, 1993; Bradner & Mark, 2001). Many videoconferencing systems have high initial equipment and setup costs, and users sometimes experience technical difficulties and disruptions in the service.

*Mimetic* representation relies on animated, full-bodied anthropomorphic avatars in online environments. Some systems employ life-like, realistic virtual bodies, while others employ cartoon-like representations. Users are likely to associate anthropomorphic representations with real people, and are able to recognize and respond to facial expressions. Users are able to use their virtual bodies to convey feelings, to greet others, to play and to create a sense of closeness, thus creating a heightened sense of social presence (Perry & Donath, 2004). The use of full-bodied, anthropomorphic avatars allows users to perform an extensive repertoire of ‘physical’ behaviours and actions, and also offers many additional outlets of expression associated with clothing, fashion and appearance. However, Smith, Farnham and Drucker (2000) observed that many of the gestural and physical capabilities offered through mimetic avatars are rarely utilized by most users in any communicative capacity. Environments that rely on mimetic, full-bodied avatars situated in fully featured three dimensional worlds – such as *Second Life, There,* and *World of Warcraft* – are often too immersive, and are fantasy or game-based experiences rather than places focused on communication. The virtual bodies of avatars can also confuse the relationship between
explicit, articulated actions and implicit social cues that are normally conveyed subconsciously or are self-evident in the course of natural social interaction. This is especially true with life-like avatars that afford facial features and expressions. In natural communication, one’s facial appearance gives others many powerful yet subtle cues about one’s character, intent, and emotional state. Anthropomorphism – and related avenues of expression through appearance - can also cause problems of misrepresentation of identity. Donath and Viégas (2002) note that the appearance of mimetic avatars can inadvertently convey strong, often misleading social and cultural messages to others.

Abstract representation relies on non-figurative graphical metaphors to represent people in online places. Generally, the graphics used in these systems follow a simple, minimalist design. While abstract representational systems do not naturally lend themselves to the exchange of higher-order social, cultural cues and physical performances as do mimetic and realistic representations, they do avoid many issues of misrepresentation while still conveying a rich lexicon of social information. Tufte (1990) argues in favour of simplicity in representation, positing that, “confusion and clutter are failures of design, not attributes of information” (p. 53). Nonrepresentational graphics allow participants to form impressions about identity based on the words and actions that one presents in social interactions, rather than basing them on strong social messages and impressions that arise from one’s appearance (Donath & Viégas, 2002). Metaphors are easily assimilated and formed into usable systems of meaning exchange. This allows for many outlets of ‘physical’ and conceptual expression, and the emergence
of spatial systems of understanding that are not representationally analogous or easily confused with their counterparts in natural interaction, but are still able to convey rich social meaning. Abstract representations are easily adapted to a wide variety of pragmatic uses, are easier to implement and design, and carry a much smaller footprint than other representational strategies. For these reasons, we will be investigating the use of abstract representation in online social environment designs.

Online environments that represent users graphically and rely on a spatial metaphor to allow users to move through the environment offer users a range of expressive possibilities based on movement and proximity. The study of proxemics deals with territoriality and personal space, and indicates that people perceive a physical distance that is appropriate and comfortable for personal interaction (Hall, 1966). Violation of this personal space can cause discomfort or can be understood as aggressive behaviour, while interaction that takes place from a distance beyond a comfortable conversational zone can also result in awkward communication. Proximity and grouping can also indicate affiliation. Research has shown that spatial management of online interaction occurs in a manner very similar to that of physical interactions, suggesting that proximity and movement are valuable channels of expression and social meaning in online environments (Smith, Farnham & Drucker, 2000).

We are particularly interested in communication environments such as chat rooms and instant messaging programs because they are both real-time and lightweight, representing the ephemeral nature of natural communication. The simultaneity and contemporality of synchronous environments allow us to explore
nonverbal communication experiences that are not feasible in asynchronous online spaces. While IM programs are generally used for communication between people with pre-existing relationships, chat rooms allow for the discovery process of finding new people and forming new relationships. In most cases, text is the primary and often the sole form of embodiment in these environments. However, unlike many other text-based environments such as forums, the synchronous nature of these environments result in a much more informal tone in conversation; shorter, more frequent exchanges of text that are similar to the ephemeral, turn-taking style of face-to-face conversation, and emoticons for social cues. Chat environments are also flexible enough to adapt to a number of communicative uses. While most chat and IM environments are largely text-based, there are a few notable examples of chat environments that have been enhanced by representing users through abstract graphics and a spatial metaphor.

*Chat Circles* is a graphical chat interface that employs simple two-dimensional graphics to convey a range of social activity to users (Viégas & Donath, 1999; Donath & Viégas, 2002). The size of a user’s representative circle grows and shrinks in accordance with their recent activity, or lack thereof. Similarly, the colour of the circle brightens and fades in accordance with the user’s activity. Passive participants – those who listen and read and are part of an invisible audience in many text-only online environments – are represented and given significance as ‘listeners’ in a graphical chat environment. In text-only chats and other environments, these users are derisively deemed ‘lurkers’ because they do not write and are therefore not visibly represented as their more active counterparts in the audience are.
Chat Circles also introduced the notion of a ‘hearing range’ in chat: users in the environment can only see and interact with other users and objects in the environment that are near. This feature of the environment frames the social activity and behaviours that take place in Chat Circles, making inhabitants use the space in a socially meaningful way. Interactions with others and with elements of the environment are spatially bound, and the acts of approaching others, walking away from others, deliberately ignoring or avoiding users, or using movement socially – being playful, aggressive, or friendly - are able to take on social meaning that would be impossible to express in a text-only chat (Donath & Viégas, 2002).

Babble is another computer mediated communication system that uses abstract graphical representations to enhance communication and support persistent conversation by making social activity visible to users (Erickson, Smith, Kellogg, Laff, Richards & Bradner, 1999). While Babble houses conversations in a text-based chat interface similar to traditional chat spaces, it also includes a social proxy that represents logged-in users as coloured dots within a larger circle. The placement of the dots relative to the circle indicate users’ levels of activity in a conversation – dots closest to the centre of the circle indicate that a user has recently been active, dots near the edge of the circle indicate that the user has not been active for some time, while dots outside the circle indicate that the user is involved in another threaded discussion. The social information that is made available to users through the graphical representation of the social proxy - audience size, who is listening, how actively people are participating - can
focus participation and make conversations more engaging (Erickson, Smith, Kellogg, Laff, Richards & Bradner, 1999).

**Loops** is a second generation system built on the foundation of the *Babble* system (Erickson, Kellogg, Laff, Sussman, Wolf, Halverson & Edwards, 2006). In many ways, the two systems share the same model. Differences in *Loops* include the ability to support non-conversational text that is made available to all users through the environment, and a new timeline proxy that shows a user’s activity history in the space. The second feature, which allows users to quickly view both how often a user has logged in and how often they have contributed to conversation in the past – suggests the value of representing user activity that accrues over time and across multiple sessions.

### 4.3 Reputation systems in online social environments

While online environments are often criticized for a reduced set of social cues relative to real-world social settings, there are several advantages that the digital medium offers in terms of social information. Persistence expands conversation beyond those within earshot, allows participants to participate in or review conversation at a later time, and opens the door to a variety of new uses and practices involving accrued social activity and experiences over time (Erickson, 1999). Examples of such uses of accrued social information include the incorporation of experience and reputation markers in user representation strategies. These range from experience levels in MMOGs; post counts and reputation or ‘karma’ systems in forums; comment rating systems in blogs, news sites and social bookmarking sites; to recommendation and
reputation systems on transaction-based shopping or auction sites like eBay. In all of these systems of representation, the aim is to condense, summarize and encapsulate a history of accrued social activity of users into a simple representation that is both easily understood and socially meaningful.

The ideals that are important in natural communication, such as trust and honesty, are equally important online, but the cues that signify these ideals are different (Whitty & Gavin, 2001). In online environments, two common measures relevant to trust are reputation and experience. The explicit formation and inspection of a person’s accrued online reputation is gaining increasing prominence. For example, the site qdos.com calculates one’s online reputation from a history of multiple sources and can be viewed by anyone. The ability to know a user’s history of past interactions informs you on their social disposition (Resnick, Zeckhauser, Friedman & Kuwabara, 2000). For users that are new to an online environment or are exposed to new people in an environment, finding the right people to interact with can be a difficult process. One’s reputation is a valuable piece of social information that can be used to determine whether or not to interact with another user (Jensen, Davis & Farnham, 2002). A reputation system serves as a web of trust that relies on the accrued activity, relationships and ratings attributed to a user, and can aid in the development of an opinion of another user without prior interaction (Guha, Kumar, Raghavan & Tomkins, 2004).

Reputation systems can facilitate social interactions in online environments, and serve as a measure of accountability to counter inappropriate or offensive behaviours.
(Jensen, Davis & Farnham, 2002). In many online social environments, communities spend much time and effort monitoring and policing interactions, often by volunteer moderators who regulate behaviour by issuing warnings or banning members from further participation. Such policing activities are reactive, as offenders are punished after the fact. While it is possible that this may serve as a deterrent to other potential offenders, reactive policing activities do little to prevent negative social acts from occurring. Reputation systems can be used to minimize inappropriate behaviour, and to allow online groups and communities to collectively establish standards and expectations (Jensen, Davis & Farnham, 2002). Additionally, users who are well-trusted and have accrued a positive reputation may command greater influence in social situations. For this reason, reputation systems encourages individuals to act in a trustworthy and appropriate manner, and place positive pressure on evolving social constructs within an online environment (Guha, Kumar, Raghavan & Tomkins, 2004). Reputation systems come in many forms, and can be grouped according to how the rating is generated and according to the nature of information that they provide to users (Jensen, Davis & Farnham, 2002).

*Ranking systems* use implicit, quantifiable measures of a user’s behaviour to generate a rating. This would include the majority of experience systems in many online social environments, such as post counts, frequency of visits, experience points in MMOGs that are awarded for performing game objectives and so on. These systems provide information about patterns of use, and often reveal very little information about the interpersonal interactions that a user has had, or how that user has been
perceived by others in an environment. However, experience systems can be useful in online social environments as they demonstrate to others that a user has used an environment extensively, which implies that the user is versed in the functional structures and social norms of an environment and its community.

*Rating systems* use explicit evaluations given by users, which are aggregated and averaged to give a user or an object a score. Scores may be presented as a single composite score, or as a ratio of positive to negative evaluations. Some systems also allow users to leave comments along with their evaluation in order to give some context and rationale for the evaluation. However, these comments are often not prominently visible, and are often ignored by users observing the rating, and by users who are submitting evaluations (Jensen, Davis & Farnham, 2002). While these systems do provide an effective representation of a user’s past interactions and how this user and their history of interaction has been perceived by other users, they require the user to take action rather than rely on implicit information. Because these systems require user effort, they may only be put to use in interactions that represent the extremes of a range of behaviour in the environment: Users would only evaluate others when behaviour was perceived as very negative or very positive. This can be beneficial. As discussed earlier, reputation systems can be used as a system of accountability, and allows users to reward and punish the behaviour of others. However, one possible shortcoming is the use of the reputation system skewed towards reward rather than punishment, or vice versa. Another is the possibility of user reputation ratings not being representative of a user’s actual behaviour in the system. For example, a user may
exhibit moderately positive behaviour the majority of the time, and yet not be rewarded for this through the reputation system, but would be punished for very infrequent negative behaviour with negative reputation evaluations.

_Collaborative filtering systems_ weight explicit or implicit ratings based on similarity. Evaluations of raters are filtered and weighted by how much the rater and the user have agreed on other ratings. A high degree of agreement between rater and user means that the system will place higher value on that rater’s evaluation, using the assumption that the user will find that rater’s evaluation relevant. These systems are more complex than others, are more difficult to build and maintain, and are often the most complicated systems for users to understand. While the rating itself is easily understood, the reasoning behind the rating or recommendation is not obvious (Herlocker, Konstan & Riedl, 2000). Because collaborative filtering systems rely on the assumption that high levels of similarity or agreement will garner relevant evaluations, there may be inconsistencies and problems with the resulting evaluations. While past similarities are a good indicator of relevance, there is no guarantee that the rater(s) and the user will agree or feel the same way about every object, issue, or other user.

Regardless of how reputation ratings are generated and implemented in online environments, they provide another channel of social meaning through which identity information can be exchanged. Reputation and experience ratings are useful social constructs in online spaces as they represent a user’s accrued use of the environment over time, and can convey a collective opinion on an individual user within the context of a larger community.
4.4 Profile information: Voluntary identity information in online social environments

Millions of people have turned to social network sites such as Facebook or MySpace to express aspects of themselves online. Profiles are one of the defining features of SNS – although they are found in many other online environments as well – and serve as an online representation of a user’s self-identity. Profiles publically display personal information about a user – their name, age, gender, interests, beliefs, occupation and so on. The information found on profiles are most often voluntarily placed there. An exception to this is a friend list – a list of other users that an individual has befriended that appears on that individual's profile. The process of befriending is usually reciprocal – both friends appear on each others’ friend list. The process of befriending is not completely voluntary. One must send a friend request to another user, who must approve the request before the users appear on each other’s friend lists. Friend lists provide social information – who and how many people a user signals an affiliation with – that aid in the construction and perception of identity. Users make careful decisions as to what and whom to include and exclude on their profile and on their friend list in order to construct the identity that they want others to perceive. In this way, profiles and the information that users display on them are another form of embodiment.

Embodiment allows users to represent themselves through their interactions with the digital environment. Users detect and interpret any social signals that are available in order to consider the identity presented by others and build a mental
representation of that individual. Limited information offered to users results in inaccurate, interpolated mental models of others’ identities, and an inability to self-monitor their projected identity and self-regulate their behaviour (boyd, 2001). In order to weigh the significance of social information offered to them through a social environment, users attempt to understand how reliable or valid it is. This is especially true in online environments, where much of the social information that users seek is not directly observable. Donath describes signalling theory as that which “seeks to explain what keeps communication honest,” and uses signalling theory as a theoretical lens to examine online social activity (Donath, 2007). Signalling theory was originally developed in biology, and attempts to explain why certain social signals are reliable while others are not. For signals to be deemed valid, they must be difficult or costly to possess, and the cost of producing the signal in order to deceive others must be greater than the benefit that the individual would gain from the deception. Signalling theory evaluates signals according to the validity it exhibits within a given situation.

*Assessment signals* are very reliable because they are difficult to feign without directly possessing the quality they signal. Sketching an accurate portrait is a reliable signal of artistic skill because it requires a certain level of aptitude to perform such a feat. Conversely, *conventional signals* are not necessarily reliable because the relationship between signal production and the quality being signalled is arbitrary – the quality signalled is not required to produce the signal. Personal descriptions found in social network site profiles – information such as age or gender – can be as accurate or deceptive as the individual pleases. Conventional signals are kept honest through the
outside intervention of laws and social mores (Donath, 2007). In social network sites, inaccurate or deceptive information found on one’s profile is subjected to the scrutiny of that individual’s acquaintances. The structure of an environment – the costs associated with social participation and signalling, as well as the availability of information to aid in the interpretation of signals and their reliability – has a great effect on how users will behave and perceive behaviours. While the physical, embodied world imposes a highly structured social order complete with laws, norms and expectations, the world online offers a range of flexible, anonymous and pseudonymous social realities through which users are able to perform oft-suppressed aspects of self, or conceal other facets of their identity as they choose.

4.5 Summation

The anonymous, pseudonymous social realities that many online environments offer to people have resulted in a range of behavioural possibilities. In some cases, people have felt free of their inhibitions, liberated to explore suppressed facets of themselves or fulfil identity fantasies in the safety of anonymity. Users are also able to control which aspects of their identity they wish to share within a given situation, allowing multiple expressions of their identity to be applied to different environments. Anonymity, pseudonymity and the lack of accountability can also cause users to distance themselves socially from their behaviours and from other inhabitants of an online environment as they engage in inappropriate, aggressive exchanges and displays. However, systems of accountability – reputation systems, the scrutiny of an online
community – can be employed and leveraged by online social environments in order to counter negative interactions and to maintain an expectation of honesty (or, at the very least, consistency).

Online, people construct and perform identity through their participation with the environment. The systems of representation and interactional capabilities that are inherent to different online environments have a great influence on identity construction and performance. Just as we interact with our physical environment through our bodies, we interact with online environments through text, images and avatars. The goal of representational systems in online environments should not be to imitate the corporeal embodiment through which we perform social actions in the physical world, but rather to enable systems of social meaning and foster an awareness of self and of others through representation and interaction. This chapter has provided an overview of some of the functional and representational structures found in online social environments in order to understand and assess different systems of meaning and representation that are supported online. Our focus will now turn towards understanding how people use these environments, and what sort of social information and constructs that people use and share with others in order to construct and perceive identity online.
5: Online social environment use survey

5.1 Introduction

In online social interactions, people may come to know each other using representations of constructs that replace contextual and social cues that are often present in natural communication. Constructs such as reputation and experience are built up from a user’s social activity within an environment over time. People may also be able to use information that others publically share in the process of identity formation. In order to understand whether or not the representation of such information and constructs in common OSEs is useful to people, and to get a better sense of how these representations may affect online social interaction, an online survey was conducted. The survey examined the scope of use of existing online social environments, and explored how people present themselves, perceive others, and accrue and share public knowledge about each other in five popular online social environments: Discussion boards or online community forums, social network sites, instant messaging programs, online chat spaces, and massively multiplayer online games and metaverses. The focus of the survey was on the perception and use of reputation and experience markers that exist in each of these online environments, along with the information that people used to present themselves to others in these online spaces. We wanted to understand how people perceived reputation and experience in these environments, whether the environments they used had explicit
systems of reputation and experience representation, and how these systems
influenced participants’ social interactions in the online environments.

5.2 Survey design and methodology

Data was collected via an online, self-administered questionnaire. An online
survey was chosen as the preferred data collection procedure because it was easily
administered, allowed for a variety of potential participants with experience in several
online social environments to be included in the study, and also allowed for an
economic design that was easy for participants to use, and a rapid turnaround in data
collection. Participants were able to complete the survey at their own pace. They could
save their progress, stop their engagement with the survey and continue their survey at
a later time from where they had stopped previously, allowing them to complete the
survey at their own leisure. While this allowed participants to complete the survey over
a period of time, the nature and intent of the survey itself was cross-sectional. The
majority of the completed surveys were accomplished within a single session, and no
participants took longer than 12 days to complete the survey. Data was collected over
an eight month period. The online survey allowed participants to complete the survey
over a secure, encrypted connection, and also allowed the data to be stored on a secure
server located on campus. This survey allowed us to identify some attributes, opinions
and behaviours of a larger population of online social environment users from a small
group of individuals.
Calls for participation were sent out to several universities and colleges through both graduate and undergraduate Communication, Computer Science, Sociology and Design student mailing lists, along with public calls for participation on several online forums focused on online games, sports, design, business, and programming. In this sense, the survey was designed as a multistaged clustering procedure. This resulted in a nonprobability sample where participants volunteered to complete the survey by following a link on the call for participation. It is impossible to determine how many people saw the public calls for participation. The population of this sample was unstratified.

The survey consisted of 53 questions and was segmented into 5 sections, each containing questions about specific online environments: Discussion boards or online community forums, social network sites, instant messaging (IM) programs, online chat spaces, and massively multiplayer online games (MMOG) and metaverses. Many of the OSEs that were the subject of the survey did not offer explicit representation of reputation or experience to users. For this reason, the survey relied both on quantitative questions (“how many people are aware of reputation/experience systems in OSEs where they are used?”) and exploratory questions around reputation, experience, and information shared by participants and the people they had interacted with online (“how does information about other people in the environment affect how you interact with them?” “How do you come to know someone’s reputation or experience?” “What information do you like to know and share?”). The survey had been developed and
tested on a small pilot group of four participants before public calls for participation were sent out and data collection took place.

5.3 Survey results

The results of the survey are based on responses from 219 participants. There were also 14 incomplete surveys that were not included in the survey results. 125 of the participants were female, and 94 were male. The average age of the participants was 24.7 years: 61% of the participants were aged 17-24 years, 22% were aged 25-29%, 10% were aged 30-34 years, 3% were aged 35-39 years, 3% were aged 40-50 years, and 1% were 50 years old or older. Due to the demographic information collected and to the recruitment processes used, we believe that the majority of respondents were students.

![Figure 5.1: Online social environments - frequency of use](image)

Of these five environments, instant messaging was the most popular (86% of respondents used them), followed closely by social network sites (76%) and forums
(68%). Multiplayer online games and metaverses were less popular (24%), and chat rooms were the least popular social environment used (12%).

The usage habits of participants varied across the different environments with respect to frequency of use and how the use of each environment fit into their usual online routine. Most forum users check their favourite forum multiple times a week or daily. While very few of them leave the forum open on their browsers the entire time they are online, over half of them consider participation in the forum part of their online routine.

![Figure 5.2: Online social environments - inclusion in online routine](image)

Participants in this study who use social network sites tend to use them very frequently and regularly. Of those participants who use social network sites, 56% use them daily and another 27% use them multiple times in a week, while only 1% of participants reported using these environments “a few times a year.” Again, the majority of these users consider a social network site a part of their online routine.
Similarly, instant messaging users report high daily use (52%), with 46% of participants leaving their IM client active while online. This study shows that of these 5 OSEs, instant messaging appears to be the environment most commonly integrated into one’s online routine.

Due to the immersive nature of MMOGs and metaverses, it is difficult to gauge how these environments fit into one’s usual online routine. However, those who use these environments report a high frequency of use, with 58% of users using them a few times per week or more.

Chat rooms are the least used environment. Only 12% of participants indicated use of chat rooms, with 46% of those users only participating in chat a few times per year. This environment is the least integrated of the five into online routines, with 77% of users reporting infrequent or rare usage.

![Figure 5.3: Number of environments used by participants](image-url)
The majority of participants used more than one of these environments, with only 11.4% of responses indicating that they used only one of the five environments. The largest number of participants reported using two environments (35.2%), followed closely by three environments (30.6%). 18.7% of participants reporting using 4 environments, and only 4.1% of participants indicated that they used all five of the environments included in the survey.

**Figure 5.4: Frequency of use by participants who reported using only one environment**

With respect to popularity of environments, the data from participants who reported using only one of the five environments indicates similar patterns to the frequency of use data discussed earlier with respect to popularity: IM was most popular, followed by SNS, forums and chat rooms. However, none of these participants reported using MMORPG and no other environment. While this group only reported using one of the five environments, and could arguably be viewed as the group with the least online interaction, over 80% of these participants reported using these environments a few times a week or more. This indicates that the entire population of participants are active users of online environments.
The majority of participants who reported using 2 indicated that they used at least one of those environments more than a few times a week. Only 4 out of 77 participants (5%) who reported using 2 environments used either of these environments less than a few times a week. Furthermore, 60 of these 77 participants (78%) reported using at least one of these environments daily.
In the group of participants who reported using 3 environments, we again see high rates of frequency of use in at least one environment. 50 of 67 of these participants (76%) reported using at least one environment daily. Similar patterns can be seen in the groups of participants who reported using 4 and 5 environments. While the combination of environments used by participants do not indicate trends or patterns that differ from expectations driven by the overall popularity of the environments, it is worth noting that the participants tend to use multiple environments and we can surmise that their use of any one environment is informed by their experiences in the other environments they use. The social norms, behaviours and processes through which participants come to understand social order and the identity
of others in one environment are likely to influence their understanding of the other environments they use.

![Figure 5.7: Frequency of use by participants who used 4 environments](image1)

![Figure 5.8: Frequency of use by participants who used 5 environments](image2)

Participants were also surveyed on their purpose of use for each environment. People tend to use forums primarily to gather information (76%) and as a form of entertainment (63%). Social network sites are used to maintain social relationships (94%) and are also viewed as a form of entertainment (67%). Only 14% of respondents
reported using social network sites for work, career or school purposes. 15% of respondents had used a social network site as a way to meet new people. Instant messaging was used for a variety of reasons. Most respondents (98%) agreed it allowed them to keep in contact with people and maintain social relationships. Over half (52%) viewed it as a form of entertainment or leisure activity, 30% reported using it as a tool for information gathering, and 35% had used IM in relation to work or school. Only 8% of IM users had reported using it to meet new people, which occurs when one is invited to join an IM conversation that includes people who are not on one’s contact list. Chat rooms were viewed as a form of entertainment (81%) and also as a tool for resources and information gathering. While chat rooms are seldom used when compared to the other OSEs covered in this survey, they do seem to be well suited to fostering discovery of social relationships. Nearly half of the users (46%) had used chat rooms to meet new people, and 38% used chat rooms to maintain social relationships.

Online social environments offer users a variety of opportunities to share personal information publically. The results of the survey indicate what sort of information users are willing to share in different environments. Note that the participants were asked to indicate what information they would share beyond the scope of their actual interactions with others – posted information that would appear in profile pages, avatars, contact lists and so on, and would be visible to other users of the environment with whom they may not be actively communicating with.
Users of instant messaging applications reported a variety of information that they posted to be visible to others in their contact list (as opposed to information that they would share with contacts through conversation). Only 17% claimed not to share any personal information on instant messaging. 44% shared a picture of themselves, 47% posted an image or icon not of themselves, 40% used their real names, 47% shared a personal message or announcement, 71% shared their activity status, and 9% posted contact information other than their email address.
The majority of forum users (77%) reported that the forum they used most offered profile pages through which they could share information about themselves with other users. Of these respondents, only 29% of them did not share any information on their profile page. 19% indicated they posted a photograph of themselves on their profile page, while 32% posted an image or icon. 19% of respondents posted their real name on their forum profile, and 17% posted information about their job or career. 34% posted their email address, and 15% of the respondents posted contact information other than their email, such as a phone number, address, or a link to a personal site or blog. 36% posted a personal message or description of themselves, and 34% shared information about their interests or hobbies.

The information that people share on forum profile pages was perceived as useful, with only 14% of respondents indicating that such information was not useful in the social interactions they would have with other forum members. Some (20%) of the
participants reported that profile page information allowed them to know ‘real-life’
details that would help them evaluate the credibility of forum members, and 29%
responded that the personal details people posted allowed them to get to know others
better and improve their relationships. Of the respondents, 18% believed the profile
information provided context for communication with other people, and made it easier
to interpret people’s comments because they had some indication of their background.
Another 16% cited the contact information as helpful as it allowed them to extend
communication or relationships beyond the forum.

The survey results also indicate that most participants believe that forum profile
information affects their social interactions, with only 24% indicating that they do not
feel profile information has any effect on social interactions in forums. The most
commonly cited effects that were reported include both avoiding or seeking out and
initiating interactions with people based on information found in their profile.
Responses also indicated that profile information affected people’s perception of other
forum members’ credibility with respect to comments or posts on the forum. For
example, people who posted blatantly false or inappropriate information on their
profiles were not likely to be perceived as credible. Conversely, people who list specific
areas of expertise, education or interests are perceived to be more credible when
posting about those topics. Other responses indicate that profile information allows
people to decide how to respond to or interpret the contributions of other members.
Responses cite information concerning age, language, culture, ethnicity, religion and
location as having an effect on how one decides to interpret and respond to other members’ posts.

Figure 5.11: Social network sites - information shared

Sharing information about oneself and communicating with pre-existing social connections is the focus of social network sites. Most social network sites allow users to limit the access to information that they post to a list of known contacts. 82% of the survey participants indicate that they interact only with people that they also know offline in their most-used social network site. For these reasons, it is not surprising that participants reported higher levels of information sharing in this environment than others: 62% posted pictures of themselves; 65% shared their real name; 56% shared photographs that they had taken; 46% shared personal messages; 54% posted their email address; 52% shared information about their interests or hobbies; 50% shared professional, career or education related information; 56% shared information about
groups or organizations that they are affiliated with; 17% included some sort of journal, notes or diary of their experiences; and 19% shared contact information other than their email.

Again, the majority of users of this environment also felt that such information influenced their social interactions, with only 24% responding that such information did not affect their interactions. Almost half (46%) of the respondents used shared personal information to decide whether or not to initiate communication with someone. Many of these participants indicated that new information that people share provided social opportunities for others on their contact lists. Conversely, 29% of respondents used such information as a reason not to actively contact other people. Updates that their friends post to the site allows them to know what is going on in their lives without having to communicate with them directly. Another 21% of participants believed that the information that one shared allowed them to change the tone or level of formality of communication that they use with a particular person, with the majority of these respondents saying that they would attempt to match the approach that the user displays in their own posted information. 25% of the participants believed this information made them feel more comfortable or familiar with the people on their contact lists.

Participants who used MMOGs or metaverses reported a diversity of shared information, any many responses were highly dependent on the specific virtual context and narrative that each environment or game embodies. The most popular environments amongst participants were World of Warcraft (48%) and Second Life
Common answers were character names; guild, clan or group affiliations; level, class or character type; in-game equipment, wealth or goods; skills and vocation; and character gender and race. Other participants reported sharing fictional information that extended game narratives such as character histories or character role-playing. Very little ‘real life’ personal information – as opposed to fictional information about characters that participants portrayed in the environments – was shared in this manner. However, several responses indicated that they were comfortable sharing personal information about their real lives with other users, but only to others who they knew, and only through direct communication rather than publically visible forms of representation that they used to display information about their in-world identity.

Of the participants who used chat rooms, 38% indicated that their most-used chat room allowed users to post information about themselves to a profile page that
other users could view. Only 12% of these respondents would not share any personal information on their profile page. 19% posted a picture of themselves, 19% shared an introductory message about themselves, 15% posted their email address, and 19% posted information about interests or hobbies. 8% shared their real names, and 8% posted professional, career or education related information. It is worthy to note that the chat rooms that participants were describing were mostly geared towards either dating or were focused on shared interests or hobbies.

The majority of respondents believed profile information to be useful to their social interactions in the chat room. 65% used the information to determine whether or not to initiate communication with a user based on their age, sex, location or similar interests. Only 31% of the respondents said that there was nothing useful about the information that was found in user profiles.

We found that in environments that did explicitly display reputation and experience information – notably forums and MMOGs, respectively – the majority of participants were aware of such representations (69% in forums with reputation systems, and 91% in games with experience systems). Furthermore, We found that participants put such information to use, and their social interactions were influenced by the reputation and experience ratings of themselves and of co-communicators. For example, in discussion boards, participants often used reputation and experience information to discern the credibility, reliability and validity of other posters and their posts. They also reported that such systems encouraged positive social behaviour and kept communication civilized by introducing a modicum of accountability through
reputation that allowed for the identification of both ‘trolls’ and helpful or knowledgeable members. Over half (52%) of the responses found the reputation systems to be useful in the forum, while only 27% of the responses described reputation systems in forums as not useful. Some of the negative aspects of reputation systems in forums that were mentioned included making new forum members feel uncomfortable or timid, and also potentially changing the focus of the community away from discussion and information sharing towards accumulating reputation points through inappropriate or negative social behaviours such as spamming or begging for positive reputation, and complaining about negative reputation. In games – which provide no explicit reputation markers, but do provide external forums and guild chats that can contain reports or complaints – only 22% stated that they did not take reputation into account when interacting with other players. Others reported that they sought out or conversely avoided people based on reputation and that these also affected how polite and respectful they were in interactions.

In environments that did not include explicit representation of reputation and experience, we found that participants still attempted to construct mental models of reputation and experience. Participants described many ways that they formed such impressions using information that was available to them. For example, in social networking sites, participants would form an understanding of an individual’s reputation by assessing other people’s comments on an individual’s wall or comment section found on their profile, or by assessing the number of friends that an individual has or who their friends were. Such implicit construction of reputation also showed to influence how
participants would interact with the individual, especially in terms of formality of tone and extent of detail in communication exchanges, and also plays a role in deciding whether or not the participant would add an individual to their list of friends.

5.4 Summation

The survey results indicate that interactions in online social environments are influenced by people’s perception of reputation and experience. When these constructs are explicit, people are likely to incorporate them into their impression management process and help them form impressions of the identity of others. When these explicit representations are not built into the structure of an environment, people will use social information that is available in order to construct and understand the reputation and experience of an individual within the larger environment and its community. While self-disclosed information that appears in profiles can and often does play a role in this process, information that is gathered about an individual from the community or from observable past behaviour is perceived as much more valuable than information that is volunteered about oneself. The results from this survey led us to believe that the inclusion of explicit reputation and experience information in online social environments has value in online communication, influences online social interaction, and that these constructs were worth exploring further through the ReciproCity prototype.
6: ReciproCity: The design of an online social environment prototype

6.1 Introduction

Previous chapters have explored relevant literature and examples of social interaction and identity in both face-to-face and online communication. We have explored online environments and the functional, structural and representational strategies they have employed, along with the social behaviours and habits that users of these environments engage in. The focus of this work now moves from analysis towards synthesis, as we endeavour to create a synchronous abstract graphical chat environment prototype that expands the traditional messaging approach by constructing accrued, persistent social information, and representing explicit social cues in the form of simple iconic visualizations. We call this prototype ReciproCity.

Our intention was to design an environment that allowed us to explore social processes of awareness, impression management and identity formation, and the relationships between these processes and the functional, structural and representational affordances of an online environment. The research and corresponding insight formed in previous chapters provide a conceptual framework for ReciproCity, and informs and guides the design of this prototype. The work leading up to the design and construction of ReciproCity also allowed us to identify key motivating issues to
explore through this prototype. These motivations had a great influence on ReciproCity’s design.

The first of these issues to explore was reputation. We were interested in including a reputation system that allows a community of users to collectively assign an individual an explicitly represented reputation rating that accrued social activity and experiences over time. We intended to include this reputation system to examine how users would employ such a system, what influence it may have on social interactions, and how the representation of an individual’s reputation rating would affect how other users think about or behave towards that individual.

Similarly, we also wanted to include an experience system that would indicate how many interactions a user had previously engaged in through their accrued use of the environment, and would make these experience ratings of users known to other users. This system of representation would allow us to ascertain how users view experience (is it important to users? Do users want to know who is new to environment versus who has used the environment a lot?), and if such a representation would have any influence on their interactions.

Another issue we wanted to explore was proximity and avatar movement as a channel of expression. By endowing the users with the ability to position a personal representation of self within a spatial environment, we could examine if and how proximity and movement were used to signal affiliation, whether or not users would group around those they chose to communicate with or around specific locales within
the environment, and could also explore other unexpected behaviours that were engendered by proximity and movement.

We also wanted to understand the social processes of discovery and befriending, and how new relationships are found and formed in ReciproCity. We were interested in exploring what criteria users employed when determining whom they would approach and socially engage with, and what social information available in the environment would users rely on in such decisions. We were also interested in understanding the befriending process, and the social motivations that are at play in explicitly naming other users as friends.

Our goal is to explore how enriched meanings such as reputation, experience, spatial position, and affiliation may enhance interaction and support the formation of persistent identity cues that represent an individual’s social activity, and how such meanings can affect the social processes and experiences of users. This chapter describes the design of ReciproCity, and discusses the rationale behind some of the decisions made in the design process.

6.2 Design rationale and description of user interface

ReciproCity is an online social environment delivered through the user’s web browser. The user interface was developed using Flash, while the backend was built on a java-based multiuser server platform called Unity2. User and environmental attributes and variables are made persistent across user sessions by storing them in a database. Many of the communicative possibilities, interface features and strategies incorporated
into *ReciproCity* stem from popular online environments, applications and games discussed in earlier chapters. The design of *ReciproCity* has also been primarily informed by previous research projects that have explored different possibilities in visualizing both users and their social activity in a synchronous communication environment.

Specifically, we view Viégas and Donath’s (1999; Donath & Viégas, 2002) *Chat Circles*, a graphical interface for synchronous communication that employs simple two-dimensional graphics that change in shape, size and colour to provide social information to users, as a direct precursor to *ReciproCity*. *ReciproCity* uses similar strategies of graphical representation, but applies such strategies to signify persistent attributes that accrue over time through a participant’s repeated use of the environment. Both interfaces allow users to easily discern how many people are in the space, who is currently active, and allow users to gather themselves in groups – social information that is not available in traditional, text-based chat environments.

*ReciproCity* has been designed to offer the following affordances to users:

- A spatial metaphor that allows users to express social meaning through proximity and movement.
- Visualized social cues that support ephemeral conversation – such as the number of participants in the space, each participant’s current activity and availability.
- The ability of users to share information about their identity – such as age, gender, and any textual descriptions or messages they would like to present.
- Visualized identity cues about an individual that have accrued over the history of their use of the environment, including experience and reputation.
- The ability for users to publically display affiliation with others through a friend list.
- Support for asynchronous use of the chat space and the ability to review conversations (e.g., a chat history).
- Support for the publishing of public, non-conversational text (such as announcements).

The user interface elements of *ReciproCity* are shown in the figure below:

![Figure 6.1: The elements of the *ReciproCity* user interface.](image)

### 6.2.1 Navigation

The environment of *ReciproCity* is much larger than a single browser screen: a standard environment viewport allows a detailed view, and a fixed miniature representation (the minimap) shows the location of the current view, as well as the contents of the entire space. Users are able to navigate their avatars through the space by clicking on the environment in the main view – which will move a user’s avatar to...
that point) or can change the area that they are currently viewing by clicking in the minimap, or by using the cursor keys.

6.2.2 Avatars

Avatars serve as the primary form of user representation in *ReciproCity*. Avatars display identity and profile information about the user. Clicking on an avatar will toggle between collapsed and expanded views.

![ReciproCity avatars. Collapsed avatar state showed on the left, expanded detail avatar view of user’s own avatar shown in the centre, and expanded detail view of another user’s avatar shown on the right.](image)

Users are primarily represented by a circle above their name. Different visual elements of the circle represent information about the user. The size of a user’s circle represents their experience rating. The circle grows in size as a user gains experience. The reputation of a user is represented by the opacity of the circle’s centre: high reputation appears darker, while low reputation is lighter and transparent. Icons below the name and around the avatar circle represent other information about the user,
including age, gender, communication abilities (e.g., private messaging and post board capabilities, represented respectively by a phone and a pencil), current activity and availability. When a user is inactive, a small ‘sleeping’ icon appears beside their avatar circle. When a user is typing a message, an animated typing icon appears beside their circle. When the user is engaged in a private conversation or has posted a message to the post board, the appropriate icon is animated to indicate their activity.

When users login to the environment, their avatar is in its collapsed state by default. By clicking on a user’s avatar circle (one’s own, or on that of another user), one can expand the view of that user’s avatar. This expanded panel includes further identity about the user, including an experience bar that indicates a more exact rendering of a user’s experience rating (moving the mouse cursor over this bar will display a numerical experience rating); a text field that will display personal messages as the user sees fit (akin to status updates in Facebook, or messages visible in contact lists of IM applications); a list of friends selected by the user and corresponding icons that indicate whether or not the user is logged in; and a detailed representation of reputation using an arrow and a bar. At the bottom of this expanded panel is the voting mechanism used in the reputation system. Collapsible/expandable avatars allow users to control their view of the environment. In situations where having too many users’ fully expanded avatars will clutter and obfuscate the user’s view of the environment, or when many users are moving and having all avatars expanded panels open is distracting, one can collapse avatars as necessary. Having expandable avatar panels allows the environment to make a large amount of information easily accessible in limited screen space. It is
important to note that users are able to view themselves exactly as other users in the space see them. This enables users with a great deal of control and feedback with respect to the identity information that they wish to present to others. The only difference between viewing one’s own avatar and viewing another user’s avatar is the lack of a reputation voting mechanism on one’s own expanded avatar. Users cannot perform reputation votes on themselves.

6.2.3 Topbar menu

The topbar menu consists of four buttons, a logout link and a text field that displays system messages and prompts.

![Figure 6.3: The topbar menu.](image)

The first button from the left allows users to access and edit their friend list. The second button allows users to view a detailed help guide containing information about the environment. The third button toggles sound on and off, and the fourth button opens up a profile panel that allows users to edit the age, gender, email and personal message that is displayed in their avatars.
The friends list panel allows users to edit usernames that appear on the friends list in the profile information panel of their expanded avatars. The top list in the panel shows all users who are logged in to ReciproCity. This list is used in conjunction with an ‘add friend’ button to add users to one’s friend list. Only users currently online can be added to one’s friend list. The bottom list in the panel shows the existing users in one’s friend list, and is used to remove users from one’s friend list.

The friend system used in ReciproCity is simple in implementation and in functionality. While the friend list is a feature that is borrowed from SNS environments, the friend system in ReciproCity differs greatly from convention of most SNS friend lists. The most significant of these differences is the process through which a user adds friends to their friend list. To add a user as a friend in Facebook, one must make a request to that user, who then approves or dismisses the friendship request. If the request is approved, then both users get added to each other’s friend list. In ReciproCity,
we have made the befriending process much simpler and unidirectional. One does not need a user’s permission to add them to one’s friend list, and adding a friend does not make one’s name appear on the friend list of that befriended user. In conventional SNS friend systems, being friends with another user means that you have some increased access and permission to view information and content which that friend has posted. In _ReciproCity_, there is no additional information that friends can see that other users cannot. The only outcome of adding friends to the friend list is having that user’s name added to the list found in one’s expanded avatar along with an icon that indicates if that friend is online or not.

The decision to differ greatly from convention in the design of the friend list was motivated by a number of factors. This pared down system was very easy to implement within the scope and timeframe available for the creation of this prototype and larger research project. While we wanted to explore the befriending process and the significance that a friend list may play in the construction of identity in online environments, we did not want to endeavour creating a fully featured SNS. This system would allow us to ask users about their decisions to add friends, and would also allow us to investigate the influence that publically visible friend lists had on user’s perceptions of others. We understood that such a simplified system may reduce the significance and social value that users would place on the friend list and may result in uses and behaviours that varied from those of users of conventional SNS systems, but felt that this implementation of a friend system would still provide some valuable social situations to investigate.
6.2.4 Minimap

The minimap provides an overhead view of the entire environment. Users can use the minimap to see how many people are occupying the space, to view the position of themselves and other users in the space, and to quickly change their view of the environment.

![Figure 6.5: The minimap provides an overview of the environment.](image)

Users in the space are represented by green dots. Brighter, square dots are used to indicate the user’s own avatar position in the space, while darker circular dots represent the avatars of other users. By moving the cursor over a dot in the minimap, one can view the name of that user. The viewport in the minimap indicates to the user what section of the environment they are currently viewing. The viewing area selected by the user can be decoupled from the position of the user’s avatar. This makes it easier for the user to quickly scan other users in the space even if their avatars are distanced away from each other.
6.2.5 Chat panel

The chat panel allows users to input messages, send private messages and also houses a collapsible chat transcript.

![Chat panel diagram]

**Figure 6.6:** Collapsed panel (bottom) can be expanded by clicking the '+' button. The expanded panel is shown on top.

The chat transcript follows the form of a typical chat room, and shows a history of all chat that has taken place in the environment since the user logged in, including private messages. When a user types a normal message (by inputting text into the text field and hitting the ‘send’ button or by hitting enter, the message appears both in the environment – contained in a text ‘bubble’ above the user’s avatar – and in the chat transcript. Beside the chat transcript is a list of all logged in users. To send a private message, a user must select a recipient from this list and click the ‘private’ button. The
message does not appear in the environment, it appears only in the chat transcripts of the sender and recipient. When a private message is sent or received by a user, the private message icon (which looks like a phone) of that user’s avatar carries out an animated sequence so that others around that user are aware that they are engaged in a private conversation.

6.2.6 Post board

The post board is embedded into the environment, and is located near the bottom right corner of the map. The post board allows users to post non-conversational messages (such as announcements) that persist across sessions.

Figure 6.7: The post board allows users to post messages that persist across sessions in ReciproCity.
When a user posts to the post board, the post board icon under the user's avatar circle carries out an animated sequence so that other users are made aware of the recent post.

Along with the post board, images were also embedded into the environment. This was done to break up the sparseness of the environment, to give users points of interest to explore and gather around, and to offer users several recognizable places within the environment. As the group of users to inhabit and use the environment during subsequent studies were likely going to be Simon Fraser University students, the images were of familiar places of the Surrey campus: the coffee shop, the mezzanine, the library, a computer lab and a lecture hall.

6.3 Reputation and experience

The inclusion of reputation and experience constructs in the environment and user representation provides valuable social information from which participants can better understand the identity of an individual. Such rating systems indicate and contextualize a participant’s past social activity, and help one to recognize how others have viewed this individual based on their interactions with them. ReciproCity incorporates these systems of social representation, and bases them on implicit and explicit data from users.

Experience is determined through the number of interactions with other users and can also be gained by exploring and using the features of the environment. This is
analogous to post counts in discussion forums or to experience levels found in MMORPGs such as World of Warcraft.

The reputation rating system is based on user input. Users are encouraged to anonymously vote on other users using a 7-point semantic differential scale. A semantic differential scale is used because it allows users to offer a measurement of connotative meaning that they ascribe to another member. The contrasting values that the scale offers to users is purposefully ambiguous – represented only by ‘thumbs up’ and ‘thumbs down’ graphics – so that the rating system remains flexible for participants to use their own conceptual framing to express their reactions to others. Semantic differential scales are easy for participants to use, easy to aggregate and compare, and are ideal for representing the subjective feelings of people (Heise, 1970). An average of the votes is formed in order to generate a user’s reputation rating.

In the initial iteration of the prototype, communicative privileges – including the ability to send private messages and to post announcements on the post board – were granted to and withdrawn from the user as dictated by their reputation and experience ratings. This was done to build a system of accountability into the environment. If a user’s reputation rating, dependent on the collective judgment of the ReciproCity community, fell too low, that user would no longer be able to send private messages or post on the board. In subsequent iterations, we changed this arrangement to better accommodate new users that would be using the environment for only a short time, as these users would be the focus of our planned studies. However, we are still interested in exploring the level of accountability that such a system fosters at a later time, and
understanding the social order that results over time and accrued use with such a system in place. Both experience and reputation, along with the communicative abilities a user possesses, are signified in the representation of the user.

6.4 Summation

This chapter has described the development and design of ReciproCity, a synchronous multiuser chat environment prototype that attempts to enhance social cues through simple representations of activity, reputation and experience. We have explored the motivations and issues that have framed the design of this prototype, and with this in mind, have attempted to address some of the decisions made in the construction of ReciproCity. We have outlined the structural and functional elements of the prototype, and have discussed various constraints and affordances that this environment offers to users.

In the next chapter, we turn to studies that focus on users and their interactions within ReciproCity. We will be exploring how the representation of reputation and experience affects social interaction, how the spatial metaphors at play in the environment influence users’ behaviours with respect to movement and proximity. We will also be observing the processes of discovery – approaching new people – and befriending in order to gain an understanding of the criteria and available information people use to inform decisions and actions in these social processes.
7: ReciproCity user study

7.1 Introduction

ReciproCity is a synchronous abstract graphical chat environment prototype that draws upon many popular online social environments and includes many features familiar to other OSEs. Last chapter outlined the design and rationale of ReciproCity. Our focus now moves to the evaluation of the design of ReciproCity, to the experiences of users of the environment and to the implications to the design of online environments and to online social experiences that such an evaluation may yield.

Both ReciproCity and the user study described in this chapter were designed to explore how users manage impressions, and how people present and perceive social information in order to construct identity in online spaces. In order to learn about the social processes of impression management and identity construction, we concentrated our efforts towards gaining an understanding of users’ interpretations of the actions and behaviour of others, and to the exchange of social information that took place in ReciproCity. To this end, a user study was designed in order to explore the reputation and experience systems and their associated effects on interaction, avatar movement and proximity and how users are able to exchange social meaning through these channels, and to explore the social processes of befriending and discovery, along with the types of cues that users rely on to inform these processes. This chapter will describe the design of the research study, including procedural information, a description of the
types of data collected and an explanation of data collection methods. The results of the study will then be addressed, followed by a discussion of the implications of the results, a critique of the design of *ReciproCity*, and a summarization of the findings from the user study.

### 7.2 Pilot study

An initial pilot study was conducted using *ReciproCity* that focused on the use of proximity and movement as a channel of expression. There were five participants involved in the study, and all participants had pre-existing relationships with at least one other participant. Only one user knew all other four participants, while all other participants knew only two other participants previous to the study. The participants were first given some brief information about how to navigate their avatar and view around the environment, how to communicate with others in the environment, and were also given descriptions of the representational strategies that *ReciproCity* uses. They were asked to use *ReciproCity* for a night in place of the instant messaging program that they would normally use to communicate with each other. After the session was over, each participant was informally interviewed to further clarify their actions, intentions and interpretations of events that occurred during the study.

We found that participants preferred to be in close proximity with those that they were interacting with, and that a comfortable distance was perceived and maintained by participants during conversation with others. Participants were
protective of their personal space, and several times when collisions occurred or when avatars were too close, participants complained.

Participants also engaged in playful activity by moving their avatars, which they referred to as “dancing.” Movement was also used as a form of address during conversation. During group discussions, rather than addressing comments or replies to individuals by name, participants would move towards the individual who their message was intended for. This behaviour emerged as a convention and was used by all participants.

While the pilot study showed that simple, non-figurative avatars embedded in a spatial environment afford users a wide lexicon of expressive capabilities through proximity and movement, it also helped inform the user study. We noticed that the participants did not use the entire environment after an initial exploration of the space, and that participants complained of the space seeming too sparse and empty. This motivated us to embed images into the environment in order to allow users to explore the space and give the space some defining landmarks, and also gave us the idea to include ‘phantom’ users in the space during the user study. We also noticed that there were many lulls in conversation and activity, and that several users complained that there was “nothing to do” in the space. We concluded that if we wanted to investigate how participants used some of the more complex features of the space – such as the reputation voting feature, experience ratings, the friend list, and so on – we would need to give participants a focused activity and subject them to particular social situations.
that would give them reason to use the systems, and allow them to think about how the representation of social information affected their interactions.

7.3 Research Design

This user study draws upon ethnographic research traditions as they relate to design and online experience (Blomberg, Giacomi, Mosher & Swenton-Wall, 1993; Hammersley & Atkinson, 1995; Button, 2000), and intends to obtain a holistic perspective of the design and use of ReciproCity. This study also relies on participatory design approaches and methodologies in order to gain an understanding of the relationship between the design of an online social environment and its use by participants through discussion and observation (Schuler & Namioka, 1993; Spinuzzi, 2005). This research focuses on the experiences of users as a means of evaluation of the design of the ReciproCity prototype and its functional and representational structures. The study includes collecting observational data of participants using ReciproCity and conducting in-depth interviews with participants.

In this study, we wanted participants to be exposed to a number of social situations in order to observe and understand how they may react, behave and use the environment. Initially we were hoping to have participants use the environment for a long duration – using ReciproCity over the span of two months – so that these situations would occur naturally. However, there were too many problems with this plan. Participants would not always be logged in at the same time as others; it would be impossible for researcher observers to observe and record all interactions in the space;
it was difficult to recruit participants to take on such a commitment; and finally there would be no guarantee that the participants would be exposed to the social situations that we wanted to observe. Instead, we decided to hold discreet user study sessions as described below, and have role players ‘planted’ in the study in order to play out personae and to enact specific social situations upon the participants. We acknowledge that such artificially-constructed situations raises concerns over the ecological validity of the participant reactions and behaviours that we observed, and also raises concerns about our ability to make generalizations from these observations that would apply to a larger public. However, this strategy allowed us to expose participants to situations in order to get them thinking about such situations in relation to the functional and representational structure of ReciproCity and other online social environments, and allowed us to pose focused questions to participants in the post-activity discussion.

7.3.1 Method

The user study consisted of three sessions across a period of ten days. Each 1.5 hour long session focused on five participants who were new to ReciproCity, along with five role players who participated in all 3 sessions. Each session consisted of: a 15 minute introduction to the study and to ReciproCity; a 40 minute activity period in which participants and role players were given a collaborative task that necessitated discussion and social interaction in ReciproCity; and a 35 minute post-activity group discussion where participants in that session (role players were not present for these discussions) first completed a brief questionnaire and were then asked questions about their opinions and their experiences and interactions in the environment during the activity.
All participants were gathered in a single room for the introduction and environment walkthrough. Participants were told that the purpose of the study was twofold: the first focus of the study was to produce some ideas and topics to include in a new student handbook that was being prepared for new university students. Participants were asked to reflect upon and discuss their own experiences as a student and to collaboratively produce a list of ideas and topics for the handbook. The participants were told that in addition to the other participants currently in the room, this activity would be carried out with other experienced ReciproCity users who had already gone through the activity once before and therefore did not need the introduction to the study or to the environment. This was done in order to explain the presence of the role players to participants. The participants were told that the second focus of the study was on the environment and how they would use it to carry out the collaborative task assigned. They were told there would be a questionnaire to complete and a group discussion after the activity. Participants were then given laptop computers and directed to register accounts on ReciproCity. Once they were all logged in to the environment, participants were shown around the environment, and given detailed information about the interface, the functionality and the representational systems in the environment. Participants were given a few minutes to use and explore the environment, and ask any questions they had about using the environment, about the activity or about the study. Once all participants were comfortable using ReciproCity, they were assigned places around the campus for the 40 minute activity period.
Participants were geographically distributed around the campus to ensure that interaction and discussion during the activity period occurred solely through *ReciproCity*. Role players were logged into the environment for the activity period. The role players were responsible for keeping discussions and interaction going within the group of participants by prompting questions during periods of low activity or by keeping participants focused on the assigned task. Role players were also responsible for enacting specific social situations upon the participants that were of particular interest to the study. The roles and behaviours of the role players, along with the social situations that they were instructed to expose participants to, will be described in greater detail further in this chapter. Along with participants and role players, multiple ‘phantom’ user accounts were logged in and set to appear to be sleeping. This was done in order to reduce the social sparsity in the environment during the activity period.

### 7.3.2 Task

Participants were asked to collaborate and discuss ideas and topics for a new student handbook. They were given several questions to guide discussions during the activity period:

- What information should be included and why?
- What information did you find helpful when you first came to university?
- What information did you wish you had when you first came to university?
- What factors do you think are most important to providing a good first year experience? How can these be included or emphasized in the handbook?
Participants were told that they could use the environment in any way they chose in order to collaborate and discuss ideas. Two researcher observers were logged in and visibly present in the environment, but did not interact with the participants or role players. The activity session was recorded using Morae, a screen video capture application that captured the environment as viewed from the researcher observer’s perspective.

7.3.3 Questionnaire

After approximately 40 minutes, participants were told to log out. Participants were gathered and brought back to the meeting room where they were given a brief questionnaire. The questionnaire consisted of 11 questions, and is available for review in the Appendices section of this thesis. Participants were asked to rate their awareness of both reputation ratings and experience ratings during their interactions in the activity period using semantic differentials. Participants also rated the usefulness of the reputation voting system. Other multiple-choice questions dealt with if and how they used the features of the environment: Did they use the reputation voting system to reward, or punish behaviour? Did they add people to their friend list? Did they prefer to chat using primarily the avatars and chat bubbles, or primarily through the chat panel? Did they readjust the position of their avatar depending on the position of others they were interacting with? Finally, they were asked for their gender and age. The questionnaires were used to gain an understanding of how participants made use of the environment, and to gather their opinions on the experience and reputation systems.
7.3.4 Post-Activity Discussions

After the questionnaires were complete, participants were asked general questions that guided discussion and allowed participants to offer insight and explanations on behaviours, situations and experiences that occurred while using the environment. Questions used to guide this discussion can be found in the Appendices section of this thesis. The discussion format allowed us to seek clarification and respond to comments and opinions with follow up questions, allowed differing perspectives from participants to emerge in the discussion, and allowed us to verify if consensus on specific topics or points of interest was held by all participants in the session. Questions used to guide the discussion were focused on five areas of interest: the effect of reputation and experience representation on social interaction; reputation voting behaviours and decisions; the befriending process; avatar movement and proxemics; and the effect of activity and social cues on interaction. Participants were also invited to share comments and ask any questions they wished to discuss with other participants and with the researcher. The discussions lasted about 35 minutes in each of the three sessions. Discussions were audio recorded. After all three sessions were complete, role players were also brought in for a similar guided discussion. Questions used to guide this discussion are available for review in the Appendices section of this thesis. This discussion lasted about 85 minutes. As the role players were the only participants in the study that were present for all three sessions, they had a unique perspective. They had the opportunity to observe patterns of behaviour across all of the sessions. This discussion was also recorded.
7.3.5 Participants

The data collected in this study was based on the contributions and observed actions of 20 people. Fifteen of these people were naïve participants who were new to *ReciproCity*, and five were role players who had pervious experience with the environment and were aware of the simulated nature of the user study that the participants were immersed in. Both participants and role players were paid for their participation in this study. While we did not collect data about the age of our role players, four were second or third year undergraduate students, and were male. The fifth role player was female, held a postdoctoral research position at a local university, and was older than other role players and participants in the study.

We gathered information about our participants from the questionnaire data that was collected. A total of 15 participants were involved in the study and completed questionnaires. Of these 15, 11 were male and 4 were female. Participants for the user study were recruited through calls for participation that were sent out through two student email lists. The first of these mailing lists included first and second year students who were currently enrolled in at least one first year technology-based university course. The second list reached graduate students of an interactive arts and technology program. It is a fair assumption to believe that these participants were all technologically savvy, and quite familiar with online social environments. The average age of the participants was 21.67 years. However, only four of the participants were older than 21, while ten were 19 years or younger. We believe that 11 of the participants were undergraduate students, and 4 were graduate students.
7.3.6 Role Players

The role players were each assigned a behavioural persona, and had specific reputation and experience ratings assigned to them. Each of the role players was told whom the other role players were, and which role each was to take on. The roles were selected and constructed as personae that would best allow us to explore specific social situations, and observe the behaviours and reactions of participants immersed in these situations. The role players were prepared for the user study and their role-playing behaviours, and had explored and become familiar with the environment before the user study. While each role player was given a description of a persona to act out and some specific social situations to enact upon participants, the actual performances and much of the identity details that role players presented to others during the sessions were determined by their own subjective interpretation and by feedback given to them by the researcher after each session. There were five role players each with a specific role:

- Confrontational with high reputation and middling experience.
- Confrontational with middling reputation and middling experience.
- Friendly with low reputation and middling experience.
- Friendly with middling reputation and middling experience.
- Shy with middling reputation and middling experience.

Before each session, the role players’ reputation ratings were reset, removing any changes to their reputation rating that had occurred in the previous session. However, we decided to let each role players’ experience rating accrue across the sessions to see if a higher experience rating (in the later session) had any observable effect on interactions they had relative to the earliest session. All five role players’
experience ratings were much higher than participants’ ratings in all three sessions, making the avatars of role players visibly larger and providing participants with a noticeable cue that the role players were users who had previous experience with the environment.

Confrontational role players were instructed to act belligerently, bluntly, and aggressively. They were to engage in antagonistic behaviours: ridiculing what participants said, insulting other role players and participants, being sarcastic and caustic with other users and so on. They were also asked to be ‘annoying’ with their proximity and movement – attempting to place their own avatar on top of participants’ avatars, and running over or through other avatars. Confrontational role players were also asked to use private messaging in specific ways: once in engaged in normal conversation with a participant or a group of participants, they were to engage in private conversation with another user while the participant(s) were speaking; and sending insults to a participant via private message. Confrontational role players were also told to use the befriending feature in a specific way: they were to engage a participant in a rude or insulting manner, and then follow up the confrontational exchange by adding that participant to their friend list and telling them that they had done so: “I just added you to my friend list. Now we’re friends.”

Friendly role players were instructed to behave amicably, to introduce themselves and behave politely, to be talkative and to be supportive and agreeable towards the ideas and contributions of participants. Friendly role players also were tasked with keeping discussion and interaction going by prompting participants for
clarification on ideas, by making friendly suggestions and by extending conversation to participants who were not actively participating. These two role players were also asked to engage in ‘playful’ avatar movement (dancing, games of tag and so on), to be cognizant of proximity with others’ avatars, and to attempt to maintain a comfortable social distance with participants with whom they were interacting. Friendly role players were also told to ask participants with whom they had engaged in friendly conversation if they could add that participant to their friend list.

The shy role player was instructed to keep his distance from people, and to appear shy and quiet. This role player did not start conversations or introduce himself to others. He was instructed to approach other groups that were engaged in conversation, but to distance himself further than the users in the group were distanced from each other, and to often follow groups or individuals around the environment if and when they moved their avatars. This role player would respond to others when addressed, but was instructed to keep answers brief. He was instructed to add participants to his friend list after following them around for some time, but not to fully interact with them or engage in conversation with them. This role player was also instructed to try to start private conversations with participants whom he had not had any previous interactions with.

The role players’ assumed behavioural personae and reputation ratings allowed us to explore a variety of situations and participant behaviours. For instance, one of the confrontational personae had a high reputation rating, which would be counter-intuitive to the expectations that a participant may have of that user. We were interested in
observing the reactions of participants who encountered behaviour that did not match the reputation rating of that role player – confrontational, aggressive behaviour from a user with high reputation, or friendly, supportive behaviour from a user with low reputation. We wanted to gain an understanding of how participants would perceive and react towards the aggressive behaviour displayed by a role player, and if those perceptions or reactions would be different towards users who had very different reputation ratings. Similarly, we were interested in observing how reputation voting would be used: Would users use the reputation system to reward or punish behaviour? Would there be an overall tendency towards rewarding positive behaviour, or punishing negative behaviour through the reputation voting system? Did the existing reputation ratings of role players influence how the reputation voting system would be used? For instance, would one who already had high reputation be rewarded for positive behaviour less than one who had low reputation? We were also interested in seeing if participants felt any obligation to add one of the role players to their friend list after being informed that the role player had added them, or wanted to add them, to their friend list. We also wanted to observe how participants received (and whether participants noticed) aggressive and amicable movement and positioning behaviours.

In addition to these situations brought on by role players, we were interested in how participants would use the features of the environment. Who did participants add to their friend lists, and why? What information would they post on their profile? We also wanted to focus on how participants positioned themselves in relation to other avatars, if they used movement in any way to express themselves, and if they exhibited
a tendency to use the avatars or the chat panel as their primary method to communicate with others.

7.3.7 Data Collection

Data collected in this study include: researcher observations, recorded as descriptive notes during the user study activity sessions and as reflective notes taken in between and after each session; screen capture video of the activity in ReciproCity during each of the three sessions; audio recordings of all post-activity discussions with participants and of the discussion with role players; questionnaire data completed by participants; and records of the ReciproCity system log which archived all movements, actions (such as reputation voting, changing profile information or adding users to friend lists) and textual interactions performed in the environment. The triangulation and multiple methods of data collection in this study strengthens reliability and internal validity, and allows us to understand the observed behaviours, experiences and phenomena from more than one standpoint (Merriam, 1998). In the following sections of this chapter, the collected data will be described, interpreted and discussed.

7.3.8 Analysis

Analysis of the data collected was an ongoing process that occurred throughout the user study and continued after all data was collected. All data was coded, interpreted and analysed solely by the researcher. The analysis and interpretation of data involved writing observational notes and asking analytical questions. These questions were often posed directly to participants, but they were also used to inform
the researcher’s interpretation of the data collected. The researcher had spent prolonged time in the environment, had developed an in-depth understanding of the behaviours and activities under study, and was familiar with the common ways that users had acted and had used the environment previous to the user study. This allowed the researcher to articulate specific areas of focus to address in the user study. As the user study had been designed with several key areas of focus in mind, the researcher had some pre-determined activities, behaviours and participant reactions to look for while observing the activity sessions, along with the questions used to guide the post-activity discussions. This allowed for findings to be easily categorized. Data was organized chronologically and categorically during analysis.

The primary data source used in the analysis was the audio recordings of the post-activity discussions. The discussions were reviewed several times in order to identify patterns and themes from the perspective of participants and role players, using the responses of participants and role players across the four discussions. The video of the activity sessions, along with the researcher’s observational notes, were also reviewed with these themes in mind, and particular relevant interactions between users were re-examined in order to verify participants interactions, behaviours and reactions. Similarly, the system log was reviewed in order to verify and articulate information that was suggested by either the discussions or the video. For example, the log provided concrete evidence of the participants’ voting behaviours, and offered up information (the precise value of the vote, the number of votes cast, and so on) that was unavailable
from other sources. Data sources were reviewed and compared repeatedly, in order to understand and explain patterns and themes.

7.4 Results

This section describes the data collected during the user study. Specifically, we will be focusing on points of interest from the observational notes, videos, and recordings of discussions from each session, along with the recording from the role player discussion and the results of the questionnaire. Because our focus is on the thoughts, opinions and experiences of participants and role players, direct quotes will be relied on heavily in this description of results.

7.4.1 Session 1

During the first session, the participants spent about half the time discussing and brainstorming ideas for the student handbook, and the other half exploring the space, engaging socially in chat and activity that was unrelated to the assigned task. Of the three sessions, this group seemed to be most interested in having fun, but also were most able to bring the focus of the social activity back to the task at hand. This group used the post board as a means of keeping a list of ideas for the handbook, which seemed to make it easier to review the ideas they had come up with already and return their focus as a group to brainstorming. The session started with people engaging in several behaviours: Some people were interested in saying hello to everyone, but not really to any one individual in particular. Other people quickly moved around to explore the environment, to view the images or to explore the functional features such as the
friend list or profiles. After a short period of such activities, users and role players started to interact, and several smaller groups emerged. In some cases, role players would approach a participant and start interacting with them, and then another participant would approach them and join the conversation.

7.4.1.1 Discovery

When asked what information was used when deciding on whom to interact with, participants offered several responses. User names were viewed as a deciding factor on whom to chat with. Three of the participants agreed that they avoided users who had pseudonymous screen names - which they described as “geeky” and “immature” – and preferred to speak with people who used their first names. The other two participants disagreed, and felt that users’ names did not matter and did not influence their decision to approach someone or not. Experience was also cited as information that they used when deciding whom to interact with: “I approached people who had larger circles because I knew that they had used the site before and had already brainstormed ideas.” One of the participants said that they never had to make any decisions on whom to interact with, as users approached them. They would respond and continue to interact with others, but had never initiated interaction with other users. Another reported low reputation as a reason to avoid a user: “I would run away from them, because they must have done something bad to someone to get such a low reputation.”
7.4.1.2 Reputation

The explicit representation of reputation rating made some of the participants want to engage in positive behaviour – which they perceived as being productive and keeping on task – in order to gain a visibly high reputation rating: “I wanted to have a dark green circle – seeing another user with a large, dark circle made me want to come up with good ideas and get involved in the conversation. I asked one of the [users who had one of the] larger circles what I had to do to get a darker circle.” This was accepted by all five of the participants as one of the ways that the reputation system in ReciproCity had influenced their behaviours.

Of the five participants in the first session, four had made reputation votes on other users. When asked why they used it, there were several answers. One participant said that at first, he used it “just to try it out and see how it worked” and then after that used it when someone had an idea that he agreed with or thought was good. Other users reported using it as a mutually beneficial trade: “If you vote me up, I’ll vote you up.” This reinforces the idea of having a visibly positive reputation rating as something that is socially desirable, serves as a status indicator, and something that participants wanted to attain – even if it meant using the reputation voting system subversively. Other participants reported using the reputation voting system in order to punish negative or unwanted behaviours: “I used it on someone who was being really rude, and I [asked] other people to vote them down too,” and “I had a stalker, so I gave him a low vote.” The one participant who had not used the reputation voting system said that he did not use it because “I really didn’t have a reason to. But, I like the idea of it.” When
asked to clarify this comment, he said: “I think it’s a good idea to be able to give people some sort of feedback that other people can see – if they are nice, or if they are [mean]. I just didn’t feel comfortable using it this time, but I think if I used this site a lot I would start using it more.” The other participants agreed that with more use of the environment, the reputation voting system would likely be used more frequently than during their session.

There were 17 reputation votes made by 4 participants in the first session. Of these votes, 6 of them were positive and 11 were negative. When asked if they thought people would be more likely to use the reputation voting for punishment or for reward, the opinions of the participants were split. Two of the participants said it was more likely that it would be used for negative votes. One said this was because people were more likely to notice and act on bad behaviour rather than good behaviour. The other believed that it would be skewed towards the negative because it would be used heavily for trolling purposes: “people will just ‘neg rep’ others for no real reason.” Two other participants said it was more likely to be used to reward good behaviour because “people would give high votes to their friends and people who they would want to spend their time with in the space anyway,” and because “everyone wants to have high reputation so people would just be overly generous.” The final participant said that it all depends on what people are doing in the space and for what purpose people are using it for. She believed that it would be used for both punishment and reward and it would depend on “how people were acting and how well they knew each other.” The other four participants agreed with her, conceding their earlier statements.
It is also worth noting that the reputation of all five role players changed during the first session. Both confrontational role players’ reputation ratings dropped. The one who had started out with high reputation (+52) had dropped to middling reputation (+8), and the role player who had started with middling reputation (0) had been voted down to low reputation (-22). The shy role player – who was perceived as a stalker – also ended up with a reduced reputation rating, dropping from 0 to -17. Both friendly role players ended up with higher reputation ratings by the end of the session. One had started with a rating of -30 and ended up with a rating of +12, while the other had started with a rating of 0 and ended up with a rating of +22.

7.4.1.3 Avatar movement and proximity

All five of the participants moved their avatars around the space during the session. Compared to the other sessions, these participants engaged in a lot of movement both in terms of moving from location to location in the environment and clustering in groups, and also in terms of moving their avatars when they were in group formations. When asked why they moved their avatars, participants responded with several motivations: to explore the space; to “meet” people at a specified location (“someone said ‘let’s meet at the library!’ and a bunch of us moved there,”); to be closer to a group of people or to get away from someone; to engage in playful movement like “dancing” or games of tag. Some other responses were a bit more unexpected: “When there were a lot of avatars around me, it was hard to tell which one was me, so I’d move my avatar around just to figure out which one I was.” Another participant described being ‘sucker punched’ by a user. “Someone ran over my circle while saying ‘sucker
punch!’ After, they told me that they had stolen my wallet.” Another participant again described being followed by a stalker – it was the shy role player being described as a stalker – and this participant moved all over the environment to attempt an escape: “Someone kept following me around. I felt like he was a stalker, and I told him to go away but he didn’t.”

In ReciproCity, participants have two methods of communicating with others. They could chat using the avatars in the map environment where messages would appear in chat bubbles above avatars, or they could open the chat panel and use the environment in a similar manner to a traditional text-based chat room. When asked which they preferred to use, all five participants reported a preference for the avatars over the chat panel. All of the participants reported using the chat panel only when sending or receiving private messages, or when they wanted to review the transcript of conversations. One participant said that they kept the panel closed almost the entire time, because “it got in the way of the real chat – I was only interested in what the people around me were saying anyway.” Another participant indicated that he “only paid attention to the avatars and the space rather than the panel because it felt like being in a room with them. I could stand near them, I could follow group conversations through the speech bubbles, I could use the profile and see their reputation and everything. It just felt more comfortable that the panel.” The other participants agreed with this statement.
7.4.1.4 Befriending

Of the five participants, three added users to their friend list. When participants were asked why they added users, one responded that he figured out who two of the users were in real life (he managed to identify two of the role players who happened to be classmates of his) and so he added them. Another participant said he added people just to try out the friend list, while another responded that she added a user because “I talked with them for awhile and they seemed nice.” One of the two participants who did not add anyone to their friend list said that he did not bother adding anyone “since I knew I wouldn’t be using this system again. I didn’t see the point in adding anyone.” The other believed that the friend list was not worth using, since it did not have any functional significance: “There was no additional information I could see or any features I could access by adding people to my list, so I didn’t see the point.”

However, he and two other participants all acknowledged the representational significance of the simple friend list system. When asked if they think that one should have to approve another user’s request to add one to their friend list, they responded that yes, you should have to approve being on someone’s friend list. “Even in this system where it’s just your name appearing on their list and they don’t see any more private information than normal, I don’t want my name on someone’s list unless I think it’s okay.” The other two participants said that they did not care if someone put their name on a list. “It’s not like other sites where it’s a problem with privacy and they can see my information. It really makes no difference with this site.”
7.4.2 Session 2

Relative to the other sessions, participants in the second session seemed to stay on task for the most time. However, a great deal of the interactions that were observed in the space were not task-related. Once the interactions between participants and role players in this group moved focus away from the handbook discussion, it seemed far more difficult for these participants to get back on task compared to the first group. The session started in a similar manner to the first group – open introductions to the entire group, avatar movement around the space, participants changing information in their profiles and friend lists, followed by initiated conversations between users. Rather than several smaller clusters of users, this session started off with most users in one larger group that gathered around one of the images in the environment. Participants and role players again displayed a grouping behaviour, spacing themselves evenly in a circle-like formation.

7.4.2.1 Discovery

Two people in this group cited user names as criteria they used when deciding whom to interact with. Again, these participants felt that users with “real names” as opposed to pseudonyms were more approachable. One participant reported that users with screen names “made it seem like they were just there to goof around.” One of the other participants - whose username was a pseudonymous screen name – disagreed with this, and said that many people, including himself, used the same pseudonym on many different online environments and were not trying to “hide” behind a false name. He believed that his pseudonym was likely to be more recognizable, and more likely to
be attributed to him online than his real name would be. He and two other participants said they were not able to identify what information or criteria they relied on to decide with whom they would interact, and that they never consciously made those decisions. In response, one participant said: “we were all just in a big group most of the time, and we all just spoke to everyone, addressing the entire group. I don’t think I ever thought about why I spoke to someone in there.”

7.4.2.2  Reputation and experience

When asked specifically about the representation of reputation and how it affected interactions with others, or expectations they formed about others, it started a discussion among the participants that covered many perspectives on the issue. Initially, one participant said that reputation ratings did not affect his interactions: “I could see the reputation [ratings of users], but I don’t think it had any effect on how I would interact with them. It just [indicates] how other people have interacted with them before.” Another participant replied to this idea, arguing: “I think it’s useful to know how other people have judged a person. I don’t think it makes me automatically assume that someone is going to be horrible [if they have a low reputation rating] but it also would make me ignore them right away [if they behaved badly] rather than giving them a chance [which I would do] if they didn’t have a bad rating.” Another participant said that he could not take reputation systems seriously, “especially in forums and chats and places like this.” When prompted to explain why, this participant said that reputation systems are “too subject to ‘griefing’ [abusing, only casting negative votes], and the ratings probably do not provide an accurate representation of someone’s behaviour or
personality. All it takes is a few people who don’t take it seriously and abuse it, and suddenly, people’s ratings don’t mean anything anymore.” Another participant disagreed, and argued that “It does affect how you see someone, even if people don’t take it seriously, or even if it’s not accurate, it’s too visible to ignore. Circles are clear or they are green, and you can’t help but make the connection, ‘oh, no one likes this guy.’”

The participant who felt that reputation systems were subject to grieving moved the focus of the debate to experience without any prompting by the researcher by replying “I disagree. I think that experience meant more to me than reputation, because it isn’t based on something random, it shows that a person has used the space and knows what they are doing.” While a couple of the participants expressed agreement about the nature of experience – but disagreed about its value relative to reputation ratings – another participant disagreed with the first point about experience: “Not necessarily. I saw a guy with a big circle but it was completely clear. To me that means he’s been around [using the environment] for awhile, but he’s probably been [engaging in negative behaviour] the whole time.” Other participants agreed with this logic. Another participant had a slightly different interpretation of low reputation, associating it with being off-task: “A clear circle means that they were probably fooling around the entire time and not contributing, but doesn’t mean that they were mean or that they are [engaging in negative behaviour].” One of them said that for both experience and reputation ratings, “I didn’t really think anything about it unless it was extreme - really clear or dark, or really big or small. I figured most of the people in there were in the middle and just sort of normal like me, not ‘good’ or ‘bad’ like [other participants are
indicating]. I think we are trying to put everyone in one category or the other, when most people aren’t in those extremes.”

When asked if either reputation or experience ratings affected how ‘approachable’ a user seemed to participants, the participant who believed that reputation systems were ineffective due to griefing contradicted his earlier statements by stating that reputation “didn’t make people approachable, but it affected what kind of information and the quality of information that I would expect from them. It’s more about credibility and quality in my opinion.” The participants continued to debate the significance of reputation and experience, but were not adding any new insights so I prompted them to move the focus of the discussion to how they used the reputation voting.

According to the system logs, all 5 participants used the reputation voting system, and cast 22 votes between them. Of these votes, 14 were positive and 8 were negative. When asked why they used the reputation voting system, one participant said that he initially used the system “on a whim. I saw someone with high rep and I voted them down, just to use it. After that I used it properly a few times, when conversation started straying away from the handbook and some people were just acting ridiculous[ly], I tried to lower their rep, and I’d also vote up people who were trying to stay on task or had good ideas.” Two other participants agreed with the idea that reputation voting was used primarily as a way of rewarding staying on task and contributing good ideas, or for punishing the lack of focus rather than for rewarding friendly behaviour or punishing unfriendly behaviour. The other two participants used
the reputation voting to punish rude or unfriendly behaviour, or for rewarding people who were friendly: “I lowered a few people’s reputation because they were rude and being mean – not even to me, but to [another participant]. They were picking on them.” The other participant said: “I gave out a lot of positive votes to people who said hi to me or who were nice to me from the beginning. I was hoping that people would also vote for me so that I could get a darker circle, but my reputation didn’t go up very much.”

In the second session, 4 of the 5 role players’ reputation ratings changed. Both confrontational role players saw their reputation ratings fall (from +52 to +18, and from 0 to -16), and both friendly role player’s reputation ratings ended up slightly elevated, moving from -30 to -6, and from 0 to +20 respectively. The shy role player did not receive any votes, and maintained a reputation rating of 0.

When asked if they felt that the reputation voting system would tend to be used more for punishment than reward or vice versa, four of the participants agreed that it would likely be used for punishment more frequently than as a reward. When asked why, there were several responses. One participant said “well look at us – especially towards the end [of the activity session] we were so off-topic, everyone was joking around and there was a tendency to not take it seriously, and ...people would be more likely to lower reputation because it was too easy to play around [in the environment].” Another participant added to this: “even if playing around and getting off-topic was okay, if we weren’t in the space to brainstorm, but just to chat, people just get enjoyment out of putting people down. It’s almost competitive, it’s like ‘I look better if everyone else is lower than me.’” The one participant who disagreed with the other
four, and felt that the voting system would be used more frequently to reward users
countered this statement with: “But if everyone is voting negatively, then no one will be
higher.” Another participant replied, “that’s true I guess, but I still think that people
would lower reputation more than they’d raise it.” The participant who had stated that
it would be used for reward then stated that voting would be affected by “how the
system was used. If it’s just a chat or a game, then people may not reward good
behaviour, but punish bad behaviour. But, if it’s task oriented and it’s clear what the
goals are [for using the space], then people would find it easy to reward good
contributions.” Looking at the voting behaviours of the participants in this session, it is
interesting to note that there were more positive reputation votes than negative ones.

The discussion then moved to focus on how the voting system could be
improved. Three of the participants felt that it would be beneficial to have a
commenting system along with the vote, so that people “had to explain why they voted.
They’d have to leave a comment that would justify the vote in order for the vote to be
submitted.” The other two participants felt that if this commenting system were
implemented, that no one would vote. “It would make it too much effort to vote. No
one would use it. It’s good because it’s easy and you can see the result of the vote right
away.” All five participants agreed that there should be a better notification system that
visibly indicates or warns you that your reputation rating has been changed. “I’d like to
see a message or something that would tell me right away when someone had voted on
me. That way I could figure out maybe why they had voted on me, maybe for something
that I had just done or said.” Another participant added to this “I could tell when my
reputation was different than before, it would change colour, but I had a hard time figuring out exactly when it had happened – did I just notice the change now even though it happened a couple minutes ago? If it told me as soon as it happened it would be helpful.” One participant suggested that such a notification would also include the name of the user who had voted on you, along with the value of the vote. The other four disagreed with this, saying that people would not vote negatively as much if they were not anonymous.

7.4.2.3 Avatar movement and proximity

The reasons stated for moving during the second session were similar to those offered by participants in the first session: to explore the space, to get into groups and space avatars in a manner that allowed them to see everyone’s chat bubbles or profiles, dancing and other playful movements, moving to get other users’ attention, and so on. Again, several participants identified movement that was perceived as aggressive: “people were bumping into me and running me over. It bothered me, even though it shouldn’t.” Another participant did not see such behaviours (intentionally performed by confrontational role players to be aggressive) as a problem: “It didn’t bother me. [One user] kept running through me or tried to stand on top of me, but as long as I could read the chat bubbles [it did not bother me]. Maybe if [avatars] were bodies or faces it would have annoyed me, but they were just circles.” It is worth noting that while this participant would not acknowledge a need for comfortable social distance in the environment, she did always position her avatar close to the avatars of others when interacting with them.
Unlike participants in the first session, these five participants were split in their preference of using the chat panel versus the avatar and map environment to communicate with other users. One user preferred the chat panel because it allowed him to follow all conversations in the space rather than just the ones around his avatar. He also cited heavy use of private messaging as a reason for his preference. However, he said that a lot of the time he was ‘forced’ to use the avatars to chat because if he wanted to contribute to one of the conversations he was following in the chat panel, no one would pay attention to what he said “because they were only paying attention to the avatar chat, not looking at the chat panel to see what I was saying.” When this happened, he would find the user(s) he wanted to speak with and position his avatar close to theirs and then switch back to the chat panel.

Another user said he used both fairly equally. “I would switch between both: I’d scan around the space with the minimap, and find a group to join and at first I’d use the avatars to see their profiles and to start the conversation, or to move my circle to see [other people’s chat bubbles] better, but once I was involved [in a conversation] and didn’t need to move or see new people, I’d switch to the panel.” Another participant agreed with this strategy, but stated a preference for the avatars to chat: “The panel was better for just straight chatting. I guess I’m used to it from IM. But the avatars and movement was fun and I spent a lot more time using [the environment] that way. We spent a lot of time just interacting and playing, but not really talking about anything, especially at the end of the session. No one was brainstorming anymore. Maybe if we had just used the chat panel, we would have stayed on-topic more.”
7.4.2.4 Befriending

Of the five participants, four used the friend list feature. When asked why they added users to their friend list, participants had several responses. One participant added people who he thought were nice or funny, or were people that he enjoyed interacting with. Another participant added all of the users who had small circles: “I figured it was everyone here,” referring to all of the participants in this session. Another participant just added people arbitrarily, just to use the system.

Two of the participants had noticed (or were told by role players) that they had been added to other users’ friend lists. When asked if they felt obligated to add those users to their own friend list, one participant said that they did not feel any obligation at all. The other participant said that they did add the user in response to being added to that user’s friend list to be polite. However, she explained that the decision was contextually driven: “I added them because it didn’t really matter. I don’t normally use this site, it was just to be nice and to try out the friend list to see what happened. I didn’t feel obligated, and on Facebook, I wouldn’t have added this person.”

When asked if they think that being added to another user’s friend list should require their permission or approval, four of the five said yes. The one who felt that the friend system in ReciproCity was fine as it was responded: “it depends on the implications of being friends, and what happens when someone is added. For this system, it didn’t mean anything, so it didn’t matter.” Another participant responded to this by saying: “well maybe it doesn’t matter, you don’t get anything extra by being friends with someone, but I think it should be my decision if it is my name going on their
profile, and not only their decision. I might not even know them, or I might really dislike them.” The other three participants agreed with this second statement.

7.4.3 Session 3

The participants in the third session spent most of their time off-task, and were the least productive group with respect to brainstorming. One of the participants ‘gave up’ about halfway through the session and logged off the system because he was frustrated with other users who would not stay on-topic. He eventually returned to the environment, but was very inactive and did not engage socially with the other users. This group used the post board heavily, however most of the posts were meant to be humourous and some were even aggressive and meant to tease or taunt other users.

For this session, confrontational role players were asked to become more confrontational and aggressive, and unlike the previous sessions, their behaviour seemed to set the social norm for this group rather than the friendly role players. This resulted in lots of playful banter and teasing, and compared to the other sessions, the third session was more unruly and social interaction was less cohesive and less frequent.

Users were spread out more, there were more pairs rather than groups, and there were more instances of participants positioning their avatars alone at times throughout the session relative to the other two sessions.

7.4.3.1 Discovery

Participants indicated that they were attentive to several criteria when deciding whom to interact with. Gender, age and personal messages in profiles were cited as
useful. One participant said that they used this information to attempt to figure out which user was which person in the participant group whom she had met in the introduction and walkthrough. Another participant replied that while gender and age was nice to know and influenced how he would interact with a user, he did not feel that profile information was very useful because “no one ever says anything important” in profile messages. Two other participants both said that they did not really pay attention to any sort of information when deciding with whom they would interact with, and that they just “spoke with whoever was around.” One participant also reported using experience as the primary criteria for interacting with users, because he associated experience with “being talkative” and so tried to initiate or join conversations with users who had higher experience.

7.4.3.2 Reputation and experience

When asked how about reputation representation and what influence reputation ratings had on their interactions, this group had very little to say. They felt that reputation ratings did not affect how they viewed users, and it did not give them any expectations of users. Participants were then asked how they thought users with high or low reputation ratings were assigned those ratings. They acknowledged that the users’ reputation ratings were indicative of positive or negative votes, and that the user had probably engaged in some sort of behaviour – positive or negative – to earn those votes. They were then asked: “So knowing that those users had likely shown a pattern of positive or negative behaviour in the past does not influence how you interact with them, or even your expectations about how they would behave?” Their responses were
still that the ratings did not affect their perception or expectations of users. One participant explained: “just because someone acted that way before, doesn’t mean that they will again.” Another referred to the group of participants’ behaviour in the session: “we didn’t stay on task and some people were [misbehaving], but that doesn’t mean that we always would act [that way] or that we should be branded as trolls.” Another participant replied that this statement implied that he viewed a low reputation rating as an indication that a user is a troll. While this comment was meant to be humourous, it was an interesting observation.

This group of participants did not use the reputation voting system as much as other groups. There were 9 reputation votes made by 4 participants in this session. Of these votes, 5 of them were negative and 4 were positive. One participant cited a good sense of humour as a reason for a positive vote. Another participant rewarded the contribution of an idea for the handbook with a positive vote. Other participants had made negative votes because of rude behaviour. One of these participants said “I liked seeing changes in people’s avatars, so I voted a couple times when someone bothered me. It became a visible talking point and I told one guy after I lowered his reputation ‘oh no, your circle is clearer now, what did you do?’ I think it just made him act worse.” One participant did not use the voting system because he assumed “just my vote alone wouldn’t have any effect on their reputation, it would take everyone to vote to make them clear.” Another participant responded: “but if no one votes, [the system] doesn’t work. Even if it did take everyone [to lower that user’s reputation], we’d all be voting at separate times and it all adds up, it doesn’t happen at once.” Another participant noted
that they had cast a negative vote on someone who “kept following me around the space but never said anything to me.”

The focus of the discussion then moved towards a critique of the reputation voting system. One participant described the reputation system as useless: “Even if everyone voted one person very low because they were a troll, there are really no consequences for them.” Another participant suggested that they have capabilities stripped if they get too many negative votes: “If they became mute or couldn’t do something anymore, it would be a better way to get good behaviour rather than just giving them a clear circle.” While a couple of the participants agreed, another participant argued: “if you [limited] people’s ability to communicate, you’d never get anyone to stay on the system. As soon as they got a bad vote they’d log off, or maybe register another account.” It was interesting to see this group of participants discussing this exact issue that was faced in the design process of ReciproCity. One participant also suggested a system where you had to somehow earn votes that you could cast on other users: “that would make each vote more meaningful, and people wouldn’t be able to abuse the voting system.”

Similar to the last two sessions, role players experienced reputation changes. Again, both confrontational role players’ reputation dropped (from +52 to +13, and from 0 to -14), and both friendly role players’ reputation increased (from -30 to -7, and from 0 to +13). The shy role player’s reputation rating also decreased, from 0 to -16.

Participants in the third session all felt that the reputation voting system was more likely to be used for punishment than reward under normal use, although all five
felt that there were more positive votes than negative votes in the session. When asked to explain why they felt their experience in the session differed from ‘normal’ circumstances, one participant explained: “we all knew we weren’t going to be on here again after the session so it didn’t matter. Why punish people when you aren’t going to see them again? It’s easier to just ignore bad behaviour and have everyone get along for 30 more minutes.” Another participant added: “if it were something we used all the time, it would be punishment [that would be used more] since on forums and chats, it’s the bad behaviour that stands out a lot more than good behaviour.”

When participants were asked about how the representation of experience influenced their interactions or expectations of users, they started describing the role players. One participant started the conversation by stating: “the people with the biggest circles were the ones who were always going off topic.” Someone else responded that not all of “them” were behaving that way: “One of them kept trying over and over to get [everyone] to talk about the handbook.” After this, they described each of the role players and their behaviour. The confrontational role players were depicted as a “jerk” and a “clown,” while the friendly role players were described as “friendly and fun” and “trying to get everyone focused.” At this point, the participants also tried to recall the role players’ reputation rating, and accurately identified that there were mismatches between the ratings and the behaviours that they exhibited. This was intriguing not only because they were able to identify the behavioural roles that the role players were assigned, but it also demonstrated that they were acutely aware of the reputation and experience ratings of each of them, along with the
expectations that such ratings implied (despite their earlier comment concerning the influence of reputation ratings on their expectations).

7.4.3.3 Avatar movement and proximity

The avatar movement displayed and described by participants in the third session was very similar to that already described by participants in the previous two sessions: moving avatars to grab people’s attention; dancing and playful movement; being ‘stalked’ by the shy role player and trying to move away from him; bullying and aggressive behaviour through movement and by repeatedly positioning avatars too closely.

When the participants were asked about why they positioned the avatars the way they did with those that they spoke to, there were some interesting responses. The discussion began with some expected responses – avatars were positioned in such a way so that participants could see others’ avatars and chat bubbles, and participants adjusted the position of their avatars when a new user joined the circle of conversation. However, one participant described how this was done: “we tried to space ourselves comfortably with each other, about 3 or 4 feet away from each other.” The response to his answer was that the screens were only 15 inches in size, so such a spacing would not be possible. The participant was asked to clarify what he meant. His response was “I guess I’m relating it to the real world, as if we were all standing around and talking with each other. I guess that’s what I think a comfortable distance would be.” All of the other participants but one agreed with this statement. The one participant who did not agree
felt that it was only a matter of seeing the chat bubbles that determined where he positioned the avatar rather than an adopted sense of comfortable social distance from face-to-face interactions. This spurred the discussion on, with one participant stating that “we all wanted to be close to a group. Even though I hardly used the avatar to chat, I noticed when I became isolated on my screen and moved closer to someone else, even if it wasn’t someone I was talking to on the chat panel.”

This group of participants had a range of opinions when it came to preference between communicating using the avatars versus using the chat panel. One participant said that she liked to use both, and would switch back and forth between the two modes. Another said that he used both, but primarily used the chat panel: “I preferred using the chat panel because I’m used to that in [IM], but you really had to use the avatars too, or else you’d miss out on a lot like movement and reputation.” One participant said that he didn’t like the chat panel, and that he barely used it at all because it was “just easier to just use the avatar to chat.”

7.4.3.4 Befriending

Only two of the five participants added users to their friend list in the third session. One of these participants said that they added everyone they could, and said they did so “just to try it out.” Another participant added a user because “they were friendly.” Another participant said he did not add anyone to their lists because he did not know anyone well enough. Another participant asked people if they wanted to be her friend but no one said yes, so she did not add anyone.
When asked about the friend system, and whether or not they should have to approve another user’s request in order to appear on that user’s list, the participants offered a few answers that were similar to those from earlier sessions. One participant responded that having their name on a list did not bother them, and that he would be more concerned if people could see personal information without their permission. Others felt that it should be their decision to have or not have their name on someone else’s profile, and that is was “weird that I can’t control who says they are my friend.” One other participant argued that it was not just about control and permission, but also about “seeing some sort of notification so that I can keep track of who is my friend, or who wants to be friends with me.”

7.4.4 Summary of observations

Below is a table that summarizes the observed behaviours, opinions and activities of the users (or, in some cases, role player activity that participants observed) across all three sessions.
Table 7.1: Summary of observations across 3 activity sessions

<table>
<thead>
<tr>
<th>Categories of Observations</th>
<th>Session 1</th>
<th>Session 2</th>
<th>Session 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task oriented behaviour</td>
<td>Half of the time spent on task.</td>
<td>More than half the time spent on task.</td>
<td>Majority of time spent off task.</td>
</tr>
</tbody>
</table>
| Information used to inform discovery | • User names  
• Experience ratings  
• Reputation ratings  
• Age  
• Gender  | • User names  
• Experience ratings  
• Reputation ratings  | • Gender  
• Age  
• Personal profile message  
• Experience ratings |
| Reputation ratings         | • Viewed as socially desirable  
• Encouraged positive behaviour through accountability | • Viewed as indicator of past behaviour  
• Subject to abuse; may not be accurate representation of a user  
• Represents credibility and quality of contributions | • Viewed as indicator of past behaviour  
• Participants claimed ratings did not influence expectations or interactions  
• Suggested that it did not provide accountability |
| Experience ratings         | • Associated with knowledge of environment and task | • More reliable than reputation  
• Associated with expertise on the environment and task | • Associated with being talkative |
| Reputation voting          | • 4 of 5 participants voted  
• 17 votes total: 6 positive, 11 negative  
• 2 of 5 felt it would be used more for punishment | • All 5 participants voted  
• 22 votes total: 14 positive, 8 negative  
• 4 of 5 felt it would be used more for punishment | • 4 of 5 voted  
• 9 votes total: 4 positive, 5 negative  
• all 5 felt it would be used more for punishment |
Avatar movement and proximity

- All 5 moved
- Used to: explore; be closer to or further from others; play (dance, tag); differentiate self from other avatars; aggressive behaviour

Avatar versus chat panel

- 5 of 5 preferred using avatar to chat over the chat panel
- 1 of 5 preferred chat panel
- 1 preferred avatar
- 1 stated no preference (equal use)
- 2 were not sure

Befriending

- 3 of 5 added friends
- 4 of 5 added friends
- 2 of 5 added friends

7.4.5 Role player interview

After all three sessions, the role players were led through a discussion by the researcher. Questions that were used to guide the discussion were similar to those used in the post-session discussions with participants. While role players noticed many of the same patterns and shared many opinions with those expressed by participants of the three sessions, they also had the opportunity to see patterns across all three sessions.

7.4.5.1 Discovery

The discussion began with how they felt about the social information that was represented in their avatars and profiles, and if such information affected how participants interacted with them. The role players brought up a few specific examples of times where they could identify that such information had a direct effect on their
interactions. One role player had set her age to 88, and was surprised by how much attention it drew. While this role player was older than all of the other participants and role players, she was not 88. Several participants approached her about her age when it was listed as 88 and were suspicious that not only was she lying about her age, but implied that she was lying about other information on her profile as well.

Another role player noted that users had treated males and females very differently in the space. “The guys were much more polite to the girls. I was contemplating changing my gender for one of the sessions to see if people treated me differently.” Unfortunately, this role player did not try switching genders for one of the sessions – it may have yielded some interesting results.

7.4.5.2 Reputation and experience

Much of the discussion focused on the reputation and experience ratings: how they were perceived, how they influenced interactions, and how the implementation of these systems could be improved. One role player said that it was difficult to know if the social information in the profiles did have an effect on how the participants interacted with the role players. He believed that “it takes awhile” for people to really grasp the meaning of persistent social constructs such as reputation and experience, and to grasp how an online community understands them or uses them as a group: “social norms take time to develop.” He felt that they need to be established over time in order to really have an effect on interactions, and that participants simply did not understand what reputation and experience ‘meant’ to the rest of the group. In these sessions,
there was no established and universally understood way that reputation was used. He also stated that participants were unable to get a sense of the full range of reputation or experience ratings in one session, which may have limited the influence that such ratings had on interactions.

The friendly role player with low reputation noted that while he believed reputation ratings could influence interactions and expectations that users would put on each other, he also noted that “it was not just the reputation that people paid attention to. It was viewed in relation to how you were acting.” This perspective was likely shaped by his own experience of seeing his friendly behaviour being rewarded with positive votes in each session, despite him starting each session with a very low reputation rating.

There was also some debate between role players on whether or not reputation had any influence on their perceived approachability: “Even though I had high reputation, I didn’t find that users were approaching me, which I thought would have been the case since I had higher rep than everyone else.” Another role player noted that the participants were not really approaching any of them very much during any of the sessions. “I found that we [role players] did all of the initiating [of] conversations, and [the participants] were shy and looking around at the beginning of the sessions, they didn’t want to start conversations or brainstorm right away.” Another role player suggested that having high reputation or experience would have the opposite effect – that it made them less approachable: “I think that [participants] would be more likely to speak with [users] who had lower reputation and experience than with us, since they
might be looking to speak with people who were new to the system and were more like them.”

The two role players whose reputation ratings were a mismatch to the roles that they played were both unable to tell if participants had identified the mismatch. While both were aware that they had received reputation votes that ‘suited’ their behaviours, they both noted that none of the participants had explicitly asked or commented about it. “No one asked me why I was mean but still had high reputation.”

Overall, the role players all felt that the reputation ratings would influence interactions in theory, but were surprised they did not see more evidence of this in the sessions. They attributed this to several factors, including participants having too short of a time spent using the system, participants not being used to the space or being able to create social norms and conventions around reputation ratings, and the fact that participants were often busy exploring the space and the communicative features of the environment.

The role players also noted several ways in which experience ratings – and the way that experience was represented in the avatars – influenced the social interactions they had with participants. Role players all agreed that participants immediately noticed the difference between the size of their own circles and those of the role players. One role player said that the experience representation “almost made it seem to the new users that we had some authority” in the environment, and noted that the participants seemed to feel that the role players had “a sort of ownership” over the environment. One of the role players – whose role was to keep people on task, and be friendly and
supportive – felt that the high experience level he had made his role easier to carry out.

“People actually listened to me when I made suggestions because I had this big circle. If I had a small circle [like the participants] maybe they wouldn’t have been ready to accept the sort of leadership role I took.”

The role players were also asked their opinion on whether users would be more likely to use the reputation system to reward behaviour, or punish behaviour. Four of them believed it would be more likely for reputation systems to be used to punish than to reward. When asked why, they offered answers that were similar to those offered by participants. One focused on anonymity: “It’s easier to be negative when you’re anonymous and you won’t be held responsible. If the system told you who voted on you, you’d probably see a lot more positive votes than negative ones.” Another commented on the seemingly competitive and selfish nature of online interactors: “People are competitive, and don’t want other people to have higher ratings than their own.” The cathartic nature of the act of punishment was also brought up, as one role player explained how negative reputation votes were a good way to vent frustration on a user: “It’s more rewarding to vote negatively on someone bugging you than it is to reward someone for being nice.” The one role player who believed that the system would be used to reward more often than to punish said that users would “vote up for people that they knew and liked, especially if it was a group that used the environment a lot. People wouldn’t vote down people who they interacted with [frequently], even if they were [behaving badly].”
The role players also discussed whether or not they felt the reputation voting system was a useful feature to have in online environments. While they all agreed that it could be useful, the extent of its usefulness would depend on the context of its use, the type of environment it was used in, and how it would be implemented. All five believed that it would be more useful in an ‘ongoing’ environment than it appeared to be in the short sessions of the user study. Two of the role players felt that it was not as suitable for some social environments as it was for other types of online spaces. In the context of the user study, one role player felt that the reputation system “was a negative thing, because it put prejudgment on people. If the point was to go in [the environment] and meet people and discuss things, then having a rating that makes people automatically assume you were good or bad wasn’t great [for that purpose]. In another setting,” like eBay or on recommendation sites for consumer services, “it would have been more useful.” The other of the two said that if the environment was being used for “a collaborative task, or a focused discussion, it could be very useful. But, if it were in a social place that was just about having fun or speaking with other people like an open chat room, then it wouldn’t have as much use.” Another role player responded to this statement in support of the reputation system: “but even in a social chat, you’d still want to know what other people thought. I wouldn’t want to speak with someone who I knew no one else liked.”

At this point, the discussion moved its focus away from whether or not the reputation system was useful towards what it was that people were rating when they used the system. Although the system was designed to be open ended, and users could
make positive or negative judgments using whatever criteria they chose, role players
felt that knowing what the ratings referred to would be important social information for
users. One role player asked: “does it mean someone’s ability to complete a task, or
does it measure [expertise] about something? Or, is it just a rating of how much you like
them? I think you need to use an environment for some time in order to understand
how reputation is used or [understood] by everyone in that [community].” Most of the
other role players agreed, but one replied “it doesn’t matter what it means or how a
[community] uses it, it shows [patterns] over time, and people would use it as a way to
know to either avoid or approach [users] and I think it would be useful, especially for
social purposes.”

Another role player used her experience using IRC and discussion boards to
explain her perspective on the issue of the ambiguous nature of the reputation ratings,
saying that some of the users she had encountered were very knowledgeable and could
draw on a wealth of expertise and were therefore respected in the community.
However, they were also very unpleasant or socially unskilled, and so there was some
ambiguity concerning the idea of reputation, and how it would apply to users like the
ones she had described. She restated the idea that the reputation rating would be more
useful if it was attributed – either explicitly, or implicitly through social conventions of
the environment – to a specific characteristic or criterion. To explain her point further,
she said that often, “the people who are not [the best behaved] are the most
interesting to speak with.” Having an ambiguous rating could tend to make users avoid
others who may in fact provide the best social experiences.
7.4.5.3 Avatar movement and proximity

Concerning movement and proximity, again the role players offered many observations and insights that were similar to those previously discussed by the participants. The two confrontational role players described their aggressive movements – running ‘through’ other users, standing too close, and even ‘sucker punching’ users – and the sort of responses that these actions received from participants. They reported that they would get some sort of response most of the time, ranging from a comment from the participant asking them to stop, or the participant moving their avatar away from them. However, there were other times when their aggressive behaviours did not solicit any response from users. One role player commented: “it was impossible to tell if they didn’t care, or if maybe they just weren’t paying attention to their own avatar. Maybe they were looking somewhere else, or just using the chat panel.” Both confrontational role players also noticed that many of the ‘victim’ participants would avoid or “run away from” them afterwards for the remainder of the session.

The shy role player described his role as ‘following users around, and yet keeping my distance from them.’ He said that it often meant a lot of moving, but usually people would get into a position and then stay there for awhile, chatting with other people nearby. He reported that this made his task very boring, and he often found himself paying attention to other areas of the environment and following other conversations: “when I looked back at my avatar, the person I was following was gone so I had to go find them again.”
All role players agreed that proximity was important. In all three sessions, they observed the same sort of proxemic behaviour from participants. One role player said “everyone always formed little groups, you hardly saw a user alone. I think [participants] did not realize that they kept forming the same groupings, and we saw them in all the sessions with different participants.” These groupings were shaped like semi-circles, people standing beside each other, but never directly above or below each other unless there was enough space for the chat bubble between the avatars.

Role players also suggested that proximity, movement and the spatial nature of the environment allowed conversations to be easily organized and helped people identify when someone was addressing them in ways that were not possible in some other online social environments. One role player noted “having groups of avatars made it really easy to follow conversations, much easier than in [text-based] chat rooms.” Another said that he “liked how easy it was to direct comments to people” through movement. “If I say something as I walk towards [a group of users], they know that I’m talking to them, but if they were only looking at the transcript, they’d never know unless I used their names. It takes too long to type out all their names, it’s easier just to walk towards them to grab their attention.”

7.4.5.4 Befriending

When asked about the friend list, all role players agreed that the befriending system was flawed and underused. By the third session, most of them had stopped trying to use it with participants: “There was no point.” They all agreed that the system
suffered because there was “no reason to add friends,” and that it did not make sense that users could add other users without permission. Again, many of the comments made by role players on this matter mirror earlier comments by participants. One role player reported that he had told a participant that he wanted to add them to his friend list, and that participant ended up adding him as a friend as well. This was the only positive response he received from similar exchanges concerning the friend list across all three sessions. All other times, he reported that participants either did not respond or did not care. Other role players said that they assumed that none of the participants had used the friend list feature, and were surprised when they were informed that several participants did use it. All five role players agreed that the befriending system should require approval from the friend being added, and should have followed established conventions in order to be useful.

7.4.5.5 Reflections on role playing

Finally, the role players were asked to describe any unexpected reactions that participants exhibited in response to the behaviours that they were acting out. The shy role player – who referred to himself as a ‘lurker’ – said that he felt uncomfortably similar to a stalker at times, and also said that he was a “conversation killer.” He described several times when he would approach a group of people, but would stop short of positioning himself too close to them. In many of these situations, he “would approach them, and everyone would just stop talking. They would either move away, or eventually I would because I felt obligated to give them more space. I think they were waiting for me to say something to them.”
One of the friendly role players – who took on a role of keeping people motivated and on-task for the brainstorming activity – said that in one session, when he tried to get people back to the student handbook task, a few participants accused him of being the researcher impersonating someone else. He tried to convince them otherwise, but the participants would not believe that was not a puppet-account of the researcher.

Both confrontational role players were surprised by many of the responses of the participants towards their aggressive behaviour. They were expecting people to be offended, and they were trying to procure negative reputation votes from participants, but often their bullying and insults were taken as a form of humour, and participants seemed to enjoy the exchanges. Other times, the ‘victim’ participants would mimic their behaviour and would be aggressive towards other users. One of the role players joked “we turned them to ‘the dark side,’ but we didn’t even mean to.”

This was especially evident in the third session, when confrontational role players were asked to exaggerate their aggressive behaviour. One role player said: “Instead of just us standing out, we made the entire group bad. We set the tone for the session, and all the participants were making rude remarks, insulting and teasing each other, and none of them were taking the handbook task seriously. It was completely unexpected.” The friendly role player who had taken on the task of keeping people focused on the handbook agreed: “No one would listen to me in that session. Once they started goofing around and being rude, it was impossible to get them back on track.”
7.4.6 Questionnaire results

Participants completed brief questionnaires directly after the activity period and before group discussions in each session. The questionnaires consisted of 11 questions and took less than 5 minutes for participants to complete.

Participants were asked to rate their awareness of reputation ratings and awareness of experience ratings using five-point semantic differentials that employed ‘completely unaware’ and ‘very aware’ as bipolar adjectives, with 1 being assigned to ‘completely unaware’ and 5 being assigned to ‘very aware.’ The participants reported very high levels of reputation rating awareness. The average of all ratings was 4.27. Participants also reported high levels of experience ratings, with an average of 4.07.

Participants were asked to rate the usefulness of the reputation voting feature using a similar five-point semantic differential that used ‘completely useless’ (assigned to 1) and ‘very useful’ (assigned to 5) as bipolar adjectives. Again, the majority of users found the system useful. The average of the ratings was 4.

Participants were then asked if they noticed changes to their own experience and reputation ratings during the activity session. Nine of the participants reported that they noticed changes to both their experience and reputation ratings. Four participants reported only noticing changes to their reputation rating, and 2 participants reported that they did not notice changes to either their reputation or their experience ratings.

When asked if they used the reputation voting feature to reward behaviour, nine participants responded “yes,” four responded “no,” and two reported that they did not
use the reputation voting feature. No participants selected “I don’t know.” When asked if they used the reputation voting system to punish behaviour, six participants responded “yes,” seven responded “no,” and the same two responded that they did not use the reputation voting feature. Again, no participants selected “I don’t know.”

Twelve of the 15 participants reported adding people to their friend list, while only 3 reported that they did not add anyone. No participants selected “I don’t know.”

The participants were also asked if they preferred to position their avatars close to other users’ avatars to chat, or if they preferred to communicate with people from a distance using the chat panel. Four reported that they did not have a preference between these two methods of communication, seven responded that they preferred using the avatars to chat, and four reported that they preferred to use the chat panel to communicate with other users in the environment. No participants selected “I don’t know.”

The questionnaire also asked if participants readjusted the position of their avatar while they were interacting with others in the environment, and were given the examples of ‘when other avatars were too close to your own,’ or ‘when more users came into proximity’ to explain the query. All but one participants responded “yes,” while the other participant responded “no.” No participants selected “I don’t know.”

7.5 Discussion

The purpose of this study was not to evaluate the usability of ReciproCity, or to serve as a first step in an iterative design process. This prototype was built to collect
data from users, and this study was designed to explore not only how participants would use the environment and its features, but also what they thought about elements of this system and similar elements in other online social environments, and why. The goal of this study was to gain an understanding of how social experiences are influenced by the functional and representational structures of this system design in the hope that such knowledge can be leveraged towards the design of other online environments in order to offer users an improved social experience.

The study focused on several key areas of exploration. We were interested in persistent, community-generated social constructs that accrued over time with use. To this aim, we explored both the construction of reputation and experience: how these constructs were represented and perceived, and how they affected interaction. We explored movement and proximity: how people used these channels to express social meaning, and what value did they add to an online social environment. We explored the social processes of discovery and befriending, and the kind of information and criteria that people used in selecting co-interactors and friends in online spaces. The discussion that follows will focus on these areas.

7.5.1 Reputation

The questionnaire data suggests that users were aware of reputation ratings, that they were aware of changes in their own reputation ratings, that they found the reputation system useful and that the system was used to both punish negatively-perceived behaviour and to reward positively-perceived behaviour. The observation
notes, system log and screen capture video from the three activity sessions confirm the use of the reputation system. The discussions with participants and role players indicate that there were many different ideas about how reputation was perceived, and how reputation affected interactions.

Participants had clearly formed expectations about a user based on their reputation ratings, and these ratings had an effect on whether or not a user was perceived as approachable. Many of the participants and role players offered opinions on how a user’s reputation ratings affected expectations of that user, many indicating that a low reputation rating was a reason to avoid that user, and a high reputation rating made the user more approachable. This user study confirms Jensen, Davis and Farnham’s (2002) statement that reputation ratings are valuable to users in that they can be employed to determine whether or not to interact with another user. Other people felt that reputation was an indicator of credibility and quality of information or contributions that could be expected from a user. These results seem to confirm the notion that the ability to know a user’s history of past interactions informs one on the social disposition of that user (Resnick, Zeckhauser, Friedman & Kuwabara, 2000), and can aid in the development of an opinion of another user without previous interaction (Guha, Kumar, Raghavan & Tomkins, 2004). The data also showed that many users did not use reputation ratings as a predictor of future behaviour or as an impetus to avoid or approach a user, but rather identified reputation ratings as a measure of how other people had perceived the user in the past in order to provide context about the user’s behaviour. The difference between these two perspectives can be polarized as those
that feel that past behaviour is a good indicator of how one will behave in future interactions, versus those that feel that people behave very differently at different times and in different contexts, making it difficult for users to be categorized or characterized by a rating. Other users reported that they did not feel reputation ratings affected their expectations or interactions in any way. However, in most of these cases, their actions in the sessions or opinions afterwards provided a contradiction – they displayed that they had in fact made some sort of judgment on a user based on their reputation rating.

Much of the data collected supports the notion that reputation systems have the capacity to encourage positive behaviour in online social environments (Jensen, Davis & Farnham, 2002). Many of the participants were interested in attaining a higher reputation, and in several cases reputation was used as positive reinforcement for either friendly or productive behaviour. Similarly, reputation was used as a negative reinforcement for unwanted behaviour. Many users indicated that in the context of other online social environments that they would use frequently and regularly, a similar reputation-based system of accountability would be much more effective than it was in the 30 minute activity session spent in ReciproCity. These results indicate support for the argument that reputation systems allow online communities to collectively establish standards and expectations of behaviour (Jensen, Davis & Farnham, 2002). The majority of participants seemed to feel that a positive reputation rating was something desirable to have in the environment. Several of them described it as a status symbol, and while this can motivate users towards positive behaviour, it can also cause subversive use of the reputation system simply to get the desired status.
This attitude was described several times during discussions, and provides a
dilemma for designers to address: If a reputation system is abused and used
subversively simply to artificially inflate the ratings of users, then the value of the
system is lost and meaning of reputation ratings is obscured. Similarly, some users
noted that the reputation system could be flawed and provide inaccurate depictions of
users because the system was subject to abuse through unwarranted negative votes, or
‘griefing,’ motivated either by disruptive trolling behaviour, or by competitive and
selfish attitudes of users compelled to vote others down in order for their own ratings to
appear higher relative to others’ ratings. However, while there was some evidence to
support the occurrence of artificially or unwarranted inflated and reduced reputation
ratings, this was certainly the exception and not the norm, as most users of the system
did not engage in either of these behaviours.

It is also likely that in a real, ongoing online environment, a community of users
would take steps to collectively ensure that such abuse would be curtailed. This could
be accomplished either through crowd-powered voting to overcome and negate the
votes of the offending users, or through explicit reprimands, resetting of reputation
ratings, or by removing the voting capabilities of offending users. While the results of
this study would lead us to agree with Jensen, Davis and Farnham’s (2002) suggestion
that reputation systems can minimize the need for moderators and policing or
regulation of behaviour and social activity in an online environment, it does not
necessarily eliminate the need for such activities. Instead, the focus of the moderators
would shift from the inappropriate behaviour of users towards the abuse of the
reputation system and towards the dissemination of well-defined and universally accepted social norms and expectations with respect to behaviour.

Many of the users perceived reputation ratings as a form of feedback from a larger group or community of users in an online environment. Several users suggested that this feedback would be more effective if the reputation system included a notification system that immediately let the user know when their reputation had changed. This would allow them to directly attribute changes in their reputation rating to interactions or behaviours they had just performed, and could aid in a user’s self-monitoring process and allow them to learn how their behaviour is perceived and evaluated by others. Other users suggested augmenting the reputation system to include a commenting system that would explain or justify the reputation votes that users made. However, as discussed earlier in this thesis, such systems often require too much effort on the part of the user, and are generally ignored by users viewing the reputation ratings and also by users casting reputation votes (Jensen, Davis & Farnham, 2002). While the users’ suggested commenting system may not be worth implementing into reputation systems, it does bring to bear an issue that surfaced frequently during the user study. When people cast reputation votes, it is unclear what they are basing that vote on.

The ambiguous nature of reputation in ReciproCity was intentional by design. We wanted the system to afford users the flexibility to use any criteria or judgment they chose in making reputation votes. Many of the users cited task-oriented criteria to determine reputation, rewarding users’ contributions to the brainstorming task, or
punishing users who lost focus or were distracting others from the task at hand. Many other users felt that reputation was related to sociable behaviour. These users rewarded those who were nice, friendly, or fun, and punished those who were rude, aggressive or mean. Some users suggested that how one defined reputation was dependent on the context of use and the purpose of the environment. However, regardless of whether users perceived *ReciproCity* as a task-driven collaborative environment or a fun, socially oriented chat space, the ambiguity of reputation across the groups of participants and role players remained. Negative votes attributed to one user for being unfocused or off-task could have been misinterpreted by another user as a signal that the user had been rude or mean to others.

One possible strategy to overcome this problem of ambiguity would be to limit and focus user’s reputation votes towards a single, explicitly specified criterion to use in judgment. While this may be effective for transaction-based environments, it may prove to be too restrictive in social environments. Another strategy would be to provide several systems of reputation, each attributed to a specific criterion. This would likely prove to be too cumbersome, and would likely be misused or ignored. As many users suggested, social norms about reputation systems – how they are used, and how they are commonly understood by a community of users – emerge and are established over time and accrued use by a group of users. This sentiment echoes statements put forth by Jensen, Davis and Farnham (2002), and by Guha, Kumar, Raghavan and Tomkins (2004). While this may not prove to be helpful to new users, it is possible that issues surrounding the ambiguity of reputation would be greatly reduced as users become
experienced and are socialized in an online environment and are able to learn the social norms and the community’s shared understanding of reputation within that specific environment.

The majority of participants and role players believed that the reputation system would be used more frequently for punishment than for reward. Out of the 20 users (15 participants and 5 role players), 15 of them said that the reputation voting would be skewed towards negative votes, 4 of them believed that positive votes would occur more frequently, while 1 believed that the use of the reputation system would not be skewed one way or the other. However, it is interesting to note that the majority of users were incorrect in their assumptions. In the questionnaire responses, 9 reported using the reputation system to reward behaviour, while only 6 reported using the system to punish behaviour. A review of the total votes cast by participants across all three sessions shows that positive and negative votes were even, at 24 votes each.

All of the reputation votes that were submitted by participants were within 17 points of the extreme poles of the range of possible votes (the reputation scale goes from -60 to +60). The lack of moderate votes is not unexpected, as many of the users noted that they experienced difficulty in differentiating between moderate values of reputation representations. It is also logical that moderate votes were uncommon. As suggested previously in this thesis, users would employ a reputation rating system for evaluation only when behaviour was perceived as very negative or very positive. In addition, users likely wanted to make votes that would cause visible changes to the avatars of those they voted on, which would make moderate votes seem ineffective.
Perhaps a redesigned reputation system that allowed users to better differentiate between closer reputation values would encourage users to use the full range of vote possibilities rather than just extremes. Regardless, the reputation system could be improved simply by making it easier to detect differences in the representation of reputation ratings.

With respect to reputation votes cast on role players, it is worth noting that in all sessions, role players received votes that corresponded to their assigned behaviours. The two confrontational role players – one with high reputation and the other with low reputation – received reputation votes in each of the three sessions that supported the notion that users viewed reputation and behaviour in relation to each other. While both exhibited behaviours in all three sessions that warranted low reputation votes, and both ended up with lower reputation at the end of each session, it should be noted that in all three sessions, the one who had higher reputation experienced a greater reduction in their reputation rating than the one who had started out with middling reputation. This indicates that users may be more likely to punish users who have higher reputation than they would to punish users for similar behaviour who already exhibit a lowered reputation rating. Similarly, the friendly role players’ relative increases in reputation for each session corresponded with their starting reputation levels. In all three sessions, the friendly role player who started with a lower reputation rating – and therefore a more visibly obvious mismatch between reputation and behaviour – saw a larger increase in their reputation rating than the friendly role player who started at a middling reputation level.
7.5.2 Experience

The questionnaire data showed that participants were decidedly aware of the experience ratings of other users, and were also aware of changes to their own experience rating. Several participants believed that the representation strategy used to present a user’s experience rating – the size of the avatar circle – was effective because it was easy to differentiate between different ratings. This is especially true when contrasted with the representational strategy used to present reputation, with which several users expressed difficulty in differentiating between ratings. In ReciproCity, experience and reputation are constructs that share several similarities. Both are persistent rating systems that accrue over time, and both provide a history of an individual’s usage habits and behaviours to other users in the environment. However, during the discussions, much more attention was paid to reputation than experience, and users had much more to say about reputation ratings than they did about experience ratings. Perhaps this is because experience ratings were based on the implicit actions of an individual – a user’s experience level automatically increased as they interacted with others in the environment and even with the environment itself – whereas reputation ratings were an interactive, socially constructed system that required explicit action from other users.

The majority of discussion surrounding experience described how users perceived this rating, and how it was used as a criterion for determining the approachability of users. It was clear that participants had formed expectations of other users based on experience ratings. Many participants associated experience ratings
with knowledge and expertise, especially about *ReciproCity*. Several participants reported approaching users with higher experience levels with questions about the environment. Other participants indicated that they viewed the larger circles as indicators that those users “knew what they were doing” in the space more than other participants. Of course, this makes sense as the participants were told that there would be users in the space with them during the activity that had already used the space, and had already taken part in a previous brainstorming activity. The participants were keenly aware of the role players as a different group because of their larger circles, and often used “us” and “them” to differentiate between the two groups during post-session discussions.

One of the role players also noted this separation and attributed it to the higher experience ratings of the role players. He sensed that participants felt that the role players had “a sort of ownership” over the environment. His high experience rating made it seem to the participants that the role players had “authority” in the environment that he felt made the participants more responsive to the leadership role that he had taken on.

Another role player believed that high experience would have distanced the role players from the participants, and would have made them appear intimidating or less approachable to the participants. His reasoning was that the new users would want to find people who were also new to the system and would be more comfortable speaking to users with similar ratings who were “more like them.”
One participant felt that high experience was not related to authority or expertise so much as it was related to being talkative. This participant had focused specifically on how experience was accrued in this assessment, as the most obvious and most common way to gain experience in the space was by chatting with other people. He used high experience as the primary criteria for interacting with users, and actively sought users with high experience ratings to interact with.

Most of the participants seemed to believe that a higher experience rating was a positive attribute to have, and almost all of the connotations associated with high experience ratings were favourable. While high experience ratings did not seem to have the social cache that high reputation ratings did, low experience ratings were not frowned upon in the same manner that low reputation ratings were. Of course, all of the participants were new users and therefore all had very low experience ratings, and so would not have a bias against new users or ‘noobs’ that is not uncommon in other online social environments.

There is some evidence to suggest that experience ratings were viewed in conjunction with reputation ratings. Of course, perceptively this is the case as both constructs were tightly coupled in the user representation strategy. However, conceptually, users also seemed to view experience and reputation in relation to each other. Positive connotations associated with an elevated experience rating were often negated if the experience rating was paired with a low reputation rating. While a user with middling or high reputation and high experience was perceived as knowledgeable
or approachable, a user with low reputation and high experience was seen as someone who had been behaving negatively for a long time.

7.5.3 Avatar movement and proximity

Typically, the first activity a new user of ReciproCity engaged in was to move their avatar – and presumably, their view – around the environment. Unlike a text-based chat, where all activity is dependent on exchanges with other users, an avatar-based graphical chat engenders the exploration of the space, an activity that users can do on their own. All of the participants moved their avatars, and the majority of users did so frequently throughout the session. Although participants were most active with respect to avatar movement at the beginning of sessions, avatar movement persisted throughout the duration of each session. Some of the participants would move around much more infrequently as the session went on. This pattern of movement may suggest that avatar movement was used due to its novelty, and that frequent, experienced users of the environment may exhibit much lower levels of movement. As all of the participants were new users to the environment, it was difficult to support or refute this idea, however, role players who were present throughout the study displayed similar patterns of movement across all three sessions, and exhibited no reduction in frequency of movement as they used the environment more. Many other participants exhibited fairly regular periods of movement that occurred throughout the entire duration of a session.
Within the shared space of *ReciproCity*, the movement of avatars takes on a social significance, allowing users to perform visible, socially meaningful behaviours, and to engage in social activities with other users. Participants and role players engaged in a number of behaviours and activities through movement, including dancing, aggressive behaviour, attention seeking, or moving towards or away from other users. This supports the notion put forth by Smith, Farnham and Drucker (2000) that movement and proximity serve as valuable channels of expression and social meaning in online environments.

The significance of movement and spatial representation of users in an environment goes beyond just additional communicative options that users are granted in addition to text. The social structure of the environment is changed, as movement and proximity become embedded into all social activity. Social norms emerged surrounding positioning and proximity to other users, and participants exhibited a near-constant awareness of where they situated in the environment, and where they were situated in relation to other users.

Whyte’s (1980; 1989) observations on the design and social use of urban spaces indicate that people are attracted towards the social activity of other people. Activity observed in *ReciproCity* suggests that this is true in online spaces as well. Participants displayed what could be described as a herding instinct, and users were nearly always close to other users during the sessions, and rarely remained ‘alone’ in the environment before moving towards others. The avatar movement behaviours of participants who claimed to prefer using the chat panel over the avatar chat suggests that the social
significance of proximity awareness was ubiquitous. Even though many of these participants described chatting primarily through the chat panel, they would still position their avatars close to others and would avoid remaining positioned alone when others would move.

Users grouped together in circle-like formations. As described earlier in this chapter, the spacing and shape of these formations were largely determined by the visual constraints of obstructive avatars and chat bubbles that users had to manage when determining their position. In attempting to avoid obstructing other avatars and chat bubbles with their own, participants developed a social norm of proxemic spacing that seemed to be universally understood, even if it was not universally followed. This allowed users to signal affiliation, engagement and attentiveness through ‘comfortable’ proximal distance, and it also allowed users to perform aggressive behaviours by encroaching beyond the perceived comfortable distance that many users felt protective of, and by causing repeated collisions with another avatar. These results seem to indicate that users understood and used space and proximity in a manner very similar to real world interactions as described by Hall (1966).

Whyte also suggested that people are drawn to well-defined places, and are likely to gather and use space that is nearby recognizable objects (1980). Participants often gathered around the images embedded in the environment or around the post board. These elements served as identifiable landmarks and reference points for participants, who would often ask each other to ‘meet’ at one of these locales defined by the images. In this way users not only explored the space by moving their avatars,
but also were able to describe avatar movement in relation to these elements and use a shared mapping of the space that was understood by all users.

7.5.4 Discovery

While the design of *ReciproCity* included features that we hoped would allow us to explore the social processes of discovery and befriending, we found that our user study produced very little valuable data about these two processes and the behaviours that users exhibited surrounding these processes.

The user study sessions did not provide an accurate, natural set of social circumstances that would allow us to make observations and gain insight into the process of discovery – how people approach and meet new people – as it would normally take place in online social environments. While all participants were new users to *ReciproCity*, they had already spent 15 minutes together in person during the introduction before each activity session had begun. Many of the participants may have used social cues they had gathered from the introduction – names, gender, approximate age and so on – to identify each other in the environment, rather than being solely reliant on the social information available in *ReciproCity*. While this does mean that they had to use and map the information perceived in the environment onto what they had learned during the face-to-face introduction, it is difficult for us to understand the extent to which users employed each of these two sources of social information in their decisions to approach or befriend others. Some of the role players were instructed to initiate discussions with participants, and get participants involved in the brainstorming
activity, which likely compounded this issue as participants could passively become involved in group discussions rather than be forced to make explicit decisions on whom to interact with.

However, we were able to gather some data on how social cues and information shared by users affected participants’ expectations of other users, affected the perceived approachability of others, and how participants felt such information affected their decisions on whom to approach in the space. The relationships between these social processes and experience and reputation ratings have already been discussed in this chapter. Other information such as age, gender, user names and personal messages were also cited by participants and role players as influential towards behavioural expectations and perceptions of approachability and consequently entered into users’ decisions on whom to interact with. These results seem to confirm the notion that users will adapt and make use of whatever cues are available in an environment in order to form impressions of others (Walther, 1992; Donath, 1999). Unlike other information that users shared on their profiles, participants did not cite other users’ friend lists as influential when asked what informed their decisions on whom to approach, or what information shaped their expectations of other users.

7.5.5 Befriending

The questionnaire results would seem to indicate that the friend list feature of the environment was well-received by users, as 12 of the 15 participants reported using the friend list. A review of the participants’ use of the system shows that nine
participants actually did add a friend to their list. Regardless of the disparity between data sources, these statistics are misleading. While the majority of participants used the system, all of them were critical of the implementation of the friend list, very few of them used it in a meaningful way, and none of them viewed users’ friend lists as an influential factor in their social interactions.

Many participants took issue with the design of the friend list because it did not follow the conventions of other social networking sites in terms of permissions and befriending process. Participants viewed the friend list as a useless feature in the environment, because they felt there was no reason to add friends to the list. Some attributed this to the nature of the user study: Adding friends was a pointless activity, as they would never be on the site again. However, it was the flaws in the design of the system that proved to be much more detrimental to the efficacy and perceived usefulness of the friend list than the limited time that participants spent in the environment. Adding friends to the list did not grant them access to additional personal information on those friends. It did not notify the added friend that they were added to the list, so it was not useful as a gesture of affiliation towards another user. Even the one function that the system did perform – putting the names of selected users on a list in one’s profile – was perceived as suspect, artificial and consequently of little social meaning or value. Participants expressed discomfort with having their names appear on a user’s list without their permission. By not requiring the permission of the user being added, participants interpreted the friend list as at best, a one-sided depiction of the
relationships that one has in the environment that may not be accurate, and at worst, a list of names of users with whom the list owner may have never interacted with.

An accurate description of the friend lists, as used by participants during the user study sessions, is that they were mainly random lists of users who were also in the space at the same time as the list owner. The majority of participants indicated that they used the friend system simply to explore the feature, and most of them added people randomly from the list of users currently online before they had even interacted with them yet. Many participants added several users at the beginning of the session to explore the friend system, and then never used it again. However, a few participants used the friend list appropriately, adding other users who they were actually friends with, or who were perceived as users who they would enjoy interacting with again.

While the flaws of the friend list system in ReciproCity precluded any depth of investigation or insight into the befriending process in online environments, we were able to gain an understanding of how users determine the value and significance of friend lists. Friend lists should serve as evidence of a relationship whose nature both users in the relationship agree upon. The social value of listing a friend on a profile stems from that friend’s decision to allow their name to appear there. In some ways, users perceive friend lists as a list of people who can vouch for the character of the list owner. When a friend list does not represent the agreement of both users in the relationship, the appearance of other users’ names does not signal their corroboration and the social value of a friend list is lost. Framing this idea using Goffman’s (1959) ideas on impression management, the friend list goes from being valued as an impression
given off that indicates positive interactions with others, to being discarded as an
impression given that is suspect and artificial. As was the case in this user study, a friend
list that does not incorporate a permission-based befriending system will be perceived
as meaningless, and will not influence social interaction in the way that other
volunteered profile information can. The issues surrounding the friend list system –
specifically, the lack of value that users attributed to the system – provide evidence for
Donath’s (2007) assertion that users attempt to weigh the significance of social
information according to their reliability and how easy they are to feign in an online
environment.

7.5.6 Activity and status awareness

In all three sessions, status and activity icons did not seem to impact
participant’s decisions to interact with a user, or influence how they interacted with a
user. All participants across all three sessions offered similar responses: if they saw a
user engaged in a private conversation (the user’s phone icon was flashing), that it
would not matter and that it would not stop them from approaching them or taking to
them as they normally would, even though they would understand if that user did not
respond to them right away. In each session, at least one participant believed that this
was a result of social conventions derived from IM and chat room use – that people are
used to writing something, and letting people respond when they are no longer busy.
Although participants felt that the private messaging did not affect their approach to
interaction, they also said that they would not approach users with a sleep icon as they
felt they would not receive a response.
One participant noted that they found the keyboard typing icon helpful. “If I saw the keyboard typing icon, I would wait for a response, just like [IM]. But if the fingers stopped typing on the icon, I would say something.” Other participants in the session agreed, and indicated that this icon helped them monitor turn-taking in their interactions.

Participants also reported that conventions dealing with multiple conversations in online spaces were perceived very differently than similar situations in face-to-face communication. While it was acceptable for users to engage in private conversations during a conversation in ReciproCity, the real-world equivalent of speaking on the phone while engaged in a face-to-face conversation would be considered rude. Again, participants related this to online social conventions. It is normal in online social environments to have multiple threads of simultaneous conversations, whereas this is much more difficult to carry out in the physical world.

7.5.7 Design Critique

Interpretation and analysis of the data collected in this user study have offered many insights, but one area that has not been fully discussed is an evaluation of the design of ReciproCity. Many participants and role players offered up suggestions for changes to the interface and improvements in the representational strategies employed by ReciproCity.

Throughout the study, several participants felt that the representation of reputation and experience was not clear enough. One participant said, “I couldn’t tell
the difference between people’s ratings unless they were really big or small, or had really high or low reputation.” However, the other four participants in the session disagreed, saying they were able to detect differences between avatars, especially if the avatars were close to each other. However, all had agreed that differences in experience levels were easier to detect than differences in reputation levels.

Some of the role players felt that reputation would have had a stronger influence on participants’ interactions if it had been more clearly displayed or was more visible. One role player also noted that you could easily identify extremes – high or low ratings in both experience and reputation – but differences between ratings that fell in the middle were difficult to distinguish. Another role player suggested that there be a sort of ‘leaderboard’ of reputation ratings embedded into the environment. His reasoning was that it would make users more aware of reputation ratings, and “would have given them something to work towards,” meaning a reason to behave well, to contribute or stay on task in order to get good reputation votes.

The participants also reported several other issues they had with the interface. One suggestion was to move the profile panels of users to a separate viewing window that was not attached to the avatar of a user. This was because often users would be reading a user’s profile or attempting to submit a reputation vote on a user and then that participant would move, making it difficult to continue. Other suggestions included options to change the colour and shapes of avatars. Some participants believed this would be a better way to represent experience or reputation, while others felt that there should be more options for customizing their avatars to make them visually
unique from other avatars. Offering users a selection of shapes and colours to customize their avatars was a common suggestion across the three sessions, and emphasizes observations that users often had difficulty distinguishing their own avatars from others.

Participants offered divergent opinions on the navigation system of ReciproCity. Many participants liked that they could change the view of the environment without moving their avatar. Others would have preferred always having the avatar centred in the browser screen, and having the environment view move in relation to avatar movement. In the second session, one participant said that she found the navigation scheme counter-intuitive, and found herself trying to move the view of the environment (rather than the avatar) by clicking and dragging on the environment. The other four participants in the session disagreed with this, and expressed that they liked the navigation controls as they were - clicking to move their avatars, and using cursor keys or the minimap to change the view of the environment.

Several participants expressed difficulty using the private message system, and felt that it was too complicated of a process - you had to open the chat panel, select a name from the list of users, and click a ‘private’ button rather than typing enter at the end of messages. A suggestion was made to have the private message recipient selection also available on each user’s avatar – a checkbox with the message ‘send me a private message’ – along with the chat panel system. Another participant suggested a keyboard shortcut for submitting private messages so that you did not need to use the mouse, and a small text box somewhere in the environment (other than in the
expanded chat panel) that displayed who you were currently set to send private messages to.

Other suggestions and complaints had to do with thread-finding in the chat panel. One participant suggested, “it would be nice if you could select a number of [users] who you were speaking with, and have a separate, breakaway chat panel that you could move around the environment that would show only the chat from yourself and from those selected [users] so that you could have a few different chat windows open at once. Going through past conversations with people would be really easy that way instead of having to read through everybody’s chat history.”

Many of the users complained that the interface was too cluttered. Although many appreciated the collapsible nature of the avatar profiles and the chat panel, several participants felt that they should be able to move the chat panel around the screen so that it could be positioned out of the way of avatars and chat bubbles, allowing them to use both modes of communication simultaneously.

Most of the comments concerning the friend list feature were negative. Users found fault with both the nature of the system and with the implementation of the system in the interface, which helps to explain its sparse use in the user study. A suggestion that was offered by one of the role players to get more users to use the friend list was to include a representation of the number of friends a user had in their avatar representation: “If you added a visual cue to the avatar, like the weight of the circle outline, that would represent how many friends someone had on their list, it might have made people use it more.”
The comments and suggestions of participants and role players concerning the design of the environment illustrate that *ReciproCity* has many flaws and would need improvements in several areas if it were to be expanded into a fully working online social environment. However, it is important to note that as a research prototype designed to collect user data and introduce concepts surrounding functional or representational structures for participants to think about within the context of their online activity outside of the study, *ReciproCity* was successful in its aims and its design.

### 7.6 Summation

This chapter described the motivations, foci and design of this user study. Data collection methods and apparatus were explained in detail, and pertinent results from all data sources were reported, including observational notes, screen capture video of each activity session, system logs from each activity session, recordings of all discussions with participants and with role players, and questionnaire data. The included discussion focused on the study’s results and their implications towards social activity, behaviour and use of *ReciproCity*, as well as their implications towards the design of online social environments.

Through this process, we found that users were highly aware of reputation ratings, and changes in reputation. The reputation system was used to reward positive behaviour, and to punish negative behaviour, however there was some ambiguity with the perception of what reputation meant to users, and what motivated users to vote on others. Some associated reputation as a rating of one’s friendly or unfriendly behaviour,
while others associated reputation as a rating of one’s ability to carry out the assigned task or with being productive.

Reputation ratings were influential on users’ interactions, with most users viewing a high reputation rating as a positive attribute that made a user more approachable, and low reputation ratings as a reason to avoid users. Reputation ratings were viewed as a form of community feedback that provided context and insight into a user’s past behaviours and interactions. The data collected shows that while there is a risk of abuse or subversive use of reputation systems that may render them ineffective, reputation systems have the potential to encourage positive behaviour in online social environments by providing a means of accountability, and by enhancing users’ ability to self-monitor their own behaviour.

Users were also highly aware of experience ratings of users, and noticed changes to experience ratings. Experience was often associated with knowledge, expertise, and authority, and had a positive correlation with the perception of approachability. All of the connotations that users associated with high experience ratings were favourable, and participants believed that a higher experience rating was a positive attribute to have.

Users moved their avatars to express a wide lexicon of social meaning, and to engage in social activities with others. Participants preferred positioning their avatars nearby the avatars of other users, and avoided appearing ‘alone’ in the space. The majority of participants established and maintained a comfortable proximity to co-communicators, and most participants felt protective of the ‘personal space’ of their
avatars, distancing themselves or reporting feelings of discomfort when other users positioned avatars too closely or caused collisions. Avatar position was largely determined by the distance and relative positioning required to be close to co-communicators, while ensuring that their position did not obfuscate or obscure the view of other avatars or chat bubbles. Participants also preferred to gather around objects in the environment rather than occupy empty spaces. These objects – several images and the post board – also served as reference points that allowed participants to describe a shared mapping of the environment that was universally understood.

Volunteered information that appeared on users’ profiles, including age, gender, name and personal messages, along with the persistent attributes of reputation and experience ratings that were formed through accrued use of the environment, were all viewed as influential pieces of social information that participants relied on when deciding whom to approach and interact with in the space.

The study yielded very little insight on the befriending process in online social environments. Users place value on the corroborative nature of conventional friend lists that serve as an indication of approval of, or acknowledged affiliation with, an individual from those whose names appear on that individual’s list. When that corroborative nature of a friend’s list is not in place, the list is perceived as suspect, ambiguous, self-volunteered information that appears on a user’s profile. However, unlike other volunteered information on the profile, participants placed little significance, value or meaning on the friend list and consequently, the feature had no effect on interactions or perceptions of other users.
While the results of this user study are not necessarily a step in an ongoing iterative design process aimed towards an improved version of ReciproCity, these results are intended to help form an understanding of how users have perceived and employed the features of this prototype environment in order to inform the design of other online social environments. The final chapter will discuss the implications that the insights gained in this user study may have on future work, and will discuss some possible avenues of additional exploration that will build upon and extend this research.
8: Conclusion

Communication is framed by the social information that people are able to present and perceive. The presentation that one chooses to construct during any social interaction is informed by the information that they have about the situation and from feedback that they receive from co-communicators. Such situational and interpersonal contextual cues allow one to monitor and adjust their social performance accordingly so that it is both appropriate to the given situation, and so that it best matches the identity which they want others to perceive.

The availability and clarity of social cues is dependent on the environment in which interaction occurs. In most face-to-face communication situations, these social cues are abundant, and communicators are afforded many channels of expression for the exchange of meaning. In many online environments, the exchange of social cues is relatively constricted. When people attempt to use the same approach or maintain the same expectations for negotiating social interaction online as they do in the physical world, they are often faced with challenges that result in a lack of social awareness of both the social situations that they are in, and the social nuances of whom they are interacting with.

This thesis has attempted to address this problem by investigating how users approach and use online environments to project their own identity and to perceive the identity of others, by exploring existing representational strategies employed by several
popular online environments, and by constructing a prototype online social
environment that incorporates several of these strategies to gain an understanding of
the relationship between environment design and users’ social experiences.

One of the main goals of this research was to explore and gain an understanding
of the relationship between online social experience, identity, reputation and
representation. We wanted to leverage one of the capabilities of the online medium
that is impossible in face-to-face communication – persistent social attributes that are
accrued through the use of an environment – in order to improve the social awareness
that is afforded to users. In addition, we wanted to explore activity and relational
awareness, and how proximity and avatar movement were used as a channel of
meaning by users.

ReciproCity, the prototype built to address these goals, expanded the traditional
chat approach that offered users activity and relational awareness cues, allowed for
users to be represented by simple abstract graphics that could be moved and positioned
in a spatial environment, and included persistent attributes of experience and
reputation that were accrued by use of the environment and through interactions with
other users. While the use and evaluation of this prototype proved that ReciproCity was
not without flaws, the research project was successful in that it allowed us to gain an
understanding about users’ social experiences in specific environments, how people
present themselves and perceive others in online environments, and the relationship
between user experience and the functional and representational structures of online
environments.
8.1 Implications for design

Using the results from both the user study and the survey, our findings suggest a number of implications that could aid designers of online social environments, and inform the decisions that are made in the design and implementation of online environments.

We found that users will use any available information in order to manage impressions and form identity about others. Similarly, users will present and perform their own identity through whatever channels of expression are made available to them. However, the perceived usefulness and value of information and channels of meaning are subject to judgment. Information that is self-disclosed does have value, however, when that information is suspect or seems artificial, it loses its social value and will not be used. The befriending system used in ReciproCity is an apt example of this. Information that is gathered about an individual from a community of users who have interacted with that individual, or information about observable past behaviour is perceived as very valuable, and is relied on much more when forming opinions and expectations of an individual. When users are able to see this type of information about themselves as others do, it aids in the self-monitoring process and helps them adjust their behaviour accordingly. This means that users should be able to understand how social information about themselves and others is generated in the environment, and they should also be able to see their own representations exactly as others do. While opportunities for self-volunteered information in an environment are usually necessary, designers should also incorporate mechanisms for persistent, community-generated
social information or social information that is implicitly gathered through a user’s interactions in the environment.

The survey and user study results indicated that users were very aware of both reputation and experience rating systems in online environments, and that such systems were perceived as useful and influential in social interaction. The user study also established that the majority of users felt that reputation rating systems would encourage positive behaviour in online environments, which may reduce the need for volunteer moderation and policing in online communities. However, the success and efficacy of these systems also depend on how they are represented. This study shows that such representations should be simple, concise and easy to understand. Users should be able to differentiate between different ratings easily. The representation scheme should be immediate and obvious, so that it requires little cognitive or functional effort on the part of the user.

We also found that users are able to rely on familiar, real world strategies and ways of understanding relating to movement and proximity. Most users were able to express and perceive playfulness, aggression, attention seeking, and other social meaning through a very simple system of avatar movement. Most users also understood proximity and proxemics in a very similar manner as real world situations that allowed them to express affiliation, attention and establish and maintain comfortable social distances with each other. Most importantly, all users – even those who claimed to prefer the text-based chat panel over the avatar-focused chat – positioned their avatars close to others. For these reasons, designers may want to incorporate a very simple,
unobtrusive and lightweight ‘avatar space’ that users could employ in conjunction with more traditional, chat based communication modes. This would allow for not only the implicit signalling of users’ recent or current activity (as is the case in systems such as Loops or Babble) but would also allow users to explicitly signal affiliation or attention seeking towards their co-communicators.

8.2 Future work

While we have established that reputation and experience systems, along with avatars that can be moved and positioned in space are valuable channels of meaning to online social environment users, we feel that more research is needed to fully understand how to best leverage and implement these features in the design of online environments. Specifically, further research should focus on how reputation and experience ratings can be aggregated and calculated in a manner that best serves users and avoids manipulation or misleading ratings. Several strategies and algorithms should be constructed, implemented and compared in order to identify a method or strategy that works best for online social environments. Similarly, how these ratings – and other forms of social information - are best delivered and represented to users also requires further exploration.

It is our hope that the understanding gained in this research can be applied to the design strategies of other online environments and collaborative tools. Specifically, we feel that similar systems of reputation and experience ratings, along with user representational strategies that draw on simple, abstract graphics and spatial
metaphors, could be successfully implemented in collaborative sense-making tools, argumentation visualization tools and backchannel communication environments. These enhancements could be included in the development of a collaborative sense-making tool for information analysts within a shared knowledge domain. We may also apply these strategies towards the design of a backchannel communication environment specifically made for use in university lectures. Google’s new Wave application also lends an avenue of potential implementation, and we may seek to develop an extension for this communication tool.

We believe that the endeavours undertaken in this research are steps towards the worthy goal of improving the social awareness - and ultimately, the social experiences – of online communicators. While this thesis certainly does not stand as the first steps in this process, it almost certainly will not be the last. It is our hope that the knowledge gained from our efforts can be used in future research and design by those who share our goal of designing tools and environments that address the social needs of users.
References


*Communications of the ACM, 45*, 45-49.


Appendices

Appendix A: Online social environment survey questions

Survey questions

Section 1: Discussion Boards, Community Forums

1. How often do you use Discussion boards or forums?
   a. once a day or more
   b. a few times a week
   c. a few times a month
   d. a few times a year
   e. never

2. How long have you been using forums and discussion boards?
   ________________________________

3. What is the name of the board or community forum you use most?
   ________________________________

4. Why do you use this board/forum? (checkboxes - multiple selection.)
   a. Entertainment/leisure
   b. Resource and information gathering
   c. To meet new people
   d. To keep in contact with people
   e. Work or career related purposes
   f. Shopping
   g. Other: ___________
   h. Don’t know

5. In many boards/forums, there are reputation systems that let users rank, rate or provide feedback about other users. This reputation information is often collected and made visible to all members. Is there any explicit form of reputation rating in the board/forum you use most?
6. In many boards/forums, there are experience systems that show how many posts or threads that a user has participated in. Is there any explicit form of experience rating in the board/forum you use most?
   a. Yes
   b. No
   c. I don’t know

7. Do you find reputation and experience systems in boards/forums useful? Please explain.

_________________________________________________________________

8. How do the experience and reputation markers of other members affect how you interact with them?

_________________________________________________________________

9. Does the board/forum you use allow users to upload information about themselves to a user profile page that other members can view?
   a. Yes
   b. No
   c. I don’t know

10. If so, what do you tell others about yourself on your board/forum profile page? (checkboxes)
    a. I don’t share any profile information
    b. Picture of you
    c. Image or icon, not of you
    d. Your real name
    e. Personal message or announcement
    f. Email address
    g. Contact information other than email address
    h. Information about interests or hobbies
    i. Professional or career related information
    j. Other: ____________
    k. Don’t know
11. What do you find useful about the information that other people share about themselves on their profile page?
___________________________________________________________

12. How does the profile information that other people share affect how you interact with them?
______________________________________________________________

Section 2: Social Networks

1. How often do you use social network sites?
   a. once a day or more
   b. a few times a week
   c. a few times a month
   d. a few times a year
   e. never

2. How long have you been using social network sites?
   ____________________________

3. What is the name of the social network site you use most?
   __________________________________________________________

4. Why do you use this environment? (checkboxes, multiple selection.)
   a. Entertainment/leisure
   b. Resource and information gathering
   c. To meet new people
   d. To keep in contact with people
   e. Work related purposes
   f. Shopping
   g. Other: __________
   h. Don’t know

5. How do you meet people online in this environment? (checkboxes)
   a. I only interact with people I know offline
   b. Through introduction or association of other online contacts (finding people in your friends’ friend lists)
   c. I introduce myself
   d. I wait for others to introduce themselves
   e. Other ___________________
   f. Don’t know.
6. What information do you share about yourself in this social network site? (checkboxes)
   a. Picture of you
   b. Your real name
   c. Photos that you have taken
   d. Personal message or announcement
   e. Email address
   f. Diary or journal of your experiences
   g. Contact information other than email address
   h. Information about interests or hobbies
   i. Professional, career or education related information
   j. Who your friends are (friend list)
   k. Groups or networks that you are affiliated with
   l. Other: ____________
   m. Don’t know

7. How does information that is posted about other people in the social network site influence the way that you interact with them?

__________________________________________________________________

8. How do you come to know someone’s reputation in this social network?

__________________________________________________________________

9. What is the primary mode of communication you use in social networks to communicate with other members?
   a. In-site mail
   b. In-site real-time chat
   c. Commenting system (Wall posts or Friend’s Comments)
   d. In-site forums or discussion board
   e. Other ________________
   f. Don’t know

**Section 3: Instant Messaging**

1. When you are online, how often do you use instant messaging programs (IM)?
   a. It is always on when I am online
   b. I sign in or check it frequently
   c. I sign in or check it infrequently
d. I rarely use IM when I am online
e. I never use IM

2. How long have you been using IM or chat rooms?

______________________________

3. What is the name of the instant messaging program you use most?

____________________________________________

4. Why do you use this environment? (checkboxes, multiple sel.)
a. Entertainment/leisure
b. Resource and information gathering
c. To meet new people
d. To keep in contact with people
e. Work related purposes
f. Shopping
g. Other: ___________
h. Don’t know

5. What is the relationship to the people you communicate with on IM? (checkboxes)
a. Friends I know offline
b. People I work with
c. People I know only online
d. Other: ___________
e. Don’t know

6. What information do you often share with others in your IM program’s contact list when you are not chatting with them? (checkboxes)
a. I don’t share any information
b. Picture of you
c. Image or icon, not of you
d. Your real name
e. Personal message or announcement
f. Activity status (ex: busy, on phone, be right back, etc.)
g. Email address
h. Contact information other than email address
i. Profile information
j. Other: ___________
k. Don’t know
Section 4: Massively Multiplayer Online Games (MMOG) and Metaverses

1. How often do you use MMOGs or metaverses?
   a. once a day or more
   b. a few times a week
   c. a few times a month
   d. a few times a year
   e. never

2. How long have you been using MMOGs or metaverses?
   ____________________________

3. What is the name of the MMOG/metaverse you use most?
   ____________________________________________

4. What is the relationship to the people you communicated with in this space?
   a. Friends I know offline
   b. People I work with
   c. People I know only online
   d. Other: __________
   e. Don’t know

5. How do you meet people online in this environment? Please explain.
   ____________________________________________

6. How do you know the experience level of users in the environment? Please explain.
   ____________________________________________

7. How do you know the reputation of a user in the environment? Please explain.
   ____________________________________________

8. How do a user’s experience and/or reputation affect how you interact with them in this environment?
   ____________________________________________

9. What kind of information do you like to share about your character or avatar in this environment?
   ____________________________________________
Section 5: Participant information

1. What is your gender?
   a. Female
   b. Male

2. What is your age?
   _____________

After the Survey

Thank you for completing the survey. If you are interested in trying a new online social environment, or participating in further research concerning online social environments, please submit your email address below. We will use your email only to contact you with information about these opportunities. People who participate in further research will have an opportunity to be compensated financially.

Email:
Appendix B: Online social environment survey results

Forums/Discussion Boards:

Use/don’t use
• 68% of respondents use them.

...Of these forum users: (from the 68%)

Frequency of use:
• 30% daily use
• 33% few times a week
• 19% few times a month
• 17% few times per year

Online habit/routine:
• 11% always leave it on when online (part of their routine)
• 42% check it frequently when online (part of their online routine)
• 26% check infrequently when online (not part of their routine)
• 21% rarely use them (not part of their routine)

Experience (how long have they used forums):
• 1% less than a month
• 13% less than a year
• 51% less than 5 years
• 35% more than 5 years

What forums they use: So varied, no statistical weight to any one forum/board.

Purpose of use: (multiple answers)
• 63% Entertainment
• 76% Resource and information gathering
• 12% To meet new people (discover social relationships)
• 30% To keep in contact with people (maintain social relationships)
• 27% Work/career/school

Explicit reputation rating system on most-used board (that user is aware of):
• 31% Don’t know / unaware of reputation system
• 30% Have reputation systems
• 39% Don’t have reputation systems

Explicit experience rating system (that user is aware of):
• 24% Don’t know / unaware
• 49% Have exp systems
• 27% Don’t have exp systems
Exp/Rep useful in forums?
- 21% Don’t know
- 52% Yes
- 27% No

Explanation on why/why not these systems are useful: (most common themes)
- informs me on the credibility/reliability/validity of the poster and their posts
- encourages positive social behaviour/ keeps things civilized
- reputation doesn’t matter, but experience does (how a community views a person does not impact the quality of their posts/ people who have been around longer know more)
- experience (post count) doesn’t matter, but reputation does (lots of posts doesn’t mean good quality posts)
- neither impact the quality of a post or discussion – content is most important
- reputation allows community to identify trolls / really helpful members
- ruins the community – spamming for experience and whining about reputation
- makes new users feel uncomfortable/timid

How they affect your interactions:
- I seek out / trust information from high experienced or reputation members
- Avoid or block trolls (low rep) / won’t respond to low rep posts
- Affects my opinion on a member, but not my actual interactions
- I am more respectful/concerned about what I say in response to high experience /high rep members
- People with high exp intimidate me
- People with high reputation are more approachable
- Doesn’t affect anything at all.
- Negatively affect my interaction – instant judging based on other people’s opinion rather than letting me make my own opinion on someone
- I am more forgiving/friendly towards new users

Does the forum use profile pages for users?
- 12% Don’t know
- 77% Yes
- 11% No

What do you share on your profile page? (multiple)
- 29% Nothing
- 19% Picture of themselves
- 32% Image or icon (not of self)
- 19% Real name
- 36% Personal message/about message / announcement
- 34% Email
- 15% Contact info other than email (link to webpage, phone #, instant messaging contact info, address, etc.)
34% Information about interests or hobbies
17% professional or career related information
12% location (city or country)

Profile info – what is useful about the info provided? (open comments that mentioned...)

18% Provides context for communication, makes it easier to interpret people’s comments by knowing their background.
20% Knowing ‘real-life’ details to support credibility/accountability.
29% Get to know them to help social relationships – personal details.
16% Get contact info to contact them outside the forum.
14% Not useful.

How does profile info affect your interactions?

20% Avoid a member based on their profile info.
17% Seek out people based on their expertise.
23% Seek out people who are similar to you in interests, demographics.
24% Does not affect interactions.
12% Affects my perception of the credibility of their comments (trolls give fake info or no info, people with experience/education are knowledgeable about certain topics, etc.).
17% Affects how I treat them or interpret their comments (Young/mature, ESL, similar culture, religious, etc.)
25% Makes it more personal and friendly because I know them better – gives them an identity (human, know them more, personality, etc.).

Social Network Sites:

76% use them

...Of these users (from 76%):

Frequency of use:

56% use daily
27% use few times per week
13% use few times per month
1% use few times per year

Online habit/routine:

15% always leave it on when online (part of their routine)
56% check it frequently when online (part of their online routine)
18% check infrequently when online (not part of their routine)
11% rarely use them (not part of their routine)
Experience (how long have they used social network sites):

- 0.5% less than a month
- 41% less than a year
- 54% less than 5 years
- 4% more than 5 years

Which one(s)?

- 86% Facebook
- 6% Myspace
- 4% LinkedIn
- 3% Friendster
- 3% LavaLife
- 2% Orkut
- 2% Other

Purpose of use: (multiple answers)

- 67% Entertainment
- 32% Resource and information gathering
- 15% To meet new people (discover social relationships)
- 94% To keep in contact with people (maintain social relationships)
- 14% Work/career/school
- 0.5% Shopping

How do you meet people?

- 82% I only interact with people I know offline
- 29% Through introduction or association of other online contacts (finding new people in your friends’ friend lists)
- 6% I introduce myself
- 13% I wait for others to introduce themselves
- 0.05% Don’t know

What information do you share about yourself in this social network site?

- 62% Picture of self (pic)
- 65% Real name (name)
- 56% Photos that I have taken (photo)
- 46% Personal message or announcement (msg)
- 54% Email address (Email)
- 17% Diary or journal of my experiences (Diary)
- 19% Contact information other than email address (cntct)
- 52% Information about interests or hobbies (hobb)
- 50% Professional, career or education related information
- 68% Who my friends are (friend list) (frnds)
• 56% Groups or networks that I am affiliated with (grps)

How does information that is posted about other people in the social network site influence the way that you interact with them?

• 24% It doesn’t
• 46% Decide if I want to contact them or not based on info they post (relationship status, good mood bad mood, etc.), OR offers opportunities to get in touch with them (new information/content to spark conversations, etc.)
• 29% Lets me know what is going in their lives without having to contact them
• 11% I join groups/networks that my friends have joined or invite people based on their posted information.
• 21% Social Context - The information they share changes the level of formality I use when I interact with them (education, age, profession…) / I match the tone they use in the information they post.
• 25% Helps me get to know them better, so I feel comfortable acting more friendly/familiar towards them.

How do you come to know someone’s reputation in this social network?

• 43% I don’t know / don’t care (know them offline / their reputation offline overshadows anything on their profile / online SNS reputation doesn’t matter to me)
• 39% Other people’s comments/posts on them (how many wall posts… what people say about them… how many photos they are tagged in)
• 21% Number of friends (many feel: too few is bad…too many is bad) or who their friends are (LinkedIn esp.)
• 39% What they post/what groups or apps they subscribe to (on their own profile or on other people’s profiles, in groups/networks)

Which of these modes of communication do you use in social networks to communicate with other members?

• 73% In-site mail
• 15% In-site chat
• 83% Commenting system (wall posts/comments)
• 26% In-site forum/board

Instant Messaging:

• 86% use them.

...Of these IM users: (from the 86%)

Frequency of use:
• 52% daily use
• 24% a few times a week
• 16% a few times a month
• 8% a few times a year

Online habit/routine:
• 46% always leave it on when online (part of their routine)
• 23% check it frequently when online (part of their online routine)
• 14% check infrequently when online (not part of their routine)
• 17% rarely use them (not part of their routine)

Experience (how long have they used IM):
• 0% less than a month
• 2% less than a year
• 15% less than 5 years
• 83% more than 5 years

What IM program do you use? (Some used multiple)
• 87% MSN Messenger/Windows Live Messenger
• 6% Google Talk/gmail chat
• 3% Yahoo Messenger
• 3% ICQ
• 2% Adium
• 1% AIM
• 1% Skype
• 1% Trillian
• >1% (1 response each) Other (Pandion, qq, sametime, meebo, jabber)

Why do you use IM?
• 52% Entertainment/leisure
• 30% Resource and information gathering
• 8% To meet new people (discover social relationships)
• 98% To keep in contact with people (maintain social relationships)
• 35% Work/career/school
• 1% Shopping

What is the relationship to the people you communicate with on IM?
• 97% People I know offline
• 58% People I work/go to school with
• 33% People I only know online
What information do you share with others in your IM program’s contact list when you are not chatting with them?

- 17% I don’t share any information
- 44% Picture of self
- 47% Image or icon, not of self
- 40% Real name
- 47% Personal message or announcement
- 71% Activity status
- 66% Email address
- 9% Contact information other than email
- 13% Profile information
- 2% Not sure

**MMOG/Metaverses:**

- 24% of respondents use them

Of these MMOG users: (24%)

**Frequency of use:**

- 28% use daily
- 30% use few times per week
- 21% use few times per month
- 21% use few times per year

**Experience (how long have they used MMOGs):**

- 1% less than a month
- 20% less than a year
- 57% less than 5 years
- 22% more than 5 years

What is the name of the MMOG/metaverse you use most? (some had multiple answers )

- 48% World of Warcraft
- 15% Second Life
- 11% Guild Wars
- 4% City of Heroes
- 4% StarCraft
- 4% Runescape
- 28% Other - 1 vote each for:
  - Age of Empires
  - CounterStrike
  - Diablo II
  - Kingdom of Loathing
  - LambdaMOO

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What is the relationship to the people you have communicated with in-game/world?

- 51% People I know offline
- 14% People I work/go to school with
- 77% People I only know online

How do you meet people online in this environment?

- 53% Through clan/group/guild, and by doing missions/quests or through gameplay.
- 31% I start conversations with strangers
- 30% Strangers start conversations with me
- 4% Through trades and buying/selling game resources (in-game trade message boards/forums)
- 14% By way of introduction through mutual in-game friends
- 10% Offline acquaintance - planned offline, meeting in-world.

How do you judge the experience level of users in this environment?

- 51% Their level / stats
- 40% Appearance – equipment, clothing, possessions.
- 38% How they play / move around (obvious if they are experienced or new)
- 15% Profile info – join date, etc.
- 11% Talking to them – are they knowledgeable/familiar with many aspects of the game or not.

How do you judge the reputation of users in this environment?

- 57% What other people think/say about them (word of mouth, guild bans, demotions or promotions, gossip/complaints in chat or external forums, etc.)
- 36% Through contact with them (how they play, what they say/do, etc.)
- 11% Their level/stats
- 9% Their appearance/items

How do a user's experience and/or reputation affect how you interact with them in this environment?

- 38% I seek out or avoid people based on their reputation.
• 28% I seek out or avoid people based on their experience.
• 24% Reputation determines how polite or respectful I am with them.
• 22% Experience determines how polite or respectful I am with them.
• 22% It doesn’t affect my interactions.
• (grouping with people of similar exp., avoiding reputed PK’ers, seek out experienced or reputable players for help/advice, avoid noobs…)

What kind of information do you like to share about your character or avatar in this environment?

• Answers are really dependant on the environment, and what each game allows or defaults you to share... Common answers are names, guild/clan/group membership, level, class or character type, equipment, skills, vocation, sex, race, wealth.
• Some people had fictional information about their avatar – character history that they made up in addition to any game narratives, or something witty to get a few laughs.
• Some people (missing the point of the question...) said they refused to reveal any real life personal information in game.
• Other people (missing the point of the question) shared lots of RL information, although to varying degrees depending on whom they were disclosing the information to (public versus friends versus guild/clan members…)

Chat Rooms:

12 % of respondents use them.

Of these people (12%):

Frequency of use:
• 12% daily use
• 23% few times a week
• 19% few times a month
• 46% few times per year

Online habit/routine:
• 8% always leave it on when online (part of their routine)
• 15% check it frequently when online (part of their online routine)
• 35% check infrequently when online (not part of their routine)
• 42% rarely use them (not part of their routine)

Experience (how long have they used chat rooms):
• 0% less than a month
• 12% less than a year
• 42% less than 5 years
• 46% more than 5 years
What Chat rooms they used: IRC, Yahoo Chat rooms, varied.

Purpose of use: (multiple answers)

- 81% Entertainment
- 77% Resource and information gathering
- 46% To meet new people (discover social relationships)
- 38% To keep in contact with people (maintain social relationships)
- 29% Work/career/school
- 3% Shopping

How do you know the experience that a user has with the chat room? Please explain.

- 42% By seeing what they say, how they interact and how others interact with them (are they ‘known’ or not, how they handle themselves, etc.)
- 42% I don’t / there is no way to tell
- 19% Profile information

How do you know the reputation of a user in the chat room?

- 42% By what others say about them.
- 37% By how they interact and by how others interact with them
- 35% I don’t
- 19% Profile information

Do the experience and reputation of other users affect how you interact with them in chat rooms?

- 4% Don’t know
- 41% No
- 55% Yes

No:
- “I assume people aren’t who they say they are in chat rooms.”
- “…their ability to converse has no real correlation to experience or reputation.”
- “I don’t care who I talk to, I rarely become attached or have further communication with any of them.”

Yes:
- “If they are cool then you talk cool with them.”
- “I place higher value on their responses if they are known in the channel.”
- “Noobs and unknowns are not to be trusted...scrutinized.”
- “More trusting of them…”
- “I pretend to be idle... I ignore people who are mean in the room.”

Does the chat room you use allow users to upload information about themselves to a user profile page that other members can view?
• 38% Yes
• 36% No
• 26% Don’t know

What do you share on your profile page? (multiple)

• 12% Nothing
• 19% Picture of themselves
• 3% Image or icon (not of self)
• 8% Real name
• 19% Personal message / about message / announcement
• 15% Email
• 3% Contact info other than email (link to webpage, phone #, instant messaging contact info, address, etc.)
• 19% Information about interests or hobbies
• 8% Professional or career related information

What do you find useful about the information that other people share about themselves on their profile page?

• 65% A/S/L, are they worth talking to / similar to me, helps me to get to know them better
• 31% Nothing
• 20% Picture

How does the profile information that other people share affect how you interact with them?

• 37% It doesn’t
• 25% Frame questions/replies in a way that will interest them, talk about stuff they like...
• 19% I feel more familiar or trust them more
• 13% Avoid or seek out interaction with them

Demographics:

57% Female
43% Male

Average age: 24.7 years.

17 – 24: 61%
25 – 29: 22%
30 – 34: 10%
35 – 39: 3%
40 – 50: 3%
50+: 1%
Appendix C: User study participants guide

Thank you for participating in this research study!

A new student handbook is being prepared for new university students. We would like you to reflect upon and discuss your own experiences as a student, and to collaboratively produce a list of ideas and topics to include in the new handbook. You will carry out this task in a prototype online social environment along with other participants. Some of these participants will be using the environment for the first time, while others will have some existing experience in using the environment.

Please consider:

• What information should be included and why?
• What information did you find helpful when you first came to university?
• What information did you wish you had when you first came to university?
• What factors do you think are most important to providing a good first year experience? How can these be included or emphasized in the handbook?

Instructions:


2. Follow the walkthrough and become familiar with ReciproCity. You can review this information at any time by clicking the “?” button at the top of the environment.

3. After being distributed around the research labs, please log in to ReciproCity (http://reciprocity.iat.sfu.ca)

4. Task: A new student handbook is being prepared for new university students. Using ReciproCity, we would like you to reflect upon and discuss with others your own experiences and opinions to collaboratively brainstorm a list of topics and information that should be included in the handbook.

5. After about 30 minutes, you will be asked to logout of ReciproCity and to return here.

6. Complete the brief questionnaire that is handed out.

7. Participate in a group discussion about your experiences in ReciproCity.

8. Collect your $15.

If you have any questions, comments or feedback about this user study or about ReciproCity, please contact Drew Paulin: apaulin@sfu.ca
Appendix D: User study post-session questionnaire

Informed consent by participants in a research study

The University and those conducting this research study subscribe to the ethical conduct of research and to the protection at all times of the interests, comfort, and safety of participants. This research is being conducted under permission of the Simon Fraser Research Ethics Board. The chief concern of the Board is for the health, safety and psychological well-being of research participants.

Should you wish to obtain information about your rights as a participant in research, or about the responsibilities of researchers, or if you have any questions, concerns or complaints about the manner in which you were treated in this study, please contact the Director, Office of Research Ethics by email at hweinber@sfu.ca or phone at 778-782-6593.

Your completion and submission of this questionnaire will signify that you have read the description of the procedures, whether there are possible risks, and benefits of this research study, that you have received an adequate opportunity to consider the information in the documents describing the study, and that you voluntarily agree to participate in the study. Your completion and submission of this questionnaire signifies that you are either a student of Simon Fraser University, or are 19 years of age or older.

Any information that is obtained during this study will be kept confidential to the full extent permitted by the law. Responses gathered in the questionnaire will remain confidential. Knowledge of your identity is not required. You will not be required to write your name or any other identifying information on research materials. Materials will be maintained in a secure location.

Risks to the participants, third parties or society:
This study involves the completion of online surveys regarding usage experiences of online social environments. Because this activity shall occur in a setting of the participants’ choosing, this research poses no risks to participants’ psychological or physical health.

Procedures:
Participants will be asked to complete a questionnaire where investigators will inquire about their experiences while using an online social environment. The questionnaire will be followed by an informal discussion between participants and researchers about their experiences and opinions with respect to the online social environment used.

Benefits of study to the development of new knowledge:
The study is focused on developing new design strategies for computer mediated communication systems that seek to improve the awareness and sociability of such systems. This research also seeks to explore the relationship between representation, identity, reputation and social experiences in online social environments. The findings of this research not only contribute to an existing body of literature on abstract graphical communication systems, but
may also be used to develop and improve communicative elements of groupware and other collaborative software systems by allowing for detailed representation of group members, and informing collaboration and communication with relevant social information such as expertise and previous experience.

You may withdraw your participation at any time. You may register any complaint with the Director of the Office of Research Ethics.

Director, Office of Research Ethics
8888 University Drive
Simon Fraser University
Burnaby, British Columbia Canada
V5A 1S6
+1 778 782 3447
email: dore@sfu.ca

You may obtain copies of the results of this study, upon its completion by contacting:
Drew Paulin: apaulin@sfu.ca

By continuing with this questionnaire, you are agreeing that you have been informed that the research will be confidential, you understand the risks and contributions of your participation in this study, and you agree to participate. By continuing to participate, you are confirming that you are either a student of Simon Fraser University or are 19 years of age or older. By filling out this questionnaire, you are complying to participate.

**ReciproCity Post-Session Questionnaire**
In order for us to better understand your experiences in ReciproCity as they relate to the representation of social information, we would like you to clarify your opinions both in the following questionnaire, and in a group discussion that will take place once you have completed this questionnaire. If you have any additional comments or questions, please let us know during the discussion.

**Please answer the following questions:**

1. While you were interacting in the environment, how aware were you of **reputation** ratings?

   (Please check one box in the scale below to rate your awareness of **reputation** ratings)

   | Completely Unaware | 1 | 2 | 3 | 4 | 5 Very Aware |

2. While you were interacting in the environment, how aware were you of **experience** ratings?

   (Please check one box in the scale below to rate your awareness of **experience** ratings)
3. Did you find the **reputation voting** feature useful?

(Please check one box in the scale below to rate the usefulness of the **reputation voting** feature)

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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Very Aware</th>
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</table>

4. Did you use the reputation voting feature to **reward** friendly or positive behaviour?

A. Yes  
B. No  
C. I don’t know  
D. I did not use the reputation voting feature

5. Did you notice changes to **your own experience** and/or **reputation ratings** over the course of the session?

A. Yes – I noticed changes in both experience and reputation  
B. Yes – I noticed changes in experience  
C. Yes – I notice changes in reputation  
D. No – I did not notice changes in my own ratings  
E. I don’t know

6. Did you use the reputation voting feature to **punish** negative behaviour? (Please circle your response)

A. Yes  
B. No  
C. I don’t know  
D. I did not use the reputation voting feature
7. Did you add anyone to your friends list? (Please circle your response)

A. Yes
B. No
C. I don’t know

8. When communicating with others in ReciproCity, did you prefer to position your avatar close to their avatar(s) to chat, or did you prefer to keep your avatar stationary and communicate with people from a distance using the chat panel? (Please circle your response)

A. I preferred positioning my avatar close to others to chat
B. I preferred keeping my avatar stationary and chatting using the chat panel
C. I had no preference between these two communication methods
D. I don’t know

9. Did you find yourself readjusting the position of your avatar while interacting with others? (For example, when other avatars were too close to your own, or when more people came into proximity) (Please circle your response) (Please circle your response)

A. Yes (I would move my avatar to space it from other avatars)
B. No (I would not move my avatar to space it from other avatars)
C. I never moved my avatar while in the environment
D. I don’t know

10. What is your gender? (Please circle your gender) Male | Female

11. What is your age? (Please write your age) ____________

Thank you for completing our questionnaire. If you have any questions or comments, please contact Drew Paulin at apaulin@sfu.ca.
## Appendix E: User study post-session questionnaire results

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<th>2 Exp Aware</th>
<th>3 Rep Use ful</th>
<th>4 Rep - Rew ard</th>
<th>5 Notice changes to own rep/ exp</th>
<th>Both (Yes, No, IDK, DNU)</th>
<th>(Ye s, No, IDK , DN U)</th>
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<th>7 Add Fri ents</th>
<th>8 Position - prefer close/(avatar) vs. distance/(panel)</th>
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IDK = I don’t know; DNU = Did not use.
Appendix F: User study post-session group interview discussion questions

These questions were used to guide the discussion:

**Effect of reputation and experience representation on social interaction**

1. What sort of information did you use when deciding on whom to interact with?
2. How did having the representation of reputation and experience ratings included in the chatspace affect your interactions with other people?
3. Did people’s reputation ratings (very high or low, average) give you any expectations of them?
4. Did people’s experience ratings (very high or low, average) give you any expectations of them?
5. Did the reputation ratings of people make them more (or perhaps less) approachable?
6. Did the experience ratings of people make them more (or perhaps less) approachable?

**Reputation voting behaviours**

7. Did many of you use the reputation voting feature? Can you give us some idea of why you used it, or what prompted you to use it?
8. If you used the reputation voting feature, can you describe the interaction(s) that you rewarded or punished?
9. Do you think people would be more likely to use the reputation voting for punishment than rewarding behaviour, or vice versa? Why?

**Avatar Movement and Proxemics**

10. Did you move your avatar? Why did you move your avatar?
11. Can you think of any way that avatar movement was used by yourself or others in order to communicate or interact with others?
12. In the questionnaire, you were asked if you preferred to move your avatar towards people you were communicating with, or if you preferred to remain stationary and communicate using the chat panel. Which did you prefer, and why?

**Effect of activity and social cues on social interactions**

13. If you saw that someone was engaged in a private conversation (phone icon flashing), did that impact how (or whether) you interacted with them?
14. If someone engaged in a private message while you were interacting with them, would you find it rude?

**Befriending**

15. Did you add anyone to your friend list? Why did you add them?
16. If someone added you to their friend list, did you add them to your friend list too? Why or why not? Did you feel any obligation to add them?
17. Do you think that you should have to approve someone before they can add you to their list? Why/why not?
18. Is 30 minutes of interaction enough for you to determine whether or not you would add them to your friend list? What if you knew you would never use this particular environment again – how would that affect your decision to add/not add someone to your friend list?

Finally, we invited any comments or questions that the participants may have had.
Appendix G: User study post-study role player group interview discussion questions

Role players were told:
Think about your experiences and your interactions across the 3 sessions. While you were playing a specific role, were trying to enact specific social situations and follow scripted social behaviours, you are also have a unique perspective in that you had the opportunity to see how people reacted, and maybe you saw patterns of behaviour across the sessions.

These questions were used to guide the discussion:

**Effect of reputation and experience representation on social interaction**

1. Do you feel that the social information that was represented about ‘you’ affected how people interacted with you? (name, age, message, friend list, exp, rep, etc.) How/Why?
2. You were each assigned a specific reputation level, and it was reset each session. Do you feel that your reputation level affected your interactions with people? How? Why? (approach/avoid?)
3. Your experience levels all started off the same in the first session. Unlike reputation, your experience rating changed across sessions – they were not reset. Did you find that your experience level affected your interactions? (Can you think of any changes between the first session when your experience was lower, and the later sessions when your experience was higher, that you feel could be attributed to perceived experience levels?)
4. Some of you had ‘reputation’ ratings that were counter-intuitive to the roles you played (high rep troll, low rep friendly). Do you think that participants identified this inconsistency, or somehow affected your interactions? How/Why?

**Reputation voting behaviours**

5. Did many of you use the reputation voting feature? Can you give us some idea of why you used it, or what prompted you to use it?
6. If you used the reputation voting feature, can you describe the interaction(s) that you rewarded or punished?
7. Do you think people would be more likely to use the reputation voting for punishment than rewarding behaviour, or vice versa? Why?
8. Did you get voted on – did you notice changes in your own reputation in any of the sessions? Why do you think this happened?
9. Do you think that this is a useful feature for an online social environment, or not very useful? Why?
10. Can you think of any benefits that could stem from a reputation system such as this? What are some of the possible detriments or problems that a reputation system could cause?

**Avatar Movement and Proxemics**

11. Can you think of any way that avatar movement was used by yourself or others in order to communicate or interact with others? (how did avatar movement or proximity help you play your role?)
12. Do you think that the users (yourselves and participants) preferred to move avatars towards people they were communicating with, or do you think that users preferred to remain stationary and communicate using the chat panel. Which did you prefer, and why?

**Effect of activity and social cues on social interactions**

13. Some of you were asked to engage in private conversations while speaking ‘publically’ or normally with participants. How do you think this was perceived?
14. Were any of you able to engage in a private conversation with a participant? Explain...

**Befriending**

15. Some of you were asked to add people to your friends list – either after an insult or confrontation, or others after asking nicely if you could do so or after a
friendly interaction. What sort of reactions and responses did you receive? (ask them to explain the context AND the reaction)

16. Did you sense that people felt obligated to add you to their friend list after you added them to yours?

17. Do you think that you should have to approve someone before they can add you to their list? Why/why not?

18. In an environment like this – where people for the most part do not know each other offline - What do you think people use as criteria for determining who is added to a friend list or not? (Behaviour? Interactions? Other people on the friend list? Who cares because they all knew we’d never interact again after the session?)

Your role and reactions to the role

19. How difficult was it to play your role? (ask for context – what role they played, what sort of behaviour they acted out etc.) Do you think that it was believable - do you think that participants knew you were playing a role?

20. What sort of reactions did you get from your role behaviours? Were they different than what you expected?

21. Did you find that the roles that you played had any influence on ‘behavioural norms’ that may have emerged? (Patterns of response to your behaviour or participants who adopted their own ‘roles’ during the sessions?)

Finally, we invited any comments or questions that the role players may have had.