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Collecting and Sharing Transient Personal Information Online

by

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Abstract

Everyday people share events and small details of their lives with others in multiple online spaces such as blogs, social networking sites, instant messengers and email. The interest of this thesis is in these small pieces of digitized information that people share on a daily basis. We begin with a quantitative study into how individuals appropriate the display name space within instant messengers to broadcast information to their community. Our study reveals that this information falls into three main communication themes: *Identification, Information about Self,* and *Broadcast Messaging*. We then expand our findings to the design of a system called *Transient Life,* which is shown to provide an effortless way for users to collect their daily personal transient information tidbits on the fly. Lastly, we take a look at *Transient Life* in use. This exploration generates important insights and suggestions on how future tools can improve upon the basic concept put forth by Transient Life.

Publications from this thesis

Material, ideas, figures, and tables from this thesis have appeared previously in the following peer-reviewed publications:

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The Transient Life system introduced and discussed in Chapters 4 & 5 was developed initially by myself, but was updated and maintained by Nelson Wong and Mark Watson.

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Chapter 1. Introduction

In this age of ubiquitous computing, the number of small bits of personal information that are posted over the internet about individuals is growing exponentially. If you picked an internet-savvy person at random you might find that he or she has one or more of: a personal web page, a web log (a.k.a. blog), profiles on various web services or sites, posted photographs and video collections, emails sent, posts on discussion boards, and chats and personal messages on various instant messaging or IRC tools. All of these contain traces of information about that person.

Because this is such a vast space, let us narrow the field a few degrees. First, we leave out information posted about that person by others; for example, if their name appeared in another person's blog entry, or if their name and bio is listed on a university's webpage as part of a departmental description. Second, we disregard conversations and conversational threads, such as chats within instant messaging and postings within a discussion board or IRC. We concentrate on what is left: the explicit information that is posted by the individual about oneself. This leaves us with such things as personal web pages, blogs, emails, photos, videos, profiles, and personal messages displayed to a user's community in instant messaging tools.

Even within this narrower set, people face challenges when sharing or broadcasting information about themselves to others. The first challenge is the number of places in which information is posted; each must be visited and maintained. The second challenge is the diversity of ways to actually post information. Each place often has its own idiosyncratic interface and expected information formats that must be obeyed. This is becoming even more complex as mobile devices are added to this mix. The third challenge is to make the information appropriate to its audience: a particular piece of information may be suited for a single place and/or person, or many places and/or a community of people. A fourth challenge is timely posting: some information that people want to share is best posted as it is acquired (or it becomes stale), or perhaps as an event that can be easily recalled in detail later.

Current efforts in personal information posting tend to reduce efforts for the recipient of information. For example, tools now help a person gather selected information from multiple sources into a single location that can be quickly browsed. An example is RSS[1] feeds. However, information production is tedious for those who want to regularly post and update information about themselves to multiple sources. We believe there is opportunity to help not only the information consumers, but the information producers as well.

We want to produce a design that helps people overcome some of the challenges mentioned earlier. Yet we do not have enough knowledge to produce this design. While we know that people broadcast information to their community of contacts, we do not really understand how or why they do this. We must investigate what types of information a person often shares with others, and the varied mechanisms they use to post this information. That is, we need to understand what people want to share with others, what information they are collecting and publishing, and the means they used to achieve this. This thesis takes a look at the broader context relating to how information is shared with others and the collection of transient pieces of information. It then focuses on how broadcasting is accomplished using one tool in particular, Instant Messaging (IM). Following the discussion of the behaviour found when broadcasting information via IM, we will look briefly at a selection of other mechanisms that people use to post personal information and present a system designed to facilitate the collection and publication of personal information to others. Finally, we will review that system in practice.

The remainder of this chapter discusses the background context within which this research falls, introduces the notion of personal broadcasting and information sharing, describes the problem and goals in more detail, reviews the methodological approach and provides an overview of the subsequent chapters.

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[1] Rich Site Summary or RDF [Resource Description Framework] Site Summary, also known as Really Simple Syndication

1.1 Background

Research in the area of information sharing falls into the arena of collaborative, communication and social software, designed for groups of people (two or more). This arena can be classified into two rough categories: software used within the workplace and software used outside the office. It is difficult to draw a line between the two categories since much of the software overlaps, serving both the workplace and the social sphere.

The line continues to be muddled when looking at the notion of sharing personal information. Both inside and outside the office there is the desire for one person to impart information to or receive it from another person. In the workplace, the need is based in coworkers or team members requiring awareness in and amongst the group. The awareness required is about status, availability, project and tasks and general activities. Collaborative, communication and social software in the workplace looks to facilitate these elements as well as cohesiveness within the group. Outside the office, the need for personal information is based in the social dimension of maintaining awareness amongst friends and family as well as building new contacts, sharing life details, discussion and receiving feedback. Inside or outside the office, collaborative, communication and social software cannot work without contacts.

The use of collaborative, communication and social software in and out of the workplace can normally be divided by the purpose for which it is used and the base information that is shared. But it becomes difficult to make a clear distinction when the information that is shared within the workplace is also personal and social in nature, elements that add personality and individuality in the use of a workplace tool. Knowing personality, humour, daily habits, routines and gossip or water cooler talk can add to the cohesiveness of the workgroup. These elements are particularly important to a group and if that group is distributed, the ease of sharing is greatly diminished (Kraut, Egido, & Galegher, 1988). The sharing of personal information is not just about the discussions and comments between users but also the presentation space and what personal elements the user displays and broadcasts to others.

The broadcasting of personal information to others can be defined as information about a person's self, that is placed in a technologically public space easily viewed by others using that same space and requiring no immediate feedback or response. Information about self can be availability status, personal health or emotional status, pictures or other media, comments or stories, links or other items that may be of interest. These are items that are either directly about a person or items that display personality or individuality.

The software used for collaboration and communication within the workplace can encompass such things as email, wikis, internal web pages or weblogs, audio/video conferencing, application and file sharing, time and project management tools, instant messaging and chat. Outside the workplace in the social sphere you will find many of these as well as discussion forums, personal photo collections, social bookmarking and networking sites, and massively multiplayer online role playing games (MMORPGs). As it seems, much of the software in this area overlaps both the work and social dimensions in containing personal information.

Instant Messenging is the ultimate example of a collaborative and communication software tool in use in both the workplace and social dimensions. Millions of people use instant messenger (IM) clients daily to communicate with coworkers, team members, friends, relatives, and even online dating contacts. With this explosion of use, researchers have taken to studying instant messaging and its impact. Much of the research regarding IM has been focused on its primary uses: maintaining awareness of a contact's presence and availability, how people (usually dyads) converse via text chat and how they exploit other features such as file sharing and receipt of notifications. Studies of IM use in the workplace expose how it supports collaboration, communication and project activities (Cameron & Webster, 2005; Isaacs, Walendowski, Whittaker, Schiano & Kamm, 2002; Nardi, Whittaker & Bradner, 2000), as well as its negative effects (Rennecker & Godwin, 2003) such as disruption (Cutrell, Czerwinski & Horvitz, 2002). In social contexts, researchers found a positive relationship between the amount of IM use and verbal, affective and social intimacy (Hu, Wood, Smith, & Westbrook, 2004). Studies of IM in the life of teens shows it to be important in helping to support the maintenance of their social relationships (Grinter & Palen, 2002).

When IM is in use, contacts are identified by the system through e-mail addresses. While unique, these email addresses may be cryptic. Consequently, the designers of most IM clients include a feature that lets a person create and/or change their display name at any time; this name is shown to others instead of the email address. It is through this mechanism that many people choose to share additional information, beyond the act of exchanging instant messages. One part of this research looks at this behaviour of how contacts change their display field to do more than simply identify or label themselves. It seems that in adding to this field, most people are using this feature to publicly broadcast what they are doing, an event in their life, or a personal state of mind. The display field becomes a way to publicize personal status, specify location, post comments, ask questions, and even post popular culture references. These additions obviously augment IM's preset availability messages (i.e., away, busy, be right back) in far richer ways than the system was explicitly designed to support. This appropriation of the IM display name feature into a public broadcast facility for extra personal information is a phenomenon worth exploring.

The study and development of systems that focus on the collection and storage of personal information has been popular of late. As digital technologies become ubiquitous, our abilities and desires to record and exchange personal experiences and information have increased over time. The different software tools in addition to IM listed previously are just some of the things that contain digital information about people's daily lives.

The idea of personal information collection first appeared in 1945, where Vannevar Bush proposed the idea of mechanized personal information memory storage called a "memex" (Bush, 1945). However, his vision primarily concerned constructing personal trails through organizational information "exactly as though the physical items had been gathered together from widely separated sources and bound together to form a new book" (Bush, 1945, p. 107). This vision was based on storage and did not yet incorporate sharing or publication to others. Now, several researchers are looking at the mechanics of saving everything we encounter in a digital memory store, its organization, and links to sharing (Bell, 2001; Czerwinski et al., 2006; Gemmell, Bell, & Lueder, 2006).

The interest of this thesis is in collecting the small pieces of digitized information that people tend to share with others on a daily basis and to facilitate the publication of such

information. The points of interest to us are items of spontaneous capture due to personal interest and information pertaining to self. These are everyday events and contextual information shared with others who have an interest in our lives.

1.2 Problem Statement

The general problem addressed by this thesis is twofold. First, we need to better understand people's behaviours and intentions for communication when they seek to broadcast information about self to others. Second, we as designers need to design better interfaces to support how people spontaneously generate, collect, and publish personal information tidbits; to consolidate this information to the many outlets available, so that information reaches the desired community.

1.3 Goals

In this thesis I will partially address the problems discussed above with the following specific goals:

Goal 1. **To investigate why people were appropriating the display name space in IM for broadcast messages and how often this occurs**. People use the display name space in IM to broadcast information about self to others. Investigating how people are appropriating the display name space can give insight into their behaviours and intentions, particularly in understanding the kinds of information they wish to transmit to others. To achieve this goal, a quantitative study was conducted in which usage of the display name space was logged. The study focused on the frequency of changes to the display name space and the main communication categories that represented the information placed in the space.

Goal 2. **To design, implement and deploy a tool that lets people collect and publish personal information (as now posted from IM and from other popular tools) from a single interface**. Our understanding of IM display name use (Goal 1), as well as our knowledge of other ways that people share information about self, can provide insight into designing interfaces to support how people spontaneously collect and broadcast personal information tidbits. Consequently, our goal is to use this information to develop, deploy and perform a limited field test of such a system. We will call this system *Transient Life*.

1.4 Results and Contributions

This thesis has its foundation in previous research knowledge and contributes original ideas and knowledge to the fields of CSCW and HCI. There are two major contributions from this research as suggested by the goals in the previous section.

1. It identifies and defines how people have appropriated the display name feature in IM to broadcast messages and communicate information about themselves. It is the first real analysis of the phenomenon and reveals the importance of having a place within tools supporting person to person interaction to allow people to broadcast different types of information to their community.

2. It demonstrates that systems can be developed to allow people to gather personal information tidbits and share the information with others in a single interface. By taking a look at the different mechanisms with which people collect and share information and forming a set of common properties, a set of requirements were created and the *Transient Life* system was developed.

1.5 Organizational Overview

The organization of the subsequent chapters reflects the progression of this research through each of the goals. Initially, we will present a review of prior research and literature within the broader context of broadcasting personal information and collecting tidbits of information. Then, we will describe a study on broadcasting in IM and discuss its results. We will finish with the presentation of a design for a system to facilitate the sharing of information which was implemented and deployed and discuss the system as it was used.

Chapter 2 discusses related work in the areas that surround the collection and sharing of personal information. Providing an overview of the themes of identity, awareness, privacy, broadcasting messages and information, location sharing, and serendipitous clippings it frames our research problems, and sets the stage for the exploration of broadcasting behaviour in IM.

Chapter 3 reports in detail a quantitative study in which the changes in personal information placed in the IM display name space were observed. The focus of this study was

to discover how individuals used and altered their display names. This study revealed that people changed this space with varying frequency and that the information in the space fell into seventeen different categories of communication, encompassed by three main themes.

Chapter 4 builds on the results from the study in Chapter 3 and considers other ways in which people collect, broadcast and share personal information. It then describes the design and implementation of a system, called *Transient Life*, to enable easy collection and sharing of personal information tidbits.

Chapter 5 takes an in depth look at the *Transient Life* system in use. It reviews users' initial feedback as the system was initially deployed, and then returns a year later for a more in depth analysis of the elements of Transient Life, reviewing its actual use and outlining areas for improvement.

Chapter 6 summarizes the main contributions and results of this thesis and relates them back to the goals set forth in this chapter. The chapter ends with a number of suggestions for future research based on the work in this thesis.

Chapter 2. Related Work

Sharing personal information with other people is a standard activity in a person's life. As technology becomes more and more ubiquitous in Western life, the ways in which that information is shared is extended with each new development and service.

This thesis focuses on two particular problems as identified in Chapter 1: taking a closer look at people's behaviour and intentions as they seek to broadcast information online to others, and how to support spontaneous collection of information tidbits and their publication. However, there is a much broader context behind these issues as related to broadcasting personal information online and the collection of transient information. This chapter provides a brief overview of this context, divided into several themes.

We will first discuss the aspects of identity, awareness and privacy as it relates to sharing information on the internet. Next we will look at the concept of broadcast messaging, several collaborative software tools designed to support it, and take a look at three other mechanisms in which personal information is broadcast. Lastly, we will discuss two particular types of information sharing: location and serendipitous clippings. The goal is to frame our two problems of personal information sharing and collection of transient information within these larger contextual themes.

2.1 Identity, Awareness and Privacy

When information about self is presented online there are three factors which influence how that information is presented. The first of those is identity. On the internet there is a spectrum on which one can present their virtual identity. The two ends of the spectrum are complete anonymity with the use of a pseudonym, and complete revelation where the virtual identity is equivalent to the real identity. The identity and resulting information that is presented depends on the goal of the interaction.

Identity and revelation are related to the concepts of awareness and privacy; essentially who desires information about a person's activities, location and status, and how much of that one is willing to reveal.

This section will discuss each of the general behavioural notions of identity, awareness and privacy in relation to sharing information about self online.

2.1.1 Identity and identification on the internet

This thesis concentrates on internet settings where people are generally aware of each other's real identity. However, there are many settings within online collaborative, communication and social software where the association between a person's virtual identity and their real identity is masked.

Many computer-mediated communication (CMC) tools allow spontaneous real-time (or synchronous) communication with other users. Instant messaging (IM), Multi-User Domains or Multi-User Dungeons (MUDs), Massive Multiplayer Online Role Playing Games (MMORPGs), Internet Relay Chat (IRC), and broadcast messaging systems are just a selection of these CMC tools. However, there are significant differences between them when it comes to identity and information disclosure. IM is predominately used between people who are known to each other outside of cyberspace, i.e., friends and associates. IM conversations are also private, and tend to be between pairs of people. They are also person centered and not group centered: while a contact list may collect one's 'buddies', these lists are not shared across contacts. In contrast, MUDs, MMORPGs and IRC contain primarily public channels, where any conversation is heard by all people currently in the room, group or guild. Most tend to be used by 'strangers', i.e., those who are unknown to each other in real space, and usually involve more than two individuals. Broadcast messaging tools (Jania, 2003) sit in the middle, where real-time messages usually comprising notifications and announcements are sent to large groups of people who are somehow associated (although not necessarily familiar) with one another, such as in a corporate network.

There are a variety of articles describing how people identify themselves on the internet, usually in MUDs and IRC, where the norm is for participants to protect their anonymity by displaying a pseudonym rather than their real names. Most of these stress how identity is formed through this pseudo-anonymity (Bechar-Israeli, 1995; Turkle, 1997), where a person creates a virtual identity to project a different persona of who they are while protecting their real identity. People's choices of names and/or avatars are usually one part

of identity creation. Any personal message or information that is posted is usually in relation to their virtual identity. This work is not particularly applicable to IM, as people on a contact list are typically known to one another and their images, avatars and names are usually representative of their real self and actual life.

Social networking sites, where users connect primarily in an asynchronous manner, each have different objectives and as such have different levels of anonymity. For instance, in those that focus on dating and connections (e.g., Lavalife[2]), a person's identity is shielded to a certain degree to prevent the direct link between the real person and the online persona. Others like Facebook[3], which originated as a college website whose premise was to connect those on campus to activities, social groups and facilitate offline connections, have a direct link between person and persona and make no effort towards anonymity. A result of these different objectives is that the level of information shared and available to others is highly varied, and they each provide different access controls to shared information. However, even those sites that provide tighter access control do not completely eliminate the possibility of linking the persona with the real person by an ingenious individual.

Within this space, our interest lies within close-knit small communities or groups where people are aware of everyone's real identities. As stated in Chapter 1, we will consider in particular contacts within IM, and within our system information targeted to others via directed email and mailing lists.

2.1.2 Interpersonal awareness

Broadcasting information about self is fundamentally tied to the notion of interpersonal awareness. Neustaedter, Elliot, and Greenberg (2006) describe interpersonal awareness information as the information people desire to maintain for their sphere of family and friends. This information tends to fall into three interrelated categories: information about location, activity or status. In interpersonal awareness, status refers to the state of the person themselves: their well-being, emotionally, socially and physically. Unlike the status knowledge primarily desired in the workplace, awareness for interpersonal reasons contains more of an

[2] http://www.lavalife.com/

[3] http://www.facebook.com/

emotional component. People want to know *how* their friends or family are doing and feeling, along with varying levels of knowledge about their activities and location.

Depending on the context and the intimacy of the relationship, the level of detail for awareness information varies. Neustaedter et al. divide people's community into three groups of social contacts: *home inhabitants, intimate socials*, and *extended socials*. The first two maintain tight awareness and coordination needs with each other, often at a level of detail that lets them coordinate very short term activities and provides them with a feeling of comfort and shared personal knowledge. Extended socials, on the other hand, identify a broader community where awareness information tends to concern life events or particular coordination needs and opportunities to provide feelings of connectedness.

Within sociology, we see other nuances that express subtle relationships between a person and his or her community. There exists within social network analysis an egocentric approach, where the network is centered around one person rather than the society as a whole. In an egocentric network, the centre node begins with the individual and focuses on their direct contacts and relations existing between these contacts. Granovetter (1973) discussed the relevance of the strength of ties between individuals and their importance to an ego's (or person's) network. Strong ties are those developed over time, involving greater intimacy and frequent interactions. Weak ties arise from infrequent and casual contact between individuals. Granovetter stressed the importance of weak ties as informational bridges. With a strong tie between individuals comes a high probability that their social circles will have a large overlap. A weak tie provides a connection to a different social circle providing bridges to other resources and information, yet requires less effort to maintain.

Within this context, this thesis primarily focuses on extended socials, or those ties that are weaker in strength, and the kinds of information they convey to each other to maintain connectedness. We will see how people maintain these connections within IM (Chapter 3) and again within our own Transient Life system (Chapters 4 and 5).

2.1.3 Privacy and information sharing

We cannot talk about information sharing without discussing privacy. What is counter-intuitive is that many people are surprisingly willing to broadcast information not only to

their extended socials but even to strangers with little regard to the violation of their own privacy.

Issues of privacy always abound when discussing online information sharing. Many research teams have and continue to study the different aspects of privacy (e.g., Ackerman 2003; Bellotti & Sellen, 1993; Boyle & Greenberg, 2005; Palen & Dourish, 2003). In a study on different types of information to be shared, and who people were willing to share that information with, Olson, Grudin, and Horvitz (2005) identified key classes of recipients (e.g., public, coworkers, spouse) and information (e.g., email content, health issues, phone numbers, successes and failures). Their results show promise for the design of tools which allow people to specify their preferences in who gets what information.

Looking at personal information revelation and the privacy implications on social network sites, Gross and Acquisti (2005) found that many people share personal and sometimes sensitive information on their profiles. Individuals are seemingly unconcerned about the privacy risks involved in sharing the information on their profiles, either because they are unaware of the risks, have trust in or have not investigated the default settings, or because they simply do not care.

Connections online in social network sites simplify the complexity that exists in our real life relationships. If we have 65 friends in real life, we would moderate those who would get what information. As consumers we also have different levels of desire for that information from someone (Neustaedter et al., 2006). Within social network sites people tend to be not as discerning amongst the 65 (or 650) online friends. Most receive all the same information.

We will not discuss privacy further in this thesis. In our research, we are not looking at internet software or profile information that is being requested from the user. We are looking at information that is freely given and/or added to existing display spaces. When we present our system, we will demonstrate that the collection and distribution of the personal information remains the choice of the user, and thus we assume that people will self-mediate the information they send and the community members they choose to send it to.

2.2 Broadcasting Information

As defined previously in Chapter 1, the broadcasting of personal information is information about self that is placed in an online space to be viewed by others using the same space, and requiring no immediate feedback. Traditional workplace broadcasts are often availability/location statuses, requests for skilled help, and work related material. Personal information broadcasting also includes personal, health or emotional status, comments or stories, pictures, links and other material of interest.

This section will discuss several themes within information broadcasting, starting by looking at several broadcast messaging tools designed to enhance collaboration and communication in the workplace. We will then look at three other mechanisms in which people broadcast personal information.

2.2.1 Supporting broadcast messaging

There are several CMC systems specifically designed to allow people to broadcast information to others. However, some systems do this with an expectation that it leads to a particular desired response (i.e., they serve as conversation openers for synchronous or asynchronous communication), while others do this as a means to transmit information about self, with no immediate expectation of a reply. We are primarily interested in the latter case.

Social scientists consider computer mediated communications and how they affect the notion of community. Etzioni and Etzioni (1999) argue that in order to form and sustain bonds, a community of connected individuals needs what they call "interactive broadcasting". This is composed of two major elements:

- the ability to broadcast messages to many people within the community simultaneously, and
- the ability for those addressed by the message to provide feedback, not just to the message originator, but to other message recipients as well.

In this context, a broadcast message can be considered a request for interaction from some (or all) members of a group (Jania, 2003).

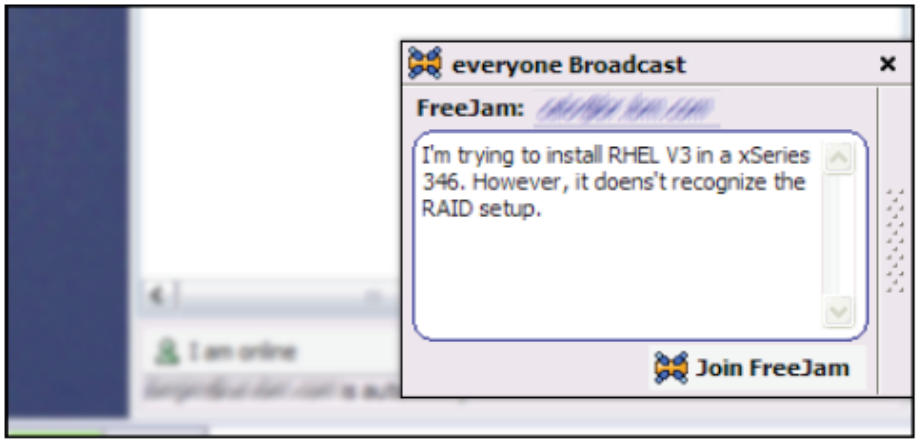

Figure 2.1 ICT Broadcast: a slide-out invitation to discuss an issue [Reproduced from Weisz, Erickson & Kellogg, 2006]

IBM Community Tools (ICT) (Weisz, Erickson, & Kellogg, 2006), ReachOut (Jacovi, Soroka & Ur, 2003), and Zephyr (Ackerman & Palen, 1996) are all broadcast messaging tools designed for a corporate context. Messages are broadcast widely, and either all users or subscribers of a channel or community will see the message (see Figure 2.1 for an example). Responding is optional. If a user chooses to respond they are brought to a chat room specific to the broadcast message. Responses are seen either by all users subscribed to the channel (e.g., Zephyr) or by just those who responded to the broadcast (e.g., ICT). Depending on the tool, chats had varying levels of synchronicity. Broadcast messages in this form were designed to support questions and answers, i.e., seeking assistance from co-workers. However, they were also used for other communications, such as announcements and polling, and sporadically contained social, non-work related messages.

A variety of other collaborative and communication software tools have broadcast capability in their systems. For example, IRC, Notification Collage (Greenberg and Rounding, 2001), Community Bar (McEwan and Greenberg, 2005) and Tickertape (Fizpatrick, Parsowith, Segall, and Kaplan, 1988) are all tools that implement interactive broadcasting. A message (which may include multimedia information) can be posted and broadcast to the group in various ways, and it is possible for everyone to view the information without directly contributing to a conversation. Those who want to respond can do so, in full view of all users. All these systems allow for communal feedback, i.e., where

everyone sees the response. Unlike IM, these systems include a strong notion of a common group by providing a public space for interaction.

AnyBiff by Rittenbruch, Viller and Mansfield (2007) is "a generic activity announcement tool that lets users share intentions to engage in activities and social context with relative ease" (p. 140). It is intentional enrichment to activity and location awareness. It sits between event-driven awareness notifications and direct communication. A *biff* is a customizable notification element that has a name, description and icon to which you can attach status messages. All biffs are shared and the activity is visible to anyone who subscribes to it (Figure 2.2). The most common types of biffs that arose from their user study were activity/location biffs which were primarily status indicators (Meeting and Thesis in Figure 2.2**Error! Reference source not found.**), and activity inducers, which were a call to join into an activity, usually social in nature (Coffee and Hacky Sack in Figure 2.2).

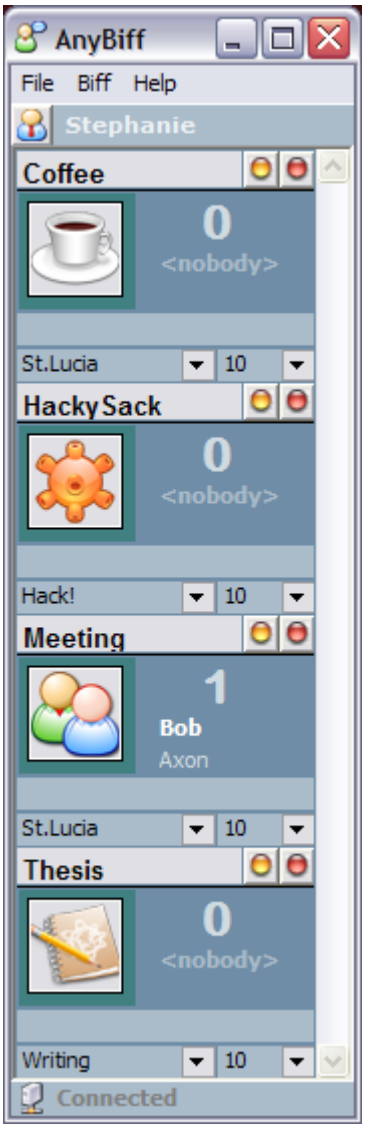

Figure 2.2 AnyBiff awareness interface by Rittenbruch, Viller and Mansfield (2007)

AnyBiff is a broadcast system. Yet it is not communication in the sense of interaction, but a declaration of intent. Biffs are sent out and people can join in or not. The display indicates which users have engaged the biff. There is no chatting as in the broadcast messaging systems mentioned above. It is more of a status tool than a discussion tool. It uses disclosing intent as limited communication – it does not require interaction beyond the notification.

2.2.2 Adding information to IM display names

In the previous subsection we described several tools that were specifically designed to support broadcasting information. We will now look at a manner in which personal information broadcasting is accomplished by appropriation, i.e., where people use the system in a way that was not intended by its designers. We shift our focus onto Instant Messaging, and in particular, how people exploit the facilities of IM to broadcast information about self that is 'out of band' of the normal conversational chat system held within it.

IM does not have an explicit broadcasting facility. Outside of direct chat, what IM provides is a simple awareness mechanism in which online availability status is broadcast to a user's set of contacts. The big 'win' of IM is that it provides one's ad hoc set of contacts with awareness of one's online state, which in turns serves as an estimate of one's availability for conversation. While not completely accurate (Nardi et al. 2000), even this minimal information suffices to create opportunities for lightweight text-based conversations and to reduce the equivalent of 'telephone tag'. While many research systems go far beyond IM in the rich awareness information they give to others (e.g., Cadiz, Venolia, Jancke, & Gupta, 2002; Greenberg & Rounding, 2001; McEwan & Greenberg, 2005; Tang & Begole, 2003), questions remain about privacy implications of distributing this information.

Although IM clients contain preset availability messages (e.g., away, busy, be right back) to provide this awareness of online state, many people desire more than simple awareness of presence or availability indicators. As briefly outlined in Chapter 1, many IM users appropriate the display name space as an alternate indicator of their personal status or location.

Grinter and Palen's (2002) study of teen use of IM also supports this observation. While their work broadly considers IM as an emerging feature of teen life, they do mention that teens found the preset availability messages to be too impersonal. To combat feelings of exclusion or to avoid being rude, teens would personalize the display name area to include a message which explains their unavailability, changes in their local environment (e.g., 'Going quiet because Mom just arrived'), and for justifying their lack of presence on the system (e.g., 'Out for dinner').

The use of IM display names to broadcast messages is an everyday world phenomenon, and has been anecdotally noticed by non-scientists. For example, one reporter noted in a newspaper article that changes to her display name are her main form of IM communication rather than actual chat conversations (Piepmeyer, 2003).

Other users may use the display name space as a notice or message board. Scores of display name changes occur to reflect a personal sentiment or post announcements. People are using this space to broadcast personal information beyond simple online state awareness. Users are not looking for a response; they are sharing without direct interaction. The change of the display name space to contain a broadcast message becomes much like a diary or a mini-blog entry.

This phenomenon of how people use IM display names to broadcast information about self will be discussed in much greater detail in our study of the behaviour in Chapter 3.

2.2.3 Static personal information in online profiles

Broadly speaking, there are two kinds of information that people may share with others: static information about self that never or rarely changes (e.g., name, addresses, occupations) vs. dynamic information that typically portrays status, events and activities as they occur in a person's life. While we are mostly concerned with dynamic information, we still have to consider how people maintain this static information. This is usually done through *profiles*.

When a person joins a community online, such as a discussion group or a social networking site, one of the most common first steps is to create a profile forming an identity for the site. As stated above, a profile contains primarily static information about self that rarely changes. How much information is provided is dependent on the type of community, and the services it provides to the user.

The information shared by someone in their profile can have an effect on their reception within a community. A study by Swinth, Farnham and Davis (2002) examined how profiles can facilitate social interaction and what factors affect the kinds and amount of information shared within a profile. Originally, people are attracted to a community's content and services, and this may be why they join, but it is the interpersonal relationships that grow and maintain that involvement. For sites that foster closer social ties and more

meaningful interpersonal relationships, people are willing to share more personal information, and keep that information up to date.

Where detailed information is shared about self, people want control over the information and will actively manage the impressions they project. Profiles constructed for online communities provide an individual's perspective of self, but it is often skewed by the person's consciousness of their audience (boyd, 2004).

We will return to profiles briefly in Chapter 4 as we discuss the different properties of information sharing mechanisms.

2.2.4 Blogs

Stepping back somewhat, there is a much broader phenomenon of broadcasting detailed information about self that goes beyond short awareness 'snippets' and basic profile information. The best examples of this are blogs.

Web logs (or blogs) are typically defined as frequently updated web pages with entries listed in reverse chronological order. They are usually interlinked with other blogs and websites, and contain mechanisms to post commentary on entries. Although initially conceived to be a basic web page compilation of interesting web links, the blog has evolved since the introduction of blog software into a journal of sorts (Blood, 2004). Now, within a blog a person can easily post a text entry of indeterminate length, pictures, links and respond to any comments by readers, providing opportunities for feedback and discussion. There is now a range of different types of blogs on the internet covering the original link consolidation, community-based, topic-specific blogs to industry newsletters. However the types of blogs most relevant to this research are the individual personal blogs. These blogs function for the owner as diaries, record-keepers, chronicles, travelogues or maintainers of status for family and friends (Nardi, Schiano, & Gumbrecht, 2004; Nardi, Schiano, Gumbrecht, & Swartz, 2004; Schiano, Nardi, Gumbrecht, & Swartz, 2004).

The blog, although viewable by both known persons and strangers, typically contains information and events based on the real self. Blogs differ from static web pages because they capture ongoing expressions. They are a facet of the blogger. They are a reflection of their interests and values. As stated by one participant in Schiano et al. (2004), "blogging is

about yourself, unlike avatars or other digital identities" (p. 1145). Audience awareness in blogs comes in the form of editing. A post is written so as not to offend or disturb a known reader (Nardi, Schiano, Gumbrecht, & Swartz, 2004).

In discussions with those who blog, there are often difficulties in trying to define blogging and blogs and what the activity means to them. Those involved often move beyond the usual metaphors (e.g., it is like a journal) and strict definitions and discuss the social aspects. "They talk about the conversational qualities of blogging and *the desire to share with others*. They talk about community and how blogging helps them engage with a community of people"(boyd, 2006, p. 9).

Most blogs are accessible by anyone exploring the internet. Despite this open availability, people are willing to share wide ranges of information about themselves. The content they choose to share encompasses to-do lists, opinions, general observations, and private thoughts. However, most bloggers are blogging to those they know in real life and the potential of being read by a like-minded individual (boyd, 2006). Control of style, access, comments and content are all within the hands of the individual blogger, creating a sense of ownership and personal space.

Blogs are an important tool for broadcasting personal information online. We will return to blogs briefly in Chapter 4 to discuss their properties as an information sharing mechanism and as an add-on construct to our Transient Life system.

2.3 Location and Serendipitous Information Sharing

One important aspect of sharing personal information is the collection and distribution of transient tidbits and encountered information. This section describes two particular types of personal information sharing that occurs in many CMC situations. First we will move away from the desktop and into mobile information, consisting of the sharing of a user's location with both known and unknown people. Second, we will look at the "clipping" and sharing of encountered information of interest.

2.3.1 Sharing location information

As mentioned previously in this chapter, location is one of the major pieces of information that is often shared between or requested from members of a community. There have been explorations in to the automatic sharing of basic location information to known associates (Consolvo et al., 2005) but it is not always positively received. People want control over to whom, when and how that information is shared, for various reasons, similar to the sharing of personal health or status information.

Luford, Priedhorsky, Reily and Terveen (2007) developed a location-based reminder system, named PlaceMail, combined with a community building map system called Sharespace (Figure 2.3). Using PlaceMail, users created reminders for locations, such as "return library book", and when they came physically near to that location (the library) in accordance to their GPS coordinates, they were alerted on their cell phone with the reminder message attached to that location.

Luford et al. investigated people's willingness to share their location information and reminder messages associated with that location. The notion was that the system combined a personal notification tool with a community bookmark/recommender system. In this project location information shared with others using the system did not necessarily indicate current position.

From this study they were able to create heuristics or how people decided what kinds of location information to share. In general, most people were willing to share:

- Public places, and any messages about typical activities occurring at those places
- Location information or messages that they believed others would find useful
- Places they wish to recommend – however, they will not do this if they feel the place will become overcrowded and ruin its appeal.

Items that they will not share are:

- Messages or locations that include names, especially those of children
- Residences, private workplaces or messages that are attached to those places

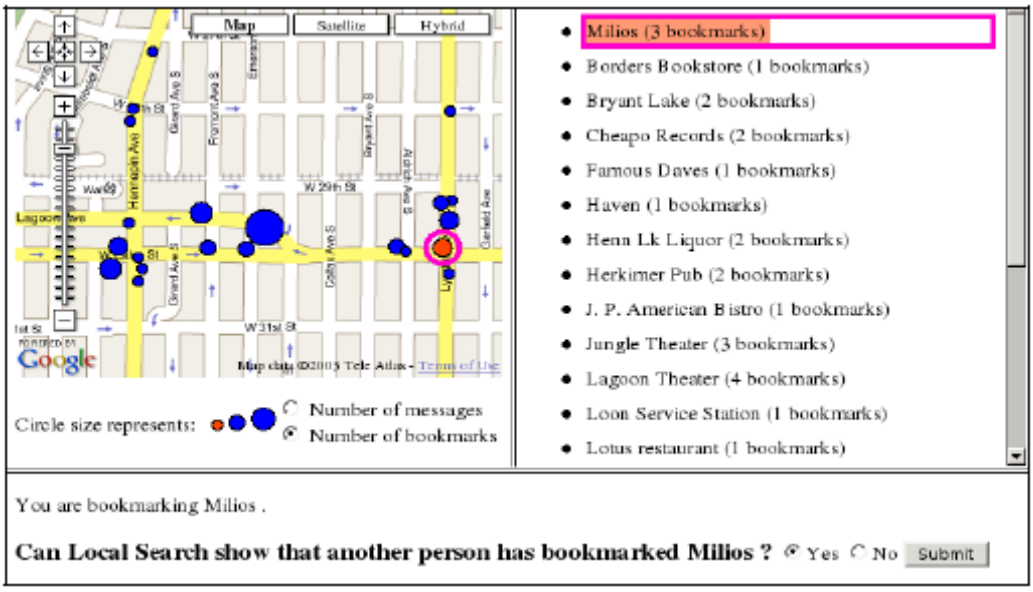

Figure 2.3 Sharespace interface [Reproduced from Luford et al., 2007]

A related location aware system is Dodgeball[4] where users share their location at social hangouts using the web and their mobile phones. It is a location-aware friend finder system. A user broadcasts their presence in a location to buddies, and through a social network, to buddies of buddies. It will also compare your location with others on your network and notify you of anyone who is nearby to your location. It is used to maintain and develop social connections.

Unlike the above Sharespace system where the location information that is shared is in the past, Dodgeball broadcasts a user's current location. Sharespace's information is more about the location itself and less about a particular individual, although opinion and behaviour is incorporated. Dodgeball is less about the location and more about the individual and the social connections.

Location information is a fundamental awareness element, either as shared or desired information. We will see how location crops up as an important element within IM display names in Chapter 3 and how we incorporate location awareness information within our own Transient Life system in Chapter 4.

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[4] http://www.dodgeball.com

Figure 2.4 Dodgeball's splash page on the web

2.3.2 Sharing serendipitous information tidbits

An important type of recurring information concerns how people share serendipitous information encountered over the course of a day. While this is not direct information about self, it does reflect aspects of an individual through their interests, values, humour and awareness of others.

Goecks and Cosley (2002) acknowledged that information tidbits shared between coworkers are often lost in face-to-face communications since the action between the delivery of the tidbit in conversation and the action upon it is asynchronous. In response they built a system, NuggetMine (Figure 2.5), as a workgroup repository of information "nuggets". NuggetMine is a groupware application that "opportunistically and asynchronously captures and displays nuggets" (p. 88).

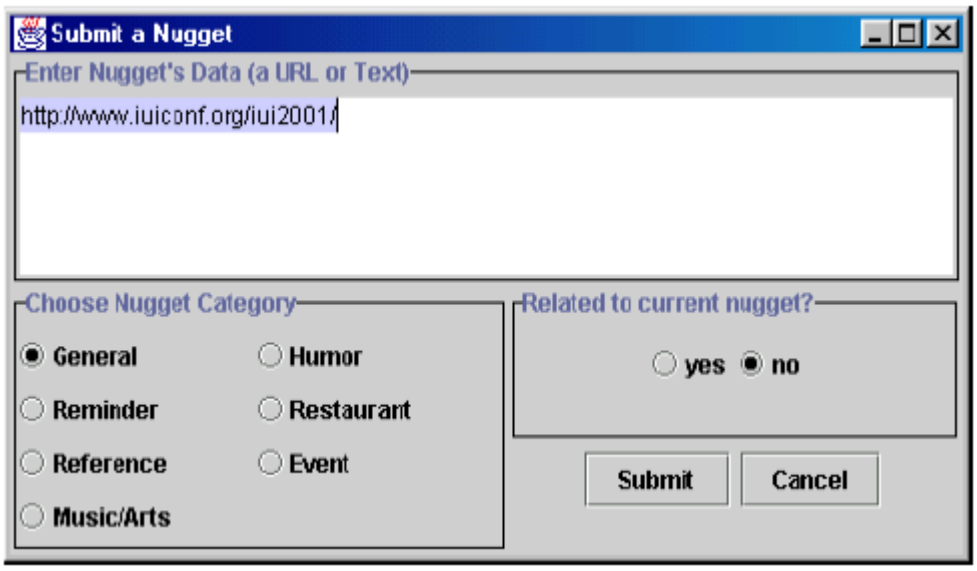

Figure 2.5 NuggetMine [reproduced from Goecks & Cosley, 2002]

Their interface follows a simple drag and drop mechanism to enter a nugget. A tickertape cycling on the interface displays the submitted nuggets. Submitted data is organized using an associative network to relate similar nuggets. Despite being a workgroup application, the nuggets that people collected and shared were not restricted to work related topics.

Online, del.ici.ous[5] provides a place to collect and share web links. It is a social bookmarking site. It acts in a similar manner to the gathering of nuggets. Using their account a user bookmarks (or collects) a link of interest. They then tag the link with a descriptor or category label. As a social software site, the user's bookmarked links are then connected via the tags to other links bookmarked by other users.

In 2004 Marshall and Bly studied how people save pieces of information as they read everyday publications, and how they expected to use the material they encountered. Specifically, they were interested in clippings from paper materials or the saving of *transient* material on the internet. This clipped material is different than the information material derived from a direct search or task focused browsing.

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[5] http://del.icio.us/

Their data showed that people clipped a mix of both work related and personal items through out the day. The collection of clippings (web or paper based) was not just for their personal use and consumption, but to be passed along and shared with others.

What is the significance of the sharing? In many cases the sender's motivation was to demonstrate knowledge of the recipient's interests or emphasize a connection between the two. Clippings are not just used to share information, they are also used to "keep in touch and strengthen the social ties within a community" (Marshall & Bly, 2004, p. 224).

Important to this research is the outline of several categories of clippings: items shared to establish mutual awareness, items to educate, items of common interest as a means to develop rapport and items that reflect the known interest of the receiver. All of these categories incorporate sharing information with others. We will see similar motivations for sharing links and photo items within our Transient Life system in Chapter 5.

2.4 Chapter Summary

In this chapter we have attempted to frame our problems of personal information sharing and the collection of transient information within several larger contextual themes.

We first discussed the themes of identity, awareness and privacy. An online virtual identity can range from complete anonymity to complete correspondence with a real identity. The amount and type of information shared relates to the type of virtual identity. Interpersonal awareness is the desire for and maintenance of activity, location and status information amongst friends and family. Privacy elements are considered when information about self is freely given online.

Next we discussed the notion of broadcasting information. We first looked at several tools designed specifically for broadcast messaging, and then we discussed several other mechanisms in which people are seen to broadcast personal information: adding information to display names, static information placed in online profiles and blogs.

Finally, we took a look at two final themes: the sharing of location information and clipped serendipitous information and how they are used to foster community ties.

This was a brief overview of a wide area of research surrounding our research problems of collecting and sharing personal information online. We will now narrow our focus and concentrate specifically on the smaller space of sharing personal transient information tidbits.

In the next chapter we will present a detailed study investigating how people use the display name feature in instant messengers to broadcast information to their community of contacts.

Chapter 3. Display Names Study[6]

The research discussed in Chapter 2 encompassed a large information space of information broadcasting and sharing personal information online. This chapter presents an investigation into a small piece of that space: the brief transient information that goes stale quickly. As a person's circumstances, thoughts and current status are constantly in flux, what they wish to share with others changes just as frequently, making it stale or transient. The motivation of our investigation, and the focus of this chapter, is how people adopted instant messaging for this purpose.

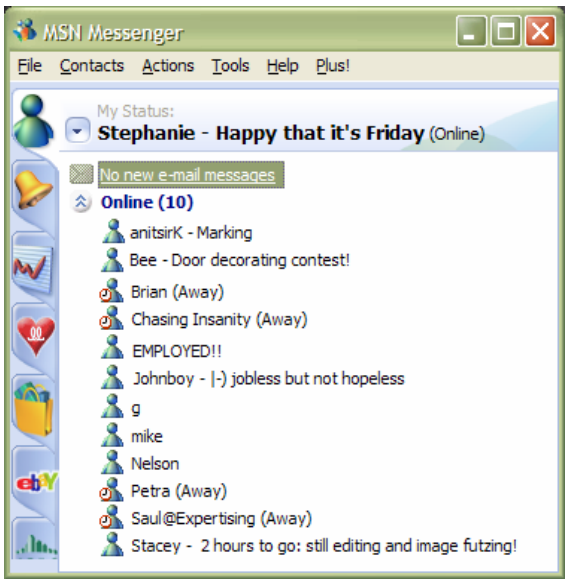

Figure 3.1 MSN Messenger; modified display names are visible

As heavy instant messenger (IM) users, we noticed that many of our contacts change their display name field to do more than simply identify or label themselves. Figure 3.1 illustrates an actual screenshot of my personal IM contact list taken at an arbitrary moment in time. In it we see that various people have used this feature to publicly broadcast what they are doing (e.g., 'anitsirK – Marking') or an event in their life (e.g., 'Employed'), or a personal state of mind (e.g., 'Chasing Insanity'). When we noticed this behaviour, several

[6] The material in this chapter appeared in Smale and Greenberg, 2005.

questions came to mind: Why was this space being appropriated for messages broadcast to an entire contact list? What were users trying to communicate to others and how is this information different than that in a normal IM conversation? How often do these messages or alternate communications occur? We believed that people's appropriation of the IM display name feature into a public broadcast facility for brief, changing information was a phenomenon worth exploring. The investigation presented in this chapter is a study of this appropriation of the IM display name feature and the brief, personal information broadcast by users in its space.

In particular, the purpose of this study was to discover how often contacts changed their display name and what those changes were. To answer these and other questions, we conducted a three week study, where we monitored changes in each person's display field within contact lists held by various users of MSN Messenger. We tracked how often contacts changed their display name, and what these changes were. We also categorized these changes into communication purposes.

As indicated in Chapter 2, there are discussions of how broadcasting information contributes to community building, and there are systems that are based on public dissemination of information within a group. However, excepting a few discussions of this phenomenon (Grinter & Palen, 2002; Piepmeyer, 2003), there has been no real analysis of how people have appropriated the display name feature of IM. Given the importance and widespread use of IM, we believed this analysis was critical to understand the type of information people are sharing and how we can use that understanding to improve IM and other communication software/systems.

The remainder of this chapter presents this study in more detail. First, the methodology of the study will be presented, outlining the main research questions and describing the participants, materials, and procedure. Then the results from the study will be reported, responding to each of the research questions in kind. The results are then interpreted and discussed along with implications that can be derived from the study.

3.1 Methodology

As stated above, this study investigates how people use the display name feature in IM clients to broadcast information other than one's name. We conducted the study by capturing changes in each person's display field as they appeared in contact lists over time and over everyday use, by asking people to explain what these changes meant, and by counting, categorizing and analyzing these changes.

3.1.1 Research questions

We wanted to identify three main behavioural patterns within our captured data:

1. At what frequency do users change the information in their display field when using an IM client such as MSN Messenger?
2. What are the main communication categories that represent the information held by these display field changes?
3. What is the frequency distribution of these categories?

A fourth interesting but secondary question was:

4. Are changes to the display name related to the demographics of age or sex?

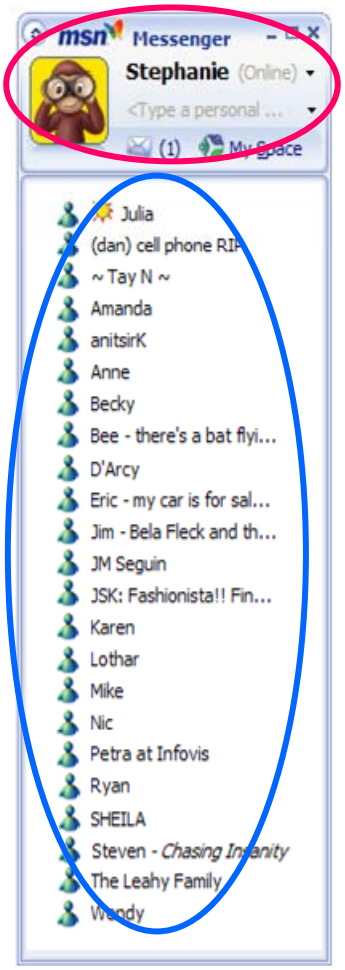

Figure 3.2 Illustration of primary (pink) and secondary (blue) participants

3.1.2 Participants

We had two classes of participants. Our primary participants were those who made their contact list available to us. Our secondary participants were those who comprised the people on the contact lists. Figure 3.2 illustrates the two sets of participants: 'Stephanie' (Figure 3.2, top pink oval) would be the primary participant, and all of the people on her contact list from 'Julia' to 'Wendy' (Figure 3.2, bottom blue oval) would be secondary participants.

Twelve participants were recruited as primary participants, all Computer Science graduate students or faculty at the University of Calgary. They ranged in age from 23 to 50, and were regular users of MSN Messenger. These participants provided access to their IM contact lists. They were also willing to annotate the collected data. While the number of contacts on each person's list varied somewhat, this variance was irrelevant to our study.

Our secondary participants were the 444 contacts found on the contact lists of the 12 primary participants. We recognize that the primary participant pool is seeded by those in the Computer Science field. Although this may seem to indicate bias, they are representative of active computer users and their use of IM is not only work related, but for the maintenance of social relationships. The secondary participants covered a broad range of demographics and social relationships, i.e., fellow students, workmates, friends, acquaintances, family members and other relatives. While the display names used by these 444 people were collected as data, they were not contacted directly.

3.1.3 Materials and data capture

Each participant (whether primary or secondary) used their own pre-existing and unaltered MSN Messenger client on their own computer (running Windows) for everyday purposes.

A logging program was written to collect all contact list data from each primary participant (see excerpt in Appendix A.5). It monitored every person's display field as it appeared in the contact list. The software worked by tapping into the programming API of MSN Messenger (regardless of its version) to monitor activities within it.

This logging program was given only to the 12 primary participants. No special software was needed by the 444 secondary participants, as their data was captured via the logging software on the primary participant's computer.

The 12 primary participants installed our software on whatever computers they wished. When installed, it worked in tandem with MSN Messenger to collect data on everyday IM usage in the field.

The program monitored whether the participant was logged in to MSN Messenger. If logged in, it recorded the initial set of display names and any display name changes of the

secondary participants on the contact list. The initial set of display names was needed to notice if a change occurred since the primary participant's last login.

As part of our analysis, we used the standard features of Microsoft Excel 2003 to sort and consolidate the data files. Relevant data was then transferred to Minitab v.14 to tally distributions, calculate statistics and create visual representations of the data. Further analysis of the categories of communication used in the display field was conducted using paper cut-outs and post-it notes to create an affinity diagram; this is detailed later.

3.1.4 Method

Once primary participants agreed to participate in the study, we gave them instructions on how to install the logging program on their computer. We did not have to be present for this, so people could install it on whichever computers they regularly used, be it at work or at home. The program then ran automatically; the only indication of its operation was a small red notebook icon appearing in the participant's system tray. This icon allowed a participant to abort the collection process if they wished, but none chose this option.

Data was collected for approximately three weeks, but did require the person to be logged onto MSN Messenger. If a primary participant was not logged on, no data about their contacts was recorded. This meant that some display field changes of secondary participants could have been missed.

3.1.5 Analysis

At the end of three weeks, the primary participants were instructed to open the data file with Excel, and indicate the sex and approximate age of each listed contact member in a pre-designated column. For each display name change, they were also asked to categorize the type of information the contact was trying to broadcast to others. We did not predefine any categories. Participants created their own category labels and categorized names into them however they wished. We chose this approach because we felt that participants would have a far better understanding of the true meaning of a person's display field changes than someone unfamiliar with the contact; we also felt that as recipients of this information, their interpretation was important. We also believed that they would generate a greater – and therefore richer – breadth of categories.

Once the categorizations were completed, the data files were transferred to the primary investigator. The investigator consolidated all of the data files into one master file, and removed any duplicate entries. These duplicate entries occurred for two reasons.

- More than one person had a particular contact on their list.
- Each time a participant logged in, their entire contact list was recorded in the data file. If a contact had not changed their name while the participant was offline, a duplicate entry was created.

When duplicate entries occurred, all but the earliest occurrence of the display name change was removed.

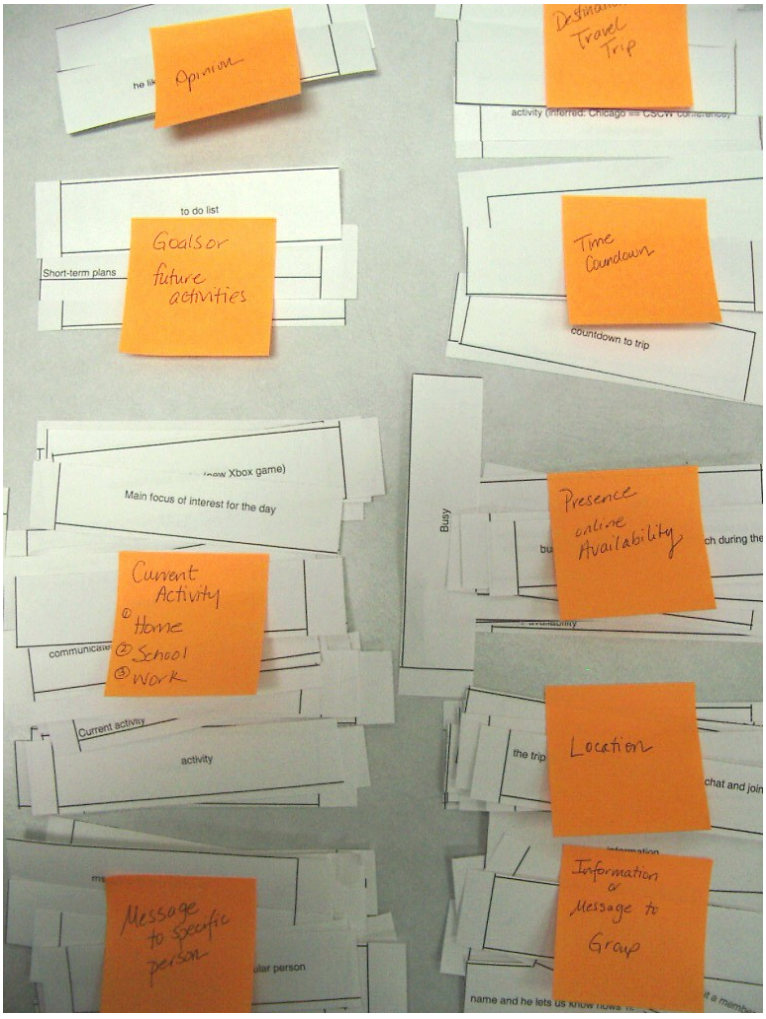

Figure 3.3 Image of a portion of the affinity organization used to group participant categorizations into master categories.

A category list was created for each primary participant based on his or her individual categorizations of display name changes. Because these category names could differ between participants, we needed to re-categorize these names into a master category list. To do this, all categories were printed on separate slips of paper for easy sorting. We then used an affinity organization to resort these categories, where entries from all the lists were sorted into groups based on perceived similarity. These groups then formed a master category (see Figure 3.3). A master category title was then chosen that best represented the theme for the grouping. After this master list was established, the entries in the consolidated file were then re-categorized based on these new divisions; this would allow us to create a distribution profile.

We should mention that many entries into the display field contained more than one textual element, each of which could be categorized differently. When this happened, we treated the display field as holding multiple entries. An example of this is shown below in Figure 3.4, where the contact's display field contains two elements; 'Johnboy' could be categorized as a Name Variation, while 'yonge&eglington' (a street junction in Toronto) is categorized as an indicator of Location.

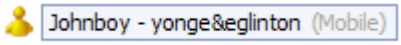

Figure 3.4 Name Variation and Location text elements

In this case, this display field entry would be split into two text fragments, where each fragment would be counted in the category that best fit. As we will see, these types of dual entry usually occurred because people tend to keep their names (or an identifying variation thereof) visible to others in order to identify themselves. Occasionally a display field would contain two elements where neither were identifiers. For example, the text shown in Figure 3.5 below is categorized as two elements: 'packing' is an Activity, and 'sad to be leaving' is a Mood. Only rarely did display field entries contain more than two elements.

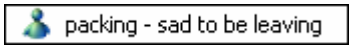

Figure 3.5 Activity and Mood text elements

3.2 Results

3.2.1 Display name change rates

Our first research question was:

> *At what frequency do users change the information in their display field when using an IM client such as MSN Messenger?*

Before answering this question, recall that the recording of display field changes of a secondary participant on a contact list only happened when the primary participant was logged on to MSN Messenger. If the primary participant was logged out, no display field changes to their contacts were recorded. While a single change would be noted by comparing the last recorded version of the contact's display field to the one recorded when the primary participant logs on, multiple changes during the logout period would be lost. This means we cannot calculate the exact display name change distribution across all contacts. Still, our numbers should be a good estimate of what happens. At the very least they represent a lower bound that somewhat underestimates how often display field changes occur. The data certainly suffices to indicate the range of activities and individual differences across 444 people.

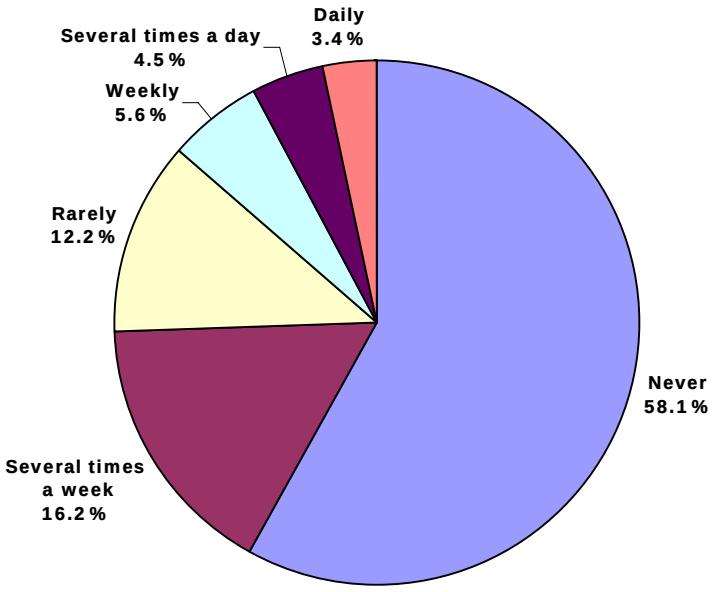

Figure 3.6 Distribution of contacts according to how often they change the display field contents

Figure 3.6 illustrates the distribution of contacts according to how often they changed the contents of the display field. Our results show that 58% of our 444 contacts (258 people) never changed the contents of the display field during the three week period. For the remaining 42% of contacts (186 people), we counted a total of 1968 display name changes, or an average of 11 display name changes per person over the three week period, or up to 4 times a week.

However, this average is misleading, for we also found that people change their display names at different frequencies. We created six rate change categories. Based on a contact's data, we placed each contact into the category that best estimated that contact's change rate. Figure 3.6 displays this distribution of contacts among the six rate change categories. We see that the 42% of contacts who change their display name do so at different rates. About 8% (4.5% + 3.4%) of contacts change their names from once to several times a day. About 22% of them change their names less often, from once to several times a week (16.2% + 5.6%). The final 12% change it rarely, i.e., once or twice over the three week period.

The person who had the highest display field change rate is worth added discussion, as it suggests what happens with contacts that used this feature heavily. This person changed her display field early in the morning and notified contacts when she arrived at school. Around 4 pm the changes started again, continuing until approximately 11 pm when she went to bed. Her changes would incorporate details on what was occupying her time. Changes would state particulars: when she was studying, babysitting, or watching TV, and her emotional reactions to these events. If she found something entertaining or interesting on TV, she would post quotes. If she was bored, she would put out a request for someone/anyone to call. In essence, this person used her display field as a web log, where she recorded and disseminated information to her community. Even though we had no further knowledge of this person, a sense of who she was and what her life was garnered through all the changes that she made to her display name.

3.2.2 Communication categories

Our second research question was:

> *What are the main communication categories that represent the information held by these display field changes?*

After analyzing the categories created by our primary participants through the affinity diagramming process, we identified seventeen master categories. These are listed below in alphabetic order. A description of each category is given along with illustrative examples taken from our data. Many examples contain more than one textual element, usually an identifier, as we present them as they appeared in the display field. To protect confidentiality, name information has been changed.

Activities include things or activities that a person has done in the past, is currently involved in, or is about to participate in the future. It also includes countdowns to an upcoming event. Examples include:

- Amy - House hunting!
- Tara @ finally coding again.
- Braced: 60% done my portfolio!

Adverts include advertisements or promotions for items or events, and things that people have for sale.

- Easton Synergy Grip 100 Flex Iginla Blade Left (Brand spanking new): $225
- headachey -- Tim Stuart Tribute and Fundraiser November 6th @ 8PM -- ask for details

Comments are personal comments, expressions of an individual's opinion and general statements on how they view things in the world around them.

- Jan[et] - Airlines are Evil
- Bee - undocumented code should be illegal
- Nancy: you don't need English to live in Vancouver

Default contains only the default unaltered entries to the display field. After installation, the IM client displays a person's e-mail address in the field. These may or may not actually contain a person's name as part of the email address.

- johnsmith@hotmail.com
- Jyn2l@hotmail.com

Directions contain entries where a reader is being directed to a web site or link. Examples are:

- Bee-http://java.sun.com/features/1999/05/duke_gallery.html
- jessie {http://littlemisskool.blogspot.com}
- CHECK THIS===> http://www.blitzkreigentt.com/.... Constructed <==

Fun contains entries that contain puns, inside jokes, humorous statements, and items placed for the amusement of others.

- Melanie. me: "come see, its a lunar eclipse"; kate: "where?"
- what do you call a fish with no eyes: f sh
- Huffy - Home is where you hang your @
- Joe - ♪ Like a Vermin, trapped for the very first time ♪

Handles contains those display name entries that hold a person's handle. A handle is like a well known nickname: it is a consistent title or name that people give themselves to represent their identity on the internet. As we will see later, IM handles are not used for the pseudo-anonymity purposes as found in IRC public forums.

- hunnybear
- Iceman
- spidermax

Location contains information about a person's current location or future destination. It can also contain travel information. Many times this location information is permanently attached to the display name when localized at a particular computer, as in

"home" or "work". This label can indicate to others the type of communications that are appropriate.

- Mat Singh...going home in 10 days!
- In the dominican republic
- Dan James [Office]
- mike -> lab meeting

Messages contain information of significance directed at an individual on a person's contact list or to the group as a whole.

- darren~thanks nate for the halo hookup
- SirMe - Happy Birthday, Angie!
- Melanie. Nick, ill be on the 330 or whatever bus at the college. <<school>>

Mood contains entries that give indications of a person's mood, feelings, health or state of being.

- i give up
- Adam feels rejected
- britney - disoriented haze
- Joe - as if shot in the head, yet still charging blindly forward.
- Bee - double espresso whee!!!
- Maggs - Not Feeling Well.

Name contains entries of a person's given name. This category contains no nicknames, handles or variations on the name.

- Rebecca
- Fred Jones

Notices contains entries that give notice of a particular event, share news or display announcements.

- DBosch [We're home owners!]
- Tracey... down 24.2 lbs

- Jennifer - party is cancelled
- NaKuL - new msn login
- Gretchen -- Holy Cole's coming to vancouver!!

Presence contains items that provide more detailed information about a person's online presence or availability beyond the standard status indicators.

- Bee - really am busy, only msg me in emergency
- Melanie. >> off for family time<<
- mike - reading at my desk/disregard (Away) status
- Flickerin: be Back at 630ish

Questions contain rhetorical questions and questions that are posed to stimulate response. This category also contains questions that are requests for assistance, similar to those that appear in company broadcast messaging systems when a person is searching for an expert in a given area (Fitzpatrick, Parsowith, Segall & Kaplan, 1988).

- Luke -- Anyone took CS322? I need some help with cilog!
- Joe - who keeps messing with my chair??
- Shri- Needin' a Physics Toolkit w/Dynamics + Collisions + Fields, any ideas?
- Melanie. Anyone have a working printer?

Quotes contain quotations taken from movies, tv, books, plays or lyrics from music. It also contains references to pop culture.

- Dusit - If you can dodge a wrench, you can dodge anything!
- b33qZ -- king jeremy the wicked... oh, rules his world...
- Andrea - so long and thanks for all the fish

Unknown contains all the entries in which the meaning of the text is too cryptic that it could not be categorized by either the primary participant or the investigator. It is assumed that once deciphered that each of these entries could be placed in one of the other sixteen categories.

- b33qZ [nts:perri]
- Andy ~ Ah é§'
- Black_Venom (In 432)Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â Â
- Â»~-jd-~Â«--> SkRoNk <-- yeh social ppl

Variations contain entries where the identifier is a variation on the person's name. This can include an abbreviated version of the full name, a nickname in which the given name is still identifiable, or a variation in the way the letters of the name are printed or ordered.

- DiAnNe
- kev
- Maggs
- timbob
- Einahpets

3.2.3 Category distribution frequency

Our third research question was:

What is the frequency distribution of these categories?

First, the 2226 logged display fields were analyzed to reveal a total of 3603 elements (recall that some display fields could have more than one information element in it). Second, each element was then located in a single communications category that best represented its meaning.

Figure 3.7 shows these category counts in two sections. The top part plots the Name, Variations and Handle categories. We separated these 'Identification' categories from the other categories because the information they contain satisfies the original purpose of the IM display name field, i.e., to hold identifying information. The frequency distributions of the remaining 14 categories are then listed.

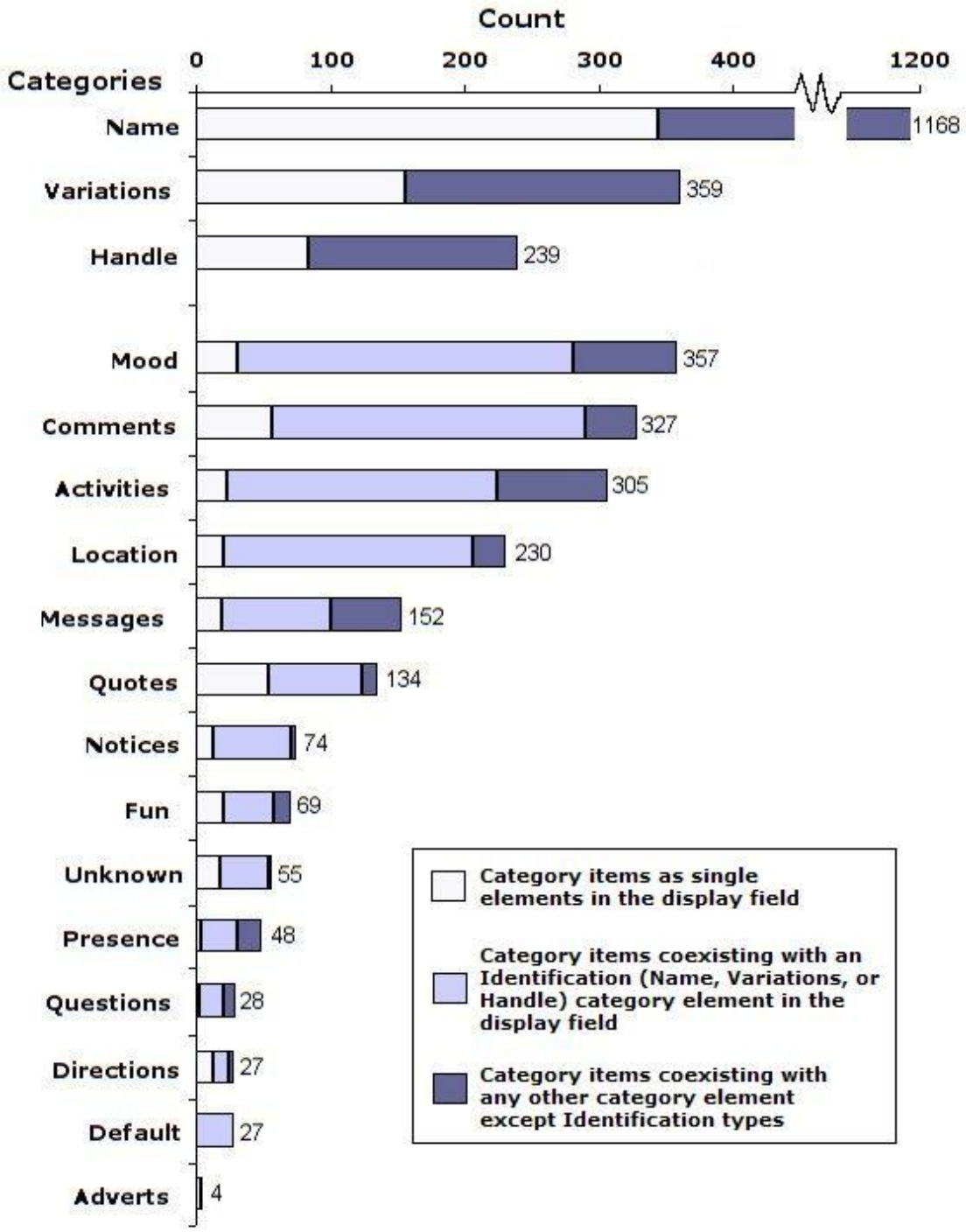

Figure 3.7 Bar chart displaying category distribution

The bar representing the counts of the number of elements within each of these categories are further distinguished into three groups. The lightest section of each bar represents the group of category elements where the element was the only one contained by the display field. The medium coloured section shows the number of category elements whose text coexisted with another element found in one of the four 'Identification' categories in the display field. The darkest section of the bar groups category elements whose text coexisted in the display field with another element found in any category other than the four 'Identification' categories.

We can see that approximately 49%, or 1766/3603 of the categorized elements, were in one of the three 'Identification' categories, i.e., **Name** (32.4%), **Variations** (10%) or **Handle** (6.4%). This makes sense, for meaningful self-identification is the expected use of the IM display name feature. The darkly coloured regions of their bars in the figure also reveal that identification elements in total coexist with other pieces of information in the display field over 67% (1186/1766) of the time. For example, the **Name** was included with other elements 825/1168 (71%) of the time. Similarly, **Variations** and **Handles** was included 205/359 (43%) and 156/239 (65%) in conjunction with other elements. Note that there are no medium coloured regions in these bars. This is because elements within the **Name**, **Variations** and **Handle** categories never co-existed with each other. They only occurred in conjunction with elements in the other 14 category types.

The other 14 categories of communication identify information unrelated to identification. Collectively, these categories comprise the other 51% of the total number of elements (1837 of 3603 total). Within these 1837 elements, we see that the most frequent categories of communication used are **Mood** at 19.4% (357/1837), **Comments** at 17.8% (327/1837) **Activities** at 16.6% (305/1837), **Location** at 12.5% (230/1837), **Messages** at 8.3% (152/1837), followed by **Quotes**, **Notices** and **Fun**. The other categories occur less often, but still at a significant level. The modest size of the lightly coloured section of all these categories suggest that this information often appeared in tandem with other categories. Most of time, this was one of the **Name**, **Variations**, or **Handle** elements, as represented by the medium-coloured section in each bar. Still, the presence of the darkly

coloured bar sections showed that two non-identifier category elements may coexist in a display field.

3.2.4 Demographics of people who change their display names

Our final research question was:

Are changes to the display name related to the demographics of age or sex?

The 444 contacts were comprised of somewhat more males than females. The primary participants reported 232 males, 189 females, and 1 male/female (the account was known to be used by a couple). The sex of the remaining 22 contacts was not reported.

The dominant age range of the 444 contacts was between 21-30 years old. Table 3.1 summarizes the age demographics of the 444 contacts, as reported by our 12 primary participants. Since the exact age of each contact was sometimes uncertain, we used age group categories to capture their estimated ages.

Table 3.1 Age distribution of contact group

Age Group	Count	Percent
<15	7	1.69
16-20	24	5.81
21-25	179	43.34
26-30	126	30.51
31-35	36	8.72
36-40	18	4.36
40+	23	5.57

N = 413, Unreported = 31

We then analyzed whether age or sex of a person was related to the number of changes that person made. First, we removed records for those contacts whose sex was not reported. We then performed a chi-square analysis on the remaining 421 contacts to determine whether there was a relationship between sex and the rate that a person changed their display field. Sex and display name change rate were found to be independent, χ^2 (5, N = 421) = 7.54, p = 0.183. That is, within our contacts no relationship exists between the sex of a person and how often a person changes the display name.

We performed a similar chi-square analysis for age and display name change rates, where unreported people were excluded. Age groups were collapsed into three age ranges: <20, 21 to 30, and 31+. This was done for analytic reasons, since several cells in the chi-square analysis would have contained counts of less than one with the original divisions. Age range and name change rates were found to be not independent, χ^2 (10, N = 413) = 20.507, p = 0.025. That is, a relationship exists between the age of a person and their likelihood of changing their display name. This result will be examined further in the discussion.

3.3 Discussion and Interpretation of Results

The most important thing revealed by our study is that a good number of people persistently used the display name feature to publicly broadcast information about themselves to their friends, and that this happened outside of individual chat sessions. They did this in spite of the fact that IM display fields are not explicitly designed to be a public broadcast system. This suggests that systems should be designed to better support this kind of broadcast activity. Details are discussed below.

3.3.1 People change the information in their display field.

From this study we have learned that the changing of the information in an IM display field is not an oddity or something done occasionally by certain individuals. Rather, it is a popular behaviour: 42% of users in our study changed their display name, and 25% did so several times a week or more. This behaviour happens in spite of the fact that the Instant Messenger client we studied did not make changing the display name immediately accessible (e.g., through direct manipulation): people had to raise menus, dialog boxes, and form-fill the text.

3.3.2 People use the display field for identification, to give information about self, and to broadcast messages.

People used the limited text that could be displayed in the display field in rich ways. Seventeen different categories were needed to describe the various communications placed in the display field.

Stepping back, three themes encompass these categories. The first theme is *Identification*: "who am I"? The second theme is *Information About Self*: "this is what is going on with me". The third theme is *Broadcast Messages*: "I am directing information to the community". These are described separately in the following three sections.

Identification is fundamental. Identifying oneself to personal contacts by typing one's own name in the display field is the original purpose of this feature; the name replaces the default email address as a way to uniquely identify a person. This proved necessary because e-mail addresses are a poor substitute for a name; some email services enforce cryptic email addresses, and others are so oversubscribed that all but the rarest names are already taken.

While people identified themselves in several ways, inserting one's real **Name** or a recognizable **Variation** of it (e.g., initials or nicknames) proved the two most common communication categories. **Handles** was also popular (a constant representative name that superficially resembles nicknames in IRC or discussion groups on the internet (Bechar-Israeli, 1995; Turkle, 1997)). Regardless of the differences between these categories, in all cases the names, variations or handles presented are not used to maintain pseudo-anonymity or complete anonymity as in IRC or MUDs. Rather, the identifier is something that the contact group uses to recognize a known individual.

Another indicator of the importance of the Identification categories is that many users keep their name visible even when they add extra information to the display field (the dark bars in three of the identification categories, and the medium bars in the other 14 categories in Figure 3.7. People do this in spite of the limited display space: in a standard sized IM window about 30-50 display field characters are viewable. As well, the usual order of this information is a name followed by the extra information. A typical example is illustrated in Figure 3.8. This inclusion of identity is likely done as a courtesy behaviour so that others can distinguish between contacts without resorting to looking up and deciphering the e-mail address.

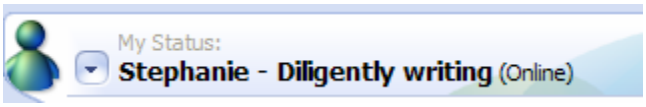

Figure 3.8 Example of Identity with extra information

Extra information is usually about self. Of the remaining 14 categories, the majority of them provide information about 'self'. Elements in these 'about self' categories dominate the frequency count (~85% of the non-name elements), with the top four categories providing information about **Mood**, **Comments**, **Activities**, and **Location**. These top categories all present information about the person at a moment in time: they annotate how they are feeling, what they are doing, or where they are. Similarly, the lesser used **Presence** category indicates if they are available, thus augmenting the preset status indicators, while **Quotes** and **Fun** are indirect indicators of state of mind and personality traits. Obviously, these people want to disclose an additional level of information revealing personal state and action to their community of friends, close contacts and collaborators. The regular association of this kind of information with one's name means that this information is truly about self; this is in sharp contrast to the personas found in chat systems, where people construct an artificial pseudonym identity through avatars or nicknames (Bechar-Israeli, 1995; Turkle, 1997).

People want to be able to broadcast information without involving conversation. Most of the remaining categories (about 14% of the non-name elements) contain communicative messages intended for the group. In particular, **Messages**, **Notices**, **Questions** and **Directions** are categories that either provide information thought to be of interest to the group or are posted to stimulate a response. Most of these are undirected e.g., 'Does anyone know…'. Occasionally, a message may be specifically directed to an individual, yet this is done in a forum public to the community of contacts. Clearly, people are adapting the IM display field into a form of public broadcast communication facility; they are thus fulfilling one element of the broadcasting system described by Etzioni and Etzioni (1999).

Since each user's contact list contains a different set of names, a responder (who may change their display name to respond to another's broadcast message) is likely not sending that response to the same community of people. This hampering of responses suggests that

display names are less effective for creating the running dialogs common to IRC, MUDs and other public broadcast systems (Fitzpatrick et al., 1998; Jania, 2003; Turkle, 1997) and the importance to the user is in the display of information.

3.3.3 Asynchronous messaging.

At the time of this study, in this version of MSN Messenger the direct chat facility was session based. That is, direct chat could not be used by one person to leave information for a currently 'Offline' participant to read later. This still remains the case in many IM clients. In contrast, the display name persists across sessions, meaning that asynchronous communication to offline participants is possible. For example, consider the message 'SirMe - Happy Birthday, Angie!' that was found in the **Messages** category. By including this in his display name, SirMe is leaving an asynchronous message that Angie (and others) can see when they come on line.

3.3.4 Younger users may change their display names more frequently than older users; sex does not make a difference.

The demographics of our study suggest some demographic trends, which are described below. However, we caution that, due to the way we collected data, the demographic findings and how they relate to display name changes are at best tentative. First, the age ranges of our secondary contacts (as being 14 – 65 years old) were likely heavily influenced by the fact that these contacts were culled from the lists of only 12 primary participants (from 22 – 50 years old), most of whom were within the 21-30 age group, weighing the data with a similar age range. Second, our data is incomplete as display field change data for secondary contacts was not collected when their associated primary contact was off line. Third, ages of secondary participants were estimated, which affects the analysis we could do. In spite of this tentative flavour, we include our results as they suggest trends and future areas of study.

We saw a fairly balanced number of males and females in our sample: 55% were male, 45% were female. The chi-square analysis for sex and display field change rates indicated that the two variables are independent, i.e., the sex of the participant does not suggest how often that person would change their display name. However, the chi-square

analysis for participant age and display field changes suggests that they are related[7]. We subsequently examined the chi-square table data to compare the observed count with the expected count for each cell of age group crossed with rate. Discrepancies between the observed and expected counts indicate a pattern where younger users are more apt to frequently change their display name when compared to older users. This trend may reflect a "computer generation" gap where younger users would be more apt to change their display name. It could also reflect a culture gap, where younger users are using it for social reasons (Grinter & Palen, 2002), while older users are using it for workplace purposes (Nardi et al., 2000).

3.4 Implications For Practitioners

At this point it is obvious that people persistently use the display field not only to identify themselves to their community of contacts, but to reveal personal information about self and to broadcast messages. They do this in spite of the fact that the display field facility was designed for other purposes; the IM community co-opted this feature to fill their real desires and needs to share alternate personal information.

The first major implication is that IM and similar facilities need first-class interface features that let people broadcast identifying information, information about self, and public messages. Because some people change this information fairly often, this information should be easy to create and alter, e.g., through direct manipulation.

Some of these capabilities are only now being supplied by a few major IM vendors and social networking applications. For example, the version of MSN Messenger (v. 7.0), released shortly after our study was performed, includes a dedicated space for adding and editing a personal message (Figure 3.9, top). A person can directly alter this text by clicking within it: no menus or dialog boxes have to be navigated or raised. Other people see this personal information as visually distinguished text, i.e., as the italicized text within the

[7] While the chi-square test determined that the two variables are not independent, it does not provide details on how the two variables are related. If true values of age and average change rates were available instead of our estimated categories (a subject of a future study), other statistical analyses could be used to reveal this detail.

contact list (Figure 3.9, bottom). The personal information message is also proprietary to the machine, similar to the display picture. Thus people can set unique location labels to various computers if desired, e.g., home or work..

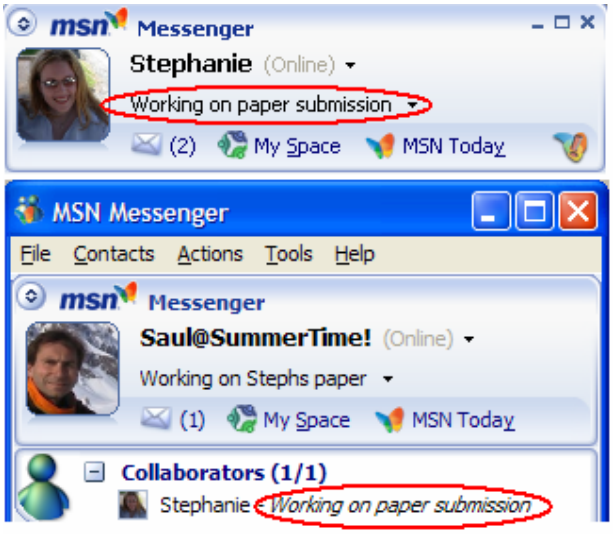

Figure 3.9 MSN Messenger v7.0 separates editing and display of names and personal messages.

Another example is on Facebook. On a person's profile and home page, a place is provided to quickly add or edit brief personal information (Figure 3.10, highlighted section). Although the space is labelled "Status", it is used to display all the same transient personal information found in the display name space in IM. Any changes to a person's status are broadcast to their friends on their respective Facebook home pages. Generally, unlike IM where the interface is designed to be always open or visible, the Facebook status entry is only modifiable when its owner navigates to the Facebook webpage. However, after someone developed an application to combine the Facebook status with Twitter [8] to satisfy the need for easy modification and integration with other tools, the Facebook status is now changeable through SMS (short message service) on a mobile phone.

[8] http://www.twitter.com, a web based communication technology where short messages (140 characters max) are posted via IM, SMS, the web and other applications.

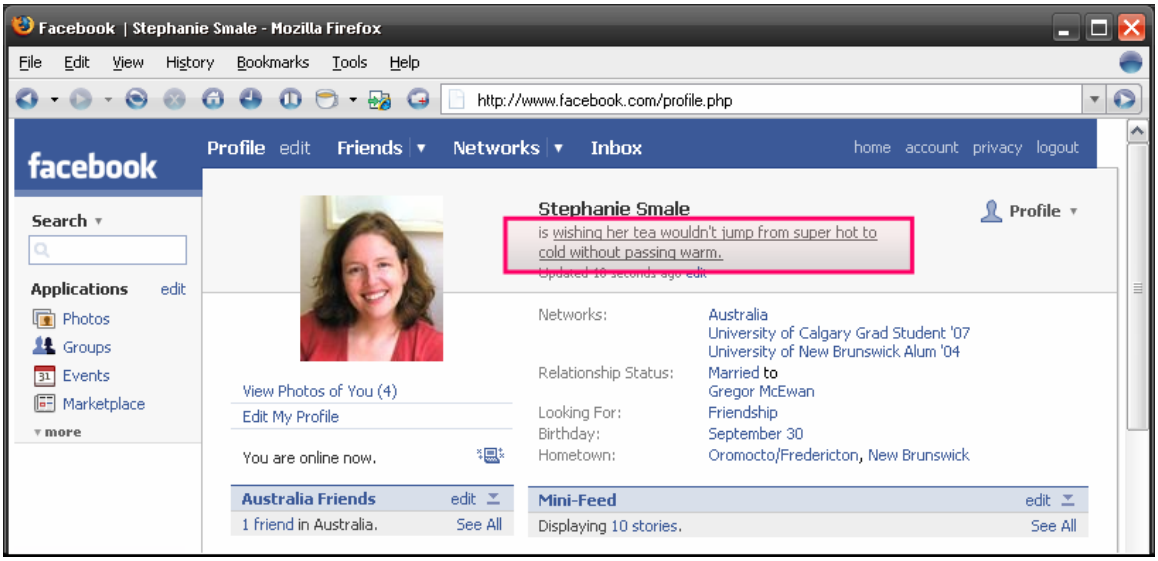

Figure 3.10 Facebook provides a space for quickly editing status (highlighted by pink rectangle)

The Community Bar (CB) (McEwan & Greenberg, 2005) is a multimedia groupware system being developed by collaborators in our laboratory. Elements of its design are partially influenced by our study results. People within an ad hoc group inhabit *places*, and all see the equivalent of a contact list within a place. For example, Figure 3.11 shows a place called 'IM Paper' and three participants within it. To support 'Identification', each participant is represented by a 'Presence item', which shows running video (or photo) of them, their name. To support 'Information about self', the Presence item also includes optional personal information (which may wrap across multiple lines) that persists across login sessions. A person can quickly modify this personal information by a popup raised whenever he or she moves their mouse over their item (Figure 3.11, right side). To support 'Broadcast Messages', it also lets people broadcast and respond to public messages to all people in the group. This public broadcast is not available in MSN Messenger 7, For example, Figure 3.11 (bottom) illustrates a public text chat dialog that lets anyone in the group post messages; all see its contents and all can post responses. Not shown is a sticky note facility, where a person can post a persistent message to all. Finally, certain categories of information are supported. For example, 'Directions' are satisfied by letting people post a 'web item' (not illustrated): a thumbnail of a web page of interest that others can navigate to via a single button press.

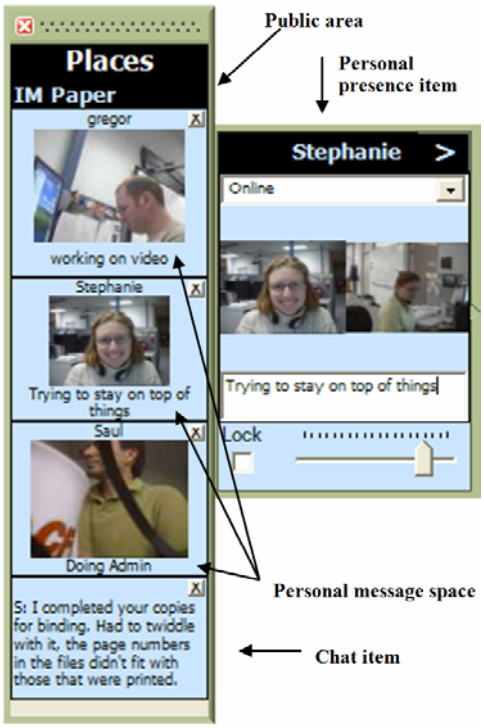

Figure 3.11 Snapshot of Community Bar displaying personal message space within presence item

Another implication of our study is that people use many different categories of information – especially when describing self – which in turn suggests that people are trying to provide others with a rich picture of themselves. Yet most systems, even the current ones shown above, only let people set one attribute of themselves in their personal message space (although they may combine these in a text fragment). Perhaps future systems will let people construct an 'avatar' of sorts with multiple attributes that distinguish these categories, so that (say) mood, location and activity are treated independently rather than compete for a small space.

While these (and likely other) systems suggest point design solutions to our implications, what is important is that our study has placed this work on a solid intellectual footing. It provides details of what people have done, and has identified the categories of information that people supply. For example, we suspect that MSN Messenger's inclusion of a personal information field arose because its designers noticed that people were moulding the technology to suit their needs, and they wanted to "fix the interface" to better fulfill these needs. In contrast, our study helps designers understand why appropriation occurred

in the first place. Looking at the 17 categories of communication that are used in messages found in the display name space, we saw that most are personal, or about the self. In taking over this space, users are not 'hacking' to make IM do totally different things. Rather, they are adding richness to their identity beyond their simple name label. They are expressing identity, and they own this expression by using a text field that only they can alter.

We also saw that there is some use of the display field for public broadcasting of messages. This suggests that there is a problem with the way we compartmentalize systems: IM systems with no real notion of groups or public broadcast, versus IRC and similar systems where public broadcasts dominate. The real solution likely amalgamates both: a system that somehow supports both public and private discussions between ad hoc (and perhaps non-overlapping) groups. To our knowledge, only very few systems are trying to tackle this fusion of genres.

3.5 Chapter Summary

This chapter presented the details of a study that examined how contacts appropriated the IM display name feature to publicly broadcast information by adding extra text to the space. The findings of this study revealed that almost half of the contacts we monitored change their display names with varying frequencies. A set of seventeen communication categories was established for the different types of personal messages added to the display field. One aspect of these findings worth highlighting is that the most popular communications were those that added personal information about self: a person's psycho-physiological status, one's current activities, details of their location, and expressions of personal comments and opinions. People used this feature to broadcast and share brief information about themselves to their contacts. The implication of this being that collaborative, communication and social software should support this need as a first class interface feature. Reflecting on the type of personal information broadcasted in the display name space led to the consideration of other internet spaces where people post information about themselves. In the next chapter is a discussion of the properties of personal information based on the different places it is posted. Following this discussion we propose the design of a system to facilitate the collection and publication of personal information.

Chapter 4. Transient Life[9]

The study described in the previous chapter on how people exploited instant messenger (IM) display names (Chapter 3; Smale & Greenberg, 2005) prompted further investigations into the area of how people communicate and share information with others using the internet. The study found that many people appropriated their display name space (the IM feature that lets people reveal their real names rather than the default IM account ID) to broadcast information about self. We found that people posted information that reflected momentary happenings, such as their mood (*"feeling low"*), their location (*"at work"*), their current activities (*"reading new Harry Potter"*), and personal comments (*"Macadamias are yummy!"*).

We realized that people's appropriation of IM names was another manifestation of their desire to tell their community about themselves, but at quite a different level of time and information granularity than the now-popular blog. Reflecting more generally on this phenomenon, the information that people post and the mechanisms they use are diverse. For example, we know that people:

- create home pages describing themselves,
- fill in public profiles to create online personas,
- share pictures of themselves and their activities through online galleries,
- email yearly newsletters / daily happenings to others,
- publish information in their IM display name field,
- post detailed daily diaries to blogs, and
- update others directly through instant messengers, email, chat, and other internet-based communication tools.

For our research, we wanted to know what qualities these information pieces shared and how we could somehow integrate and consolidate their collection and publication into a single tool. This notion led to the design of Transient Life: a single interface to collect, consolidate and publish personal information and daily tidbits of interest.

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[9] Sections of the material in this chapter appeared in Smale and Greenberg, 2006.

Before introducing the Transient Life prototype, this chapter will focus first on several internet information sharing mechanisms, from which we extract a set of common properties. Once the properties are established we use them to formulate design premises on which the system is based. The chapter then presents the basic design of the Transient Life system. Finally, we will discuss some of the design influences and implementation challenges in constructing Transient Life.

4.1 Properties of Personal Information

When we consider the different information that people publish (e.g., photos, daily activities, personal status, links) and the mechanisms that they use (e.g., e-mail, web pages, IM), several properties emerge. To help articulate these properties, we focus on four of the different mechanisms in detail: IM Names, Today Messages, Blogs, and Profiles (Figure 4.1). Each of these vary with respect to how much a person reveals to others, how often the information is changed, and its time sensitivity. Each mechanism provides clues about the formation of five key properties underlying published personal information: *content*, *update frequency and lifetime*, *archival value*, and *intended audience*. These properties are summarized later in Section 4.1.5 and Table 4.1 after we discuss each of the selected mechanisms.

4.1.1 IM display names

An IM display name is the field in Instant Messenger (IM) clients, designed so that a person can display an easily identifiable name to their contacts instead of the default, and possibly cryptic, IM login address. As mentioned previously, people appropriated this field by adding extra information, thus using it to communicate more than their name (Chapter 3; Smale & Greenberg, 2005). Given the space limitations of this name field, the information is typically very brief – usually a word or short phrase (Figure 4.1d). As discussed previously in Chapter 3, we studied and categorized display name contents. When looking at content, we found that the top four communication elements posted to that field, other than one's name, were that person's mood, a personal commentary, one's current location, and current activities. Its time relevance was also found to be highly volatile, where people updated it frequently, even several times a day, to relate to their momentary state of being (Chapter 3; Smale & Greenberg, 2005). That is, it typically holds moment-to-moment information that can rapidly

go out of date. Perhaps because of this high volatility, changes are not archived nor does there appear to be a need to want such an archive. Finally, the information is broadcast to a limited audience, i.e., that person's contact list (Table 4.1, second column for a summary).

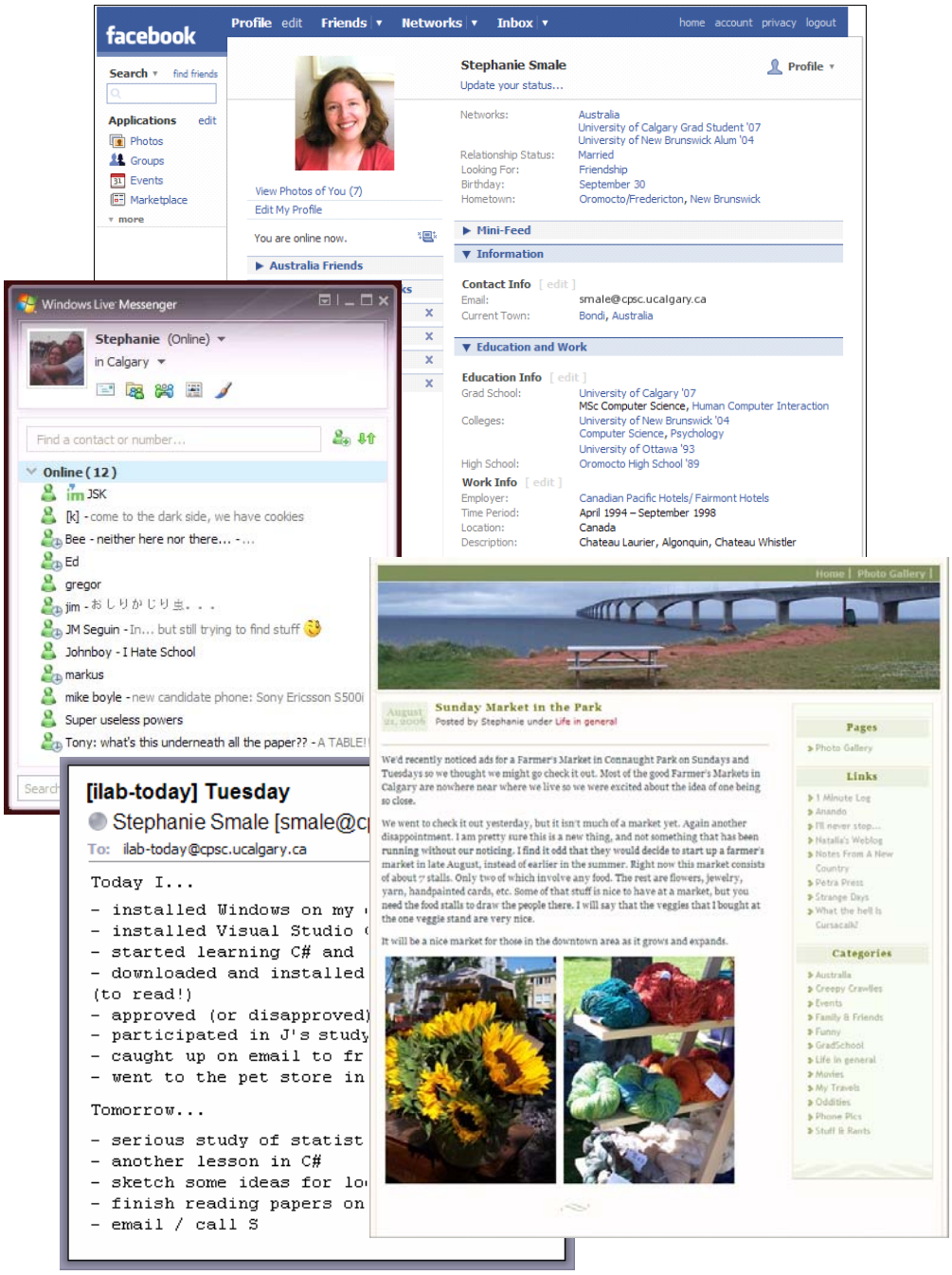

Figure 4.1 Four mechanisms that present personal information.
Clockwise from top: A. Profiles B. Blogs C. Today Messages D. IM Names

4.1.2 Today messages

Today messages are brief but regular emails one person sends to co-workers to help them stay aware of what one is doing and to facilitate coordination (Brush & Borning, 2005). The contents typically detail organizationally relevant activities throughout the day, and often include a "To-do" list of tasks yet to be completed (Figure 4.1c). The challenge of today messages is not in posting and delivering (as email is lightweight and ubiquitous), but in developing a culture around its regular use. For content, message length is usually modest, i.e., it is usually in the form of one or two bulleted lists of short but descriptive information fragments that can be displayed without scrolling. In a work oriented culture, the contents of daily postings typically describe the sender's daily and intended activities but are often empty of other information (Brush & Borning, 2005). Information lifetime is modestly volatile, as it covers daily and/or cumulative activity since the last posting. Its archival value varies. Archiving is sometimes automatic, sometimes manual, i.e., automatic if sent to an archived mailing list and manual if receivers choose to manually save (perhaps selectively) a today message into their own archives, or if the sender keeps them as a personal diary. Most of the time however, today messages are not kept; they are discarded immediately after reading. Today messages work because a person can target them to a selective audience, i.e., a specific set of people or a mailing list as designated in the 'To' field (Table 4.1, third column).

4.1.3 Blogs

As discussed initially in Chapter 1, blogs (Figure 4.1b) are web pages with chronological entries that invite commentary. Blogs tend to be in two forms: topical blogs and personal blogs; it is the latter form that is of interest to us. People maintain personal blogs for various reasons: to document their life, to provide commentary, to articulate ideas, or to express deeply felt emotions (Nardi, Schiano, & Gumbrecht, 2004; Nardi, Schiano, Gumbrecht, & Swartz, 2004). Those who do it to document their life use blogs as a personal journal, a chronicle or newsletter, a photo album or scrapbook, a travelogue, or a status update (Schiano et al., 2004). Blog entries can be very brief, but are usually of substantial length and very detailed. While some people update their blog several times a day, most typically update it every several days. Its contents have a modest lifetime, as entries typically include more significant events or personal happenings judged worthy of posting. Blog entries are

chronologically sequenced as an archive; the addition of new entries pushes older entries off the main page and into the archive (the owner can remove/edit entries, but this is rare). Thus while old information can be retrieved, the typical blog web page looks different from day to day depending on the number of entries. Finally, blog entries are directed to a broader community. Unless specifically marked as private, most blogs are open to the general internet public for viewing (Table 4.1, fourth column).

4.1.4 Profiles

We spoke briefly of profiles in Chapter 1. Profiles are generally attached to a particular user account on various web site locations on the internet, are part of a person's home page, or are part of a chat or gaming group (Figure 4.1a). Profile contents typically collect person and personality characteristics, e.g., age, gender, marital status, occupation, addresses and contact information, and lists of favourite things. Profile contents for different sites can be carefully constructed by its owner with selective, embellished or even imaginary information to match the situation and appeal to others of similar interests (boyd, 2004). What others see is what the person wants to reveal. Profiles are usually edited only once, and their content is generally very stable. Information changes only when an otherwise long-lasting personal characteristic changes, e.g., a job change alters contact and employment information. The personal information contained in profiles is rarely influenced by daily activities or momentary state. By definition, profiles are archival, as they are kept for the entire on-line lifetime of the person. They are also intended for general consumption. Depending on the site, profiles are either publicly available for viewing, or are available strictly to other members of the site (e.g., an organizational intranet) (Table 4.1, last column)

4.1.5 Summary of properties

In summary, while all posted information is about self, it can differ according to the following properties (Table 4.1):

- *Content* ranges from what is going on at the moment to long term life events, and records fleeting to stable personal characteristics.
- *Update frequency* can range from several times a day to very periodically to rarely.

- *Lifetime*: information may change rapidly and have little value once it goes stale, or it may be very stable.
- *Audience* ranges from very personal to the general public, i.e., from personal contacts and small work-focus groups, to organizational communities, and even to the general internet population.
- *Archival* value: some postings are immediately discarded after they have been read; some are selectively archived; some are maintained as a long term chronology, others form a static record.

Table 4.1 classifies the four system types - IM Names, Today messages, Blogs and Profiles - against these five characteristics. By doing so, we show that these systems are quite different both in their characteristics and their purposes.

Table 4.1 Overview of the four information mechanisms and their relation to the five attributes

	IM Names	***Today Messages***	***Blogs***	***Profiles***
Content	Brief surface information	Detailed daily activity information	Detailed life events, activities and commentary	Basic personality and person characteristics
Update frequency	Up to several times a day	Daily / every few days	Daily to weekly to monthly	Once; rarely changed
Lifetime	Volatile ⟷ Stable			
Archival Value	Not logged	Can be saved as archived messages, but often deleted	Archive available for blog or site lifetime	Available for duration of account or site lifetime
Audience	IM contact list only	Specific email recipients, mail list	General internet public, unless specifically restricted	General internet public, or limited to site members

4.2 Design Premises

Perhaps the many different types of posting and viewing mechanisms in each of the above technologies arose because of these differences (Table 4.1). Yet having these different mechanisms comes at a cost. Consider for a moment the many different tools and multiple

steps required for the poster to gather, update and maintain that information. Also consider the many different things that an audience member has to do to view that information.

We believed that we could integrate personal information posting into a single system. Our goal was to design a single tool that acts as a portal to multiple different publishing applications, where it would complement and/or simplify what is now done. It would provide people with a single interface to collect, consolidate and publish personal information and daily tidbits.

We decided to concentrate our initial efforts at what seems the most challenging area: the information space ranging over IM Names, Today Messages, and Blogs. Unlike profiles, changes in these other areas are a result of regular updates to people's personal information. We based the design on the following requirements.

1. **Support spontaneous editing of personal status information**. The IM display name study (Chapter 3, Smale & Greenberg, 2005) found that the top four communication elements that people posted were moment by moment changes in mood, location, activity and personal thoughts. Location is also a traditional element in online profiles, and mood indicators are common in blog software systems.

2. **Publish personal status information to the display name field in IM clients**. Recognizing that people now use one or more IM clients, the tool should automatically publish this status information into existing IM display name spaces.

3. **Support dynamic maintenance of activity logs and to-do lists**. Today messages often contain activity logs and to-do lists (Brush & Borning, 2005), yet these have to be created retroactively when the today message is composed. Instead, we argue that people should dynamically maintain them on the fly. Adding items should be with minimal effort, and should carry over the day and (if desired) across multiple days (see also Bellotti et al., 2004). Recording activities and to-do items are all activities that are easiest to accomplish in context, i.e., recording an activity as it is completed, or adding to-do items as one thinks about it.

4. **Support gathering of information tidbits**. Many information postings collect little pieces of information that people come across, e.g., an interesting link or a curious

photo. These 'information tidbits' are generated sporadically throughout the day. We and others (e.g., Markopoulous et al., 2004), believe that people should be able to spontaneously capture and gather these items as they are encountered. When a moment passes, the information may no longer seem worthy of sharing, or may be difficult to recall later.

5. **Publish activity logs, to-do lists, and collected tidbits as desired**. We know that people want to share their activities and discovered items of interest with others, be it for research, work, conversation or entertainment. Activity and to-do lists give the readers a sense of one's short term goals and whether they were accomplished, while tidbits are meant to stimulate interest in others. While there are some mechanisms that allow one to post this information to a close community in real time (McEwan & Greenberg, 2005), we suggest that daily today messages automatically built from these information elements, have a more appropriate granularity for these types of information.

6. **Provide mechanisms for collecting and publishing personal commentaries, detailed diaries, and reflections to blogs**. Millions of people now maintain blogs on the internet to publish information to others about their lives (Schiano et al., 2004). As mentioned, the rate at which entries are composed and posted is highly variable. We believe that blog entry creation should be extremely lightweight, where a person can continually edit and add to it as desired over the course of a day, week or even month. Posting would occur only when the person feels ready to share it with others.

7. **Provide access to a personal history of gathered information**. Archival value of information is highly variable and difficult to predict. Consequently, we recommend that the tool automatically maintains a record of each posting, and that these postings are easily retrievable. Because information in these postings has a limited lifetime, history should be visible only if the user explicitly wants to see it.

All these requirements share common criteria: information should be composed and recorded as it happens, and it should be publicly disseminated in a timely way and through a medium that reflects its contents. This further requires that the tool be easily accessible and extremely lightweight to use.

4.3 Transient Life: Description

Following the above requirements, we designed Transient Life (Figure 4.2). It is a tool that allows people to easily collect information as it occurs. It also distributes the collected information in various ways corresponding to the different outlets of personal information, i.e., it is selectively displayed in the IM display name field, emailed as a multimedia today message (Figure 4.4), added to a blog, and recorded as a history. As illustrated in Figure 4.2, Transient Life is designed as a narrow sidebar located at the side of the screen; the trade-off is constant visibility and access against screen space.

Transient Life contains resizable tiles, each collecting and displaying different information content. For easy information collection, a person can add and edit most tiles by direct typing, and by dragging and dropping found objects. Its interface style is minimalist; it concentrates on collecting and displaying information rather than complex controls. Currently the Transient Life system contains seven information tiles, individually described below.

TODAY I AM... (Figure 4.2, top tile) lets people record and immediately distribute one or more of the four personal status information elements: mood (***feeling***), location (***@***), activities (***up to***) or comments (***thinking***) throughout the day. Because this information is highly volatile, it is immediately published to the display name space of

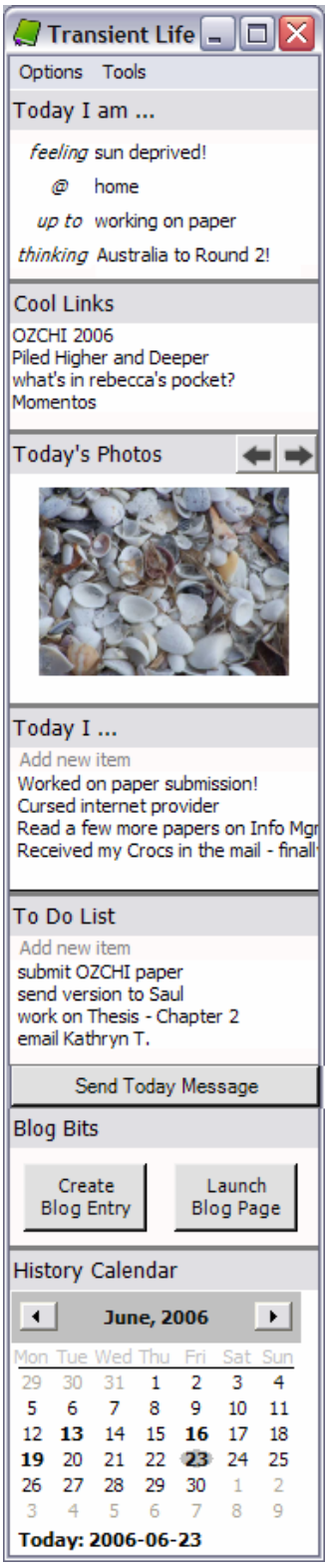

Figure 4.2 Transient Life System

external instant messaging systems so that others can see it. Although we envision that this information would be published to all IM clients used by its owner, the current version works only with MSN Messenger. Information is also recorded as a time-based history in the today message so that others can review a person's momentary activities (Figure 4.4, right side).

COOL LINKS (Figure 4.2, second tile) allows a person to collect interesting internet pages found during the day. While its primary purpose is to share interesting links with others, the tile can also be used by its owner as a place to quickly store personally relevant links for later review. Web pages are added by simply dragging the 'link' icon on the web browser's address bar into the tile. The owner can easily revisit a page by clicking the link in the tile. Links are added to the outgoing today message email (the 'Links I thought were interesting…' section in Figure 4.4). Because people commonly collect and post links to their blogs, the Transient Life owner can optionally have their collected links automatically posted to their blog as an entry at the end of every day, or when an outgoing today message email is sent.

TODAY'S PHOTOS (Figure 4.2, third tile) lets one collect photos in a similar manner to the Cool Links tile. It, too, operates with drag and drop functionality. It is also added to outgoing today messages (the 'Pictures I ran across today' section in Figure 4.4). Images can come from various sources. They can be personal photos located on one's computer, or they can be grabbed from web pages. Images are automatically reduced in size so they do not overwhelm the recipient. The Transient Life user can navigate these images (the arrow controls in the tile), and they also appear as a collection in the today message (Figure 4.4).

TODAY I… (Figure 4.2, fourth tile) allows one to enter completed tasks, activities and events onto a list. This list is published later in the today message (the Today I… section in Figure 4.4). With this tile, a person can immediately add items as they are accomplished, instead of trying to remember all that was done at the end of the day.

TO DO LIST (Figure 4.2, fifth tile) lets people add items and tasks that they expect to do in the next few days. As with most such lists, items can be rearranged according to their priority, and thus it has immediate personal value. This 'To-do' tile obviously complements the 'Today I…' tile with one being things to do and the other recording things

that have been done. Consequently, Transient Life lets a person easily move a completed task from their 'To-do' list to the 'Today I...' tile without having to delete and retype the entry. To-do items are published in the today message (the 'On my To-Do list…' section in Figure 4.4).

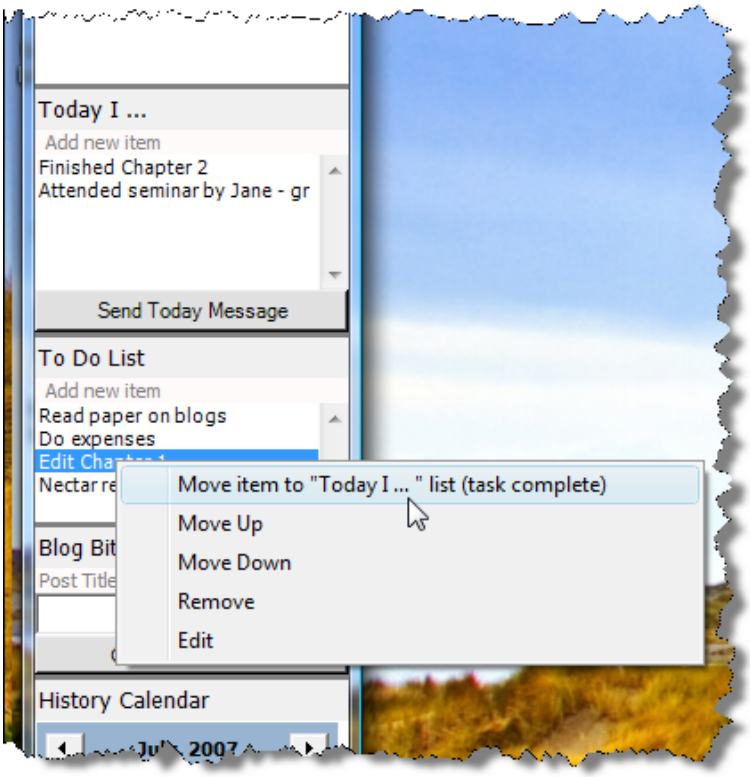

Figure 4.3 Easy access menu to move and edit items

BLOG BITS[10] (Figure 4.2, sixth tile) permits a person to compose, add to, and edit a text essay over time. The person can then post it to their blog at an opportune time. Because this essay can be large, the blog entry editor is raised as a separate window (not shown) by clicking the 'Create blog entry' button. This window contains the last unpublished entry, or a new entry if the prior one was published. The person can discard the current entry, edit and add to its text, save it for later editing, or publish it to their blog. Typically, a person creates a new entry, and returns to it several times before posting it to their blog. Existing blog types

[10] Some external development has happened since the main thesis work, and the current interface may differ in minor ways from that described here

can be supported, such as Blogger, TypePad, Moveable Type and Live Journal. Blogs are linked to today messages: when the blog entry is posted, it is also appended to the end of a today message (not shown in Figure 4.4). Finally, a person can go to their blog at any time by selecting 'Launch Blog Page'.

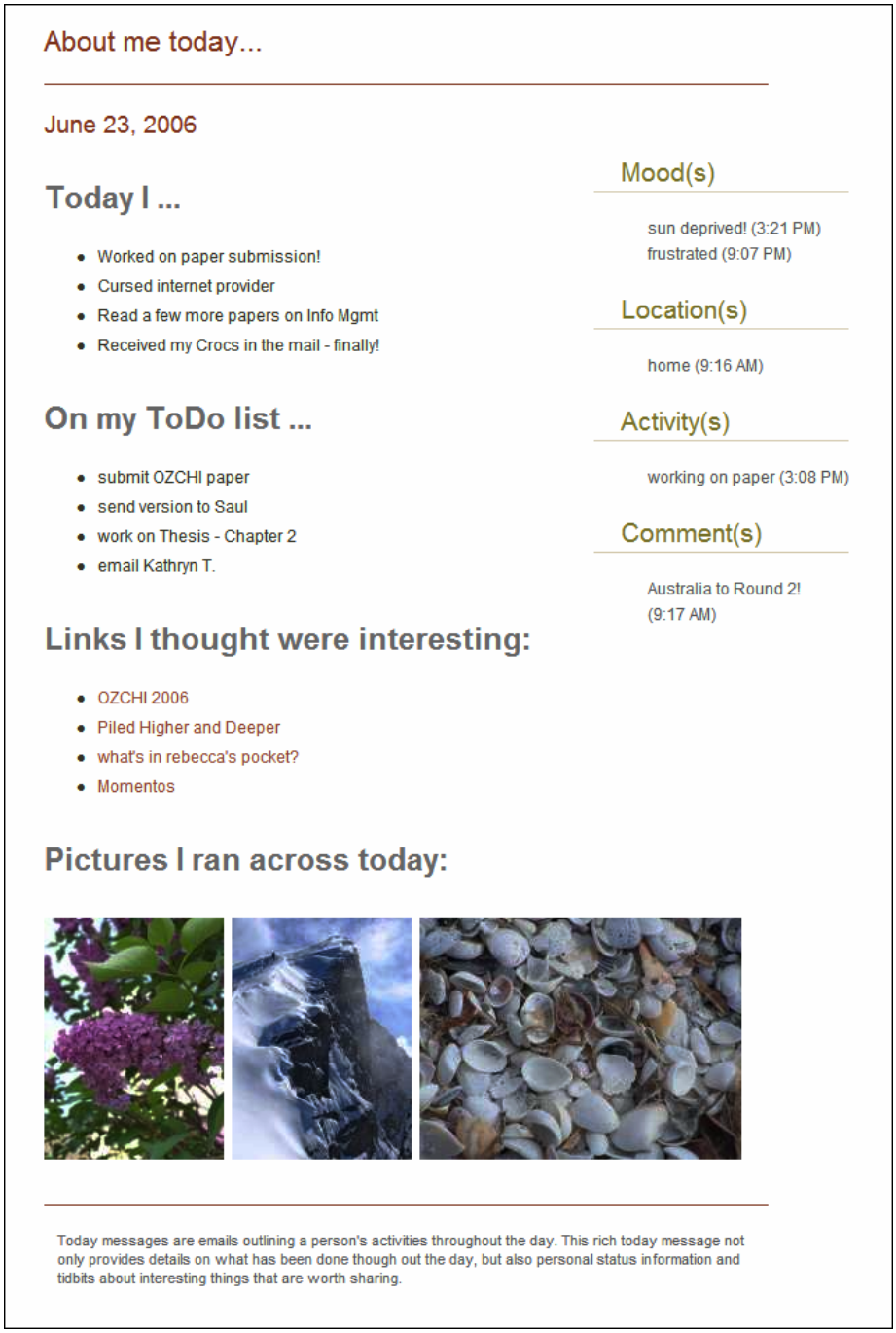

Figure 4.4 A typical multimedia today message generated with Transient Life

HISTORY CALENDAR (Figure 4.2, bottom tile) lets one easily review past archived information. Days containing content are bolded in the calendar. Clicking on a date in the calendar provides a consolidated format, in a single view similar to the today message that displays all the elements gathered on that particular day. In practice, we expect this calendar to be used only occasionally, e.g., if a person wants to review or retrieve something posted on a particular day. While this is a discretionary use, we believe the cost of automatically creating a personal archive which is more often stored than retrieved is slight.

We have already mentioned today messages (Brush & Borning, 2005) as one of the main information dissemination mechanisms in Transient Life. People compose these messages simply by clicking the 'Send Today Message' button (Figure 4.2, bottom third). A multimedia message very similar in appearance to that shown in Figure 4.4 is created in an email window. The person can then specify who the message should be send to (e.g., we use a mailing list called 'ilab-today' for lab members to send to one another), and can edit the message to remove, add or alter its information. Multiple today messages can be created and selectively edited to be appropriate for different communities.

Finally, through a menu, people can also edit long-lasting profile properties and system options. (Figure 4.5) It is on this properties page that people can specify how information is archived. They can tell Transient Life to automatically do this once a day (e.g., at midnight), or they can archive it manually. Tiles are cleared after archiving, with the exception of the 'To-Do List' (as this information is about the future, rather than about the past). People can also decide to send archived information as a today message.

4.4 Discussion

Transient Life is just one of many possible ways to support information sharing. The design may not be the ideal solution, but it demonstrates one way in which personal information sharing could be incorporated in the daily routine. In Transient Life we selected but a few of the many different ways and places information is shared. Transient Life continues to evolve and additional components are being considered for the system. The challenge is to let people collect, publish, view and archive idiosyncratic personal information, while still maintaining the original goals of a simple, uncomplicated interface.

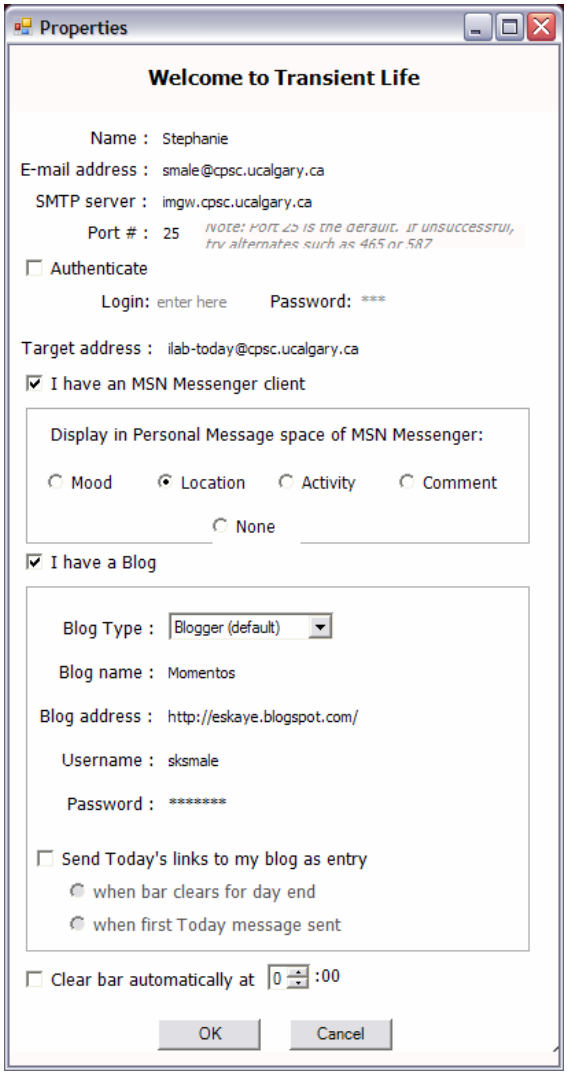

Figure 4.5 Properties and options menu

4.4.1 Design influences

Several designs were considered before the decision was made to develop Transient Life as a sidebar application. Other designs considered included a full screen desktop system similar to the Notification Collage (Greenberg & Rounding, 2001), and a web based tool to allow people to access the tool anywhere. Our choice of a sidebar was influenced by other sidebar systems, e.g., Sideshow (Cadiz et al., 2002), CommunityBar (McEwan & Greenberg, 2005), Google Desktop Sidebar (Google, 2005) and the new Windows Vista Sidebar and Gadgets (Microsoft, 2007). The main advantage of a sidebar is that by reserving space on the side of

the screen, it is always visible and easily accessed with minimal effort. Yet as a 'slimline' design, it sits on the periphery of view. Another benefit to sidebars is that sections can be modular in design (e.g., as plugins) and a new section can be added by altering only one dimension – the size of each section.

While superficially resembling other sidebar systems, Transient Life has an entirely different purpose. CommunityBar is a groupware tool intended for small ad hoc groups (McEwan & Greenberg, 2006). The information contained within the bar is either about the group or intended for the group, and the intention is that it provides group awareness that leads to casual interaction. Sideshow, its future incarnation as Windows Vista Sidebar, and Google Desktop Sidebar (Cadiz et al., 2002; Google 2005; Microsoft, 2007) are single user tools that typically collect and display broadcast information feeds, or that let one record personalized information. The differentiating element in Transient Life is that personal information is collected and shared with others.

4.4.2 Implementation challenges

Transient Life's interface is a form-filling and information storage system. While getting the interface and the back-end information storage system working correctly demanded considerable effort, it is still within the scope of routine system development. The truly challenging part of Transient Life, and also the most fragile, is how it complements other systems that a person may be using.

Transient Life is at its best if it interoperates smoothly with other personal information dissemination applications, such as email, instant messengers, and blogs. It is not expected that people will give up their current practices. Instead, we see Transient Life linking into people's existing systems, where it complements what they already do. Yet there are development issues in getting the system to work with others.

First, Transient Life would ideally use the user's default mail client to send its today message. Unfortunately, what seems like a simple task, is not, due to protocol limitations. Therefore, for now, Transient Life has its own built-in mailer.

Second, Transient Life would also use the blog and IM systems favoured by that particular person. Yet there are also many different versions of IM and blog systems, and

most have different (and often undocumented or limited) APIs. Companies often protect their market share by maintaining control over their systems and services, limiting access to outside developers.

To meet the needs of both points above, we definitely need stable industry standards and allowances that will permit third party systems to easily hook into IM, blog and personal display spaces. Until then, implementing Transient Life, and other systems like it will be challenging. The ideal – as seen in collective IM systems such as Miranda[11] - will be to link Transient Life into many systems of the user's choice, perhaps through a plug-in architecture.

4.5 Chapter Summary

As previously mentioned in Chapter 1, much research on collecting people's information and communication has been focused on large scale storage of all digital information, and less so on helping people share relevant personal information (Bell, 2001; Czerwinski et al., 2006; Gemmell et al., 2006). Yet, every day people gather bits of information that they choose to share with others via blogs, e-mail, IM, and today messages. Some of this information is detailed and presented in a manner that allows repeated viewings (e.g., blogs). Some of this information is brief and temporary and depends on mood, activity or location (e.g., IM display names).

This chapter has presented Transient Life, a system that provides a single interface to let a user collect, consolidate and publish personal information and tidbits of interest. To inform and motivate the design of Transient Life, we selected four examples of existing mechanisms for publishing information - IM Names, Today Messages, Blogs, and Profiles. Through these mechanisms we extracted five properties of personal information, which are summarised in Table 2. The five principles helped derive design guidelines for the Transient Life application, which supports people in collecting, consolidating and publishing personal information and tidbits of interest. Transient Life explores the space spanning detailed life events and brief transient state information. It provides a single place for people to gather

[11] http://www.miranda-im.org/

the simple bits of personal information as they happen, to ease how this information is published to various outlets and to provide interpersonal awareness to others that comprise a distributed community.

The design and implementation of Transient Life was completed and a functional prototype was given to selected users to evaluate. Their feedback and general reflection on the system is presented in the next chapter.

Chapter 5. Transient Life in Use[12]

The previous chapter presented the motivation and design of Transient Life, a system that lets a person gather personal 'transient' information tidbits on the fly and share this collected information with others. This chapter will focus on Transient Life in use. The program was given to a select group of users for evaluation and made available to the wider community (without advertising) via a public download website[13]. First we will take a look at the initial feedback and reactions of the first group of users. Then, we will revisit a year later some of the original and newer users of Transient Life to discuss the role the system plays in how they share and receive information.

5.1 Initial Feedback

The Transient Life system was initially given to eight people in an informal trial. These users were all computer science graduate students and were part of our larger laboratory community that already had the practice of sending vanilla today messages comprised of plain text messages with a task list and a to-do list (Brush & Borning, 2005). They were asked to explore the different elements of Transient Life and use it to send their today messages. In return for their use of Transient Life, they were asked to provide us with both interface feedback and their reflections on how they used it.

As Transient Life went into use our first surprise was that its adoption spread beyond our initial set of people to a few others within that community: within five days the total number of users grew to twelve. This happened in spite of the fact that our first version was somewhat buggy and contained only a subset of the features described in Chapter 4. As soon as the today messages generated by Transient Life started appearing, '*lurkers*' or people who normally read today messages but never posted, also installed the system to try it out. Its appeal initially arose because the Transient Life messages were far more visually attractive than the plain text email, had more content, and included links and images.

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[12] Sections of the material in this chapter appeared in Smale and Greenberg (2006).

[13] http://grouplab.cpsc.ucalgary.ca/cookbook/index.php/Utilities/TransientLife

Of course, the skeptic could argue that these people could have just been trying out the system. Yet this is unlikely. Several weeks later, the same people were still using Transient Life to post today messages regularly. While some people did stop using it, they were replaced over time by other new users interested in it.

In this initial trial period, a blog space was established and maintained as a place to gather user feedback. This blog space was set up for three main reasons. First, it allowed the trial users to place their observations and suggestions in a forum public to the other Transient Life users. This allowed users to view what feedback was given by their fellow testers and provided the opportunity to discuss or comment on the entries. Second, it supplied a way for the users to try the Blog Bits functionality without having to commit to a blog of their own or face difficulties if their own blog type was not currently implemented. Third, it permitted users to submit their comments and suggestions immediately, while they were using the tool, rather than having to recall their thoughts later when asked for their opinion. That is, it served as a diary tool.

Overall reaction to the Transient Life design concept was positive, with critical comments mostly directed towards improving low-level interaction or additional features (some of which were addressed in later design iterations). At an interface design level, people generated bug reports, new ideas, and suggestions on how to go forward in Transient Life's development.

As an example, we list a few high-level representative comments provided by different test users during the initial release period.

On Transient Life, the System:

- *"I think it is great that I am now able to bring together a variety of types of information into one repository that I can later use to send a Today message. One of the challenges I faced with Today messages was keeping it around throughout the day so I could add to it as things happened. Transient Life helps to solve this problem by keeping the repository for me."*

On Today Messages:

- *"I liked seeing other people's nicely formatted today messages; it seems that there is more detail."*

- *"One of the things I find most beneficial about today messages is the ability to plan out what I am going to do in the short term"*
- *"I love that one of the core means for distributing information to others is email. I wouldn't want it any other way. Blogs are nice, but I need to actively check them. I realize I can set up an RSS feed, etc. but to me email is still a nice and simple way for information distribution without the hassle of setting up an RSS feed correctly."*

On receiving Cool Links:

- *"I really enjoy navigating to the cool links provided by other people. Some of them are to links I would not have received elsewhere."*

On keeping a history:

- *"I really love that I can go back and easily look at what I posted on previous days. This is excellent! At the end of the week I send a weekly Today message to the group manager I work for at [company name] and I usually have to go back to see what I posted during my daily today messages. In email this is a bit cumbersome. I like that I can now quickly do this with the [History] calendar."*

We also discovered that different users wanted or needed different things. For example, people differed somewhat in how they want to share, view, and archive personal information, e.g., as a blog vs. as a today message. This is illustrated by the following conflicting suggestions. The first continues from the earlier comment above from the person who liked email dissemination instead of a blog or RSS feed:

- *"Instead of e-mailing today message, just add to a separate blog -- can tell people the RSS feed if they want to be updated".*

Another contradicts this sentiment with,

- *"I would not want my today messages to be public. If [I posted]on a blog then only [if it was] read-protected, I would also want to know who is reading [it]."*

A fourth would like the ability to access others' history calendars, which again contradicts a fifth's desire to control dissemination of things '*that I don't need/want to share with others*'. These comments raise one primary issue held by Transient Life users: how other people can

subscribe or view the Transient Life information, versus a concern that the sender wanted to limit (or control) who could read it. This is a classic trade-off between the desire for supplying and using awareness information while maintaining the need for privacy. Its appearance in our user comments is unsurprising given that awareness and privacy are opposite sides of the same coin. In Transient Life, we mitigate privacy concerns somewhat by providing the owner of the information (the poster) with complete control over the information content and who is receiving it.

This feedback led us to consider that several design challenges will arise in the future as different expectations of Transient Life emerge. The issues will always be how to accommodate these differences in light of the sometimes contradictory demands of both publishers and consumers.

We were pleased with the initial response that the Transient Life system received, especially because it became a system in daily use rather than just an experimental curiosity. The positive feedback and unprompted uptake was good motivation for us to continue to develop the tool.

5.2 Revisiting Transient Life

A month of use does not necessarily suggest how a culture will use and adopt a system over time. Consequently, a year after the initial release of Transient Life we returned to its user community for a second informal review (see Section 5.2.2 for a discussion of what we mean by Transient Life community). We were interested in the perspective of those who continued to use Transient Life because they chose to, not because they had been asked to. Through this second review process we wanted to see how use and impressions had changed (or remained constant) over time while getting fresh perspectives. We were also interested in the opinions of former users of Transient Life as well as perspectives from both senders and receivers of Transient Life today messages.

A year later, part of the original group who were asked to test drive Transient Life were still current users of it. The others were users who joined the local community (as defined in Section 5.2.2) or learned about Transient Life in other ways. At this time we do

not know exactly how many people or other communities have downloaded and tried out Transient Life since we do not track usage data or downloads from the site.

5.2.1 System changes

Before delving into usage details, we first summarize how Transient Life evolved over that year. Transient Life has gone through several changes since the original release based on user feedback, but the general functionality remains the same. Most of the changes implemented are included in the version described previously in Chapter 4, where the majority of the changes were to make the system, its interface and its connections with other applications more stable and reliable.

Since today messages play a vital part in Transient Life, it was crucial to have stability within the email components. Presently, the embedded email capability is more reliable than in the first release, though admittedly not perfect. The ideal solution would be to use a person's native email client. Some of the original problems with our embedded email component were due to resident antivirus software blocking its use; when that problem was resolved, reliability was greatly improved. Early versions of Transient Life also did not support authentication by an SMTP server. Since the subsequent addition of authentication features, many more people have been able to send today messages through Transient Life.

Although some changes have been made to the connections to IM and blog systems, they are still not ideal and are more effortful than not. As we will see, the consequence is these features are not used.

As a result of the initial feedback about the interface, several additional properties and options were added. This includes better editing and list management within the Transient Life components, manual clearing of the bar content in addition to clearing at a specified time, and the ability to preset a destination email address so that one did not have to retype it in between postings.

As Transient Life continues to go through changes and adaptations, improving these connections will be the priority. Details about future directions for Transient Life will be discussed later in Section 5.3.

5.2.2 Transient Life community

The Transient Life community we studied in this second review session is restricted to a particular set of people. As mentioned in the initial feedback section (5.1), the users were all computer science graduate students who were members of our university research laboratory, and a subset of these formed a core who continued to use it a year later.

In particular, the laboratory made use of a today message mailing list, i.e., a moderated e-list service where people could subscribe to it. Instead of posting to individuals, members of the laboratory would send to the mailing list, which in turn would forward the message to all subscribers. At the time of this writing, 25 people were subscribed to the list. Yet, this list did not have a one-to-one correspondence with laboratory members: Figure 5.1 illustrates this relationship and the target mailing list. Not all the members of the laboratory subscribe to the mailing list. There are also mailing list subscribers who are not current members of the lab, typically former students who remained on the list after they had graduated. We focus on this list as the primary target audience of our Transient Life community. While it is entirely possible that users also post their messages to other individuals or mailing lists (and we know this did happen), we did not track this.

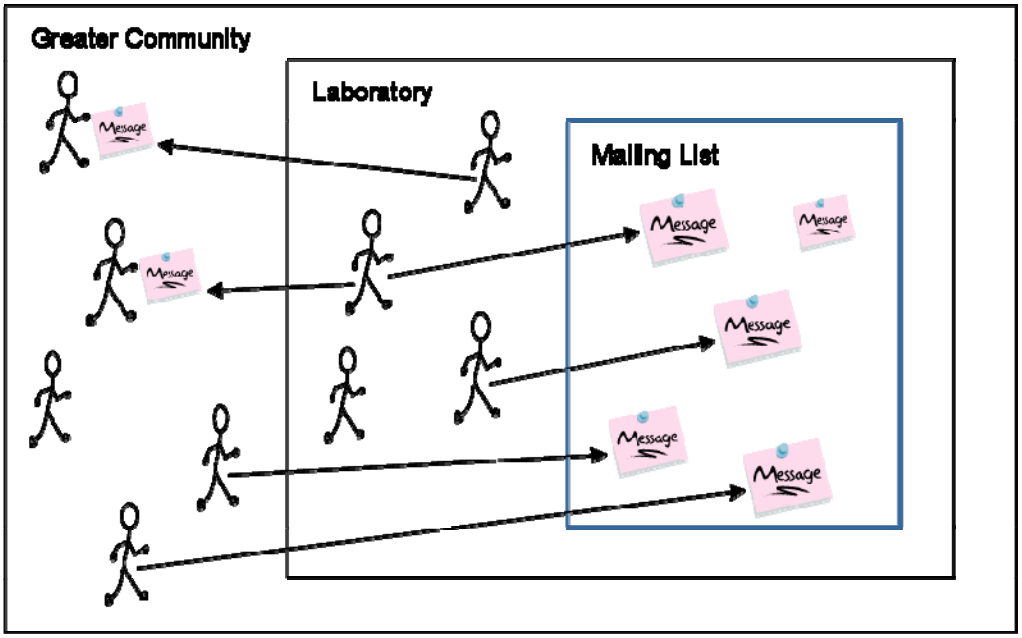


Figure 5.1 Diagram to show relationship between those who send today messages

Of the 25 people who are on the list, there are 12 people who currently send today messages, either regularly or sporadically, and 13 who are primarily audience members or *lurkers* rather than contributors.

Of the 12 people who send today messages, eight use Transient Life as their primary means of generating and sending today messages. Occasionally, these eight have used other means (typically vanilla email) when Transient Life was unavailable to them, i.e., when they were travelling or they did not have access to an appropriate mail server.

The today message mailing list was implemented approximately four years ago with the intention of having people share information about what they were working on to provide awareness for others within the group. Over the years the members on the list have come and gone as they have joined or left the greater community.

Before Transient Life was introduced, only a very small number of people sent (traditional text-based vanilla email) today messages. Since Transient Life has been in use the average number of today message senders has grown. Many of the additional senders were influenced by Transient Life, either through use or by observation. Some found Transient Life made it easier to organize and send a today message and grew beyond their original audience (or *lurker*) status. We will take a closer look at their comments throughout Section 5.2.4. As we will see, newcomers who decided not to use (or were unaware of) Transient Life would pattern their text-based vanilla email messages after Transient Life messages by including links and photos. In previous text-based vanilla email today messages, this inclusion was rare. In other words, the culture that arose patterned itself after Transient Life usage patterns.

In the next sections we will first look quickly at a timeline of the messages sent to the community over a year. We will then look in depth at the contents of today messages sent by this community, discuss the different Transient Life elements that are used and compare and contrast them against text-based vanilla email messages. Comments from several contributors to the mailing list (of both Transient Life and text-based vanilla user types) are incorporated within this discussion.

5.2.3 Time line of today messages

Figure 5.2 displays a scatter plot of the today messages sent to the community mailing list from February 24, 2006 to February 28, 2007. This time pattern shows messages sent from the 20 people (A - T) who contributed over the year, and whether the message was sent from Transient Life (black diamond) or as a text-based vanilla email (red dot). They are ordered from least frequent (sender A) to most frequent (sender T) on the y-axis.

Senders A to H are obviously sporadic contributors; in spite of occasional today messages, their status would generally be considered to be that of a *lurker*. Senders I, J and K were intern students who contributed regularly for the time they were members of the laboratory. Senders L through T are the list's primary contributors. From their patterns in Figure 5.2 we can see who normally uses Transient Life (i.e., senders L, M, N, O, P, S, T) and who normally uses traditional text-based vanilla email (i.e., senders I, J, K, P, Q, R, S). We can also see who tried out Transient Life when it became available, and whether they continued to use it.

Several senders are worth discussing for how their usage changes:

- Sender T normally uses Transient Life, but tends to travel for conferences and holidays. During these times sender T switches to text-based vanilla emails to avoid the SMTP mailer issues. This pattern is also visible in other senders (M, P, Q), though not as apparent.
- Sender S originally sent text-based vanilla emails, tried out Transient Life when it was first released, but had technical difficulties, so switched back. As the technical issues were resolved, sender S became a regular Transient Life user. Eventually sender S returned to text-based vanilla emails when he began to travel extensively.
- Finally, sender Q was originally a member of the list but not physically a member of the laboratory until late Fall 2006. Sender Q's physical appearance is noted by his usage of Transient Life, when the software became available to him.

While unintended in Transient Life's design, the graph clearly reveals a benefit of Transient Life: that it complements and co-exists with text-based vanilla email. Thus a user can always fall back to text-based vanilla email if the technology is unavailable.

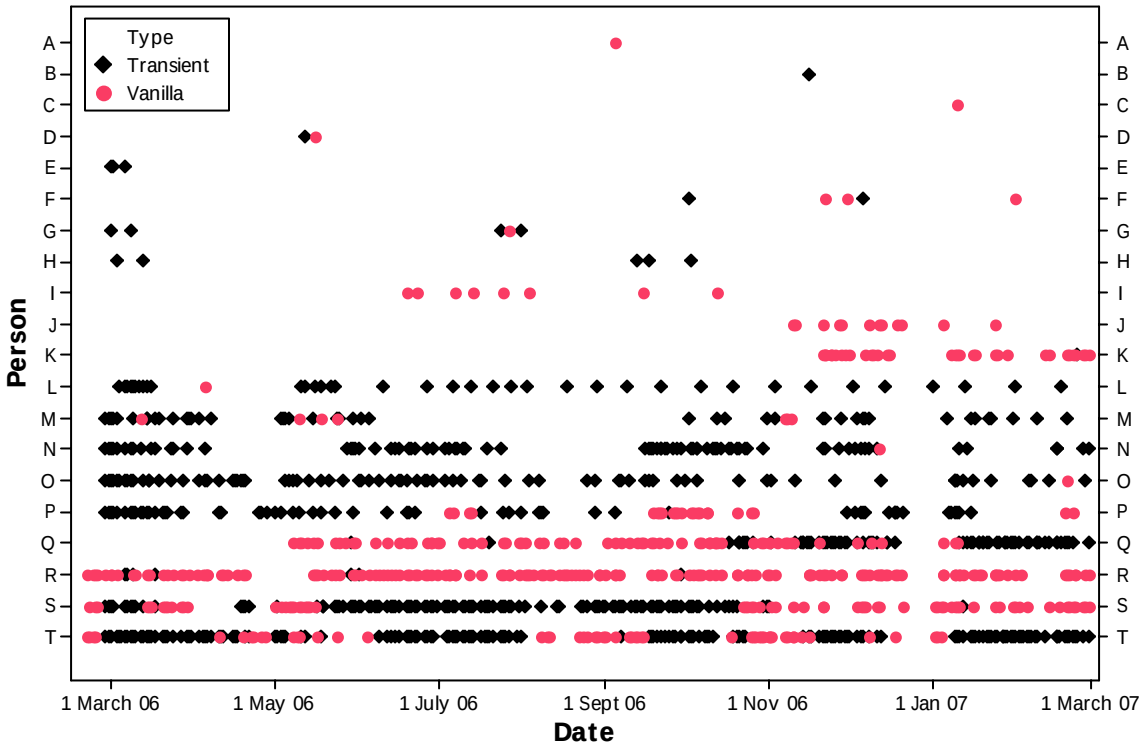


Figure 5.2 Scatter plot of Person versus Date, showing the today messages sent across the year by each person

5.2.4 Contents of Transient Life messages

Although Transient Life tends to standardize the layout of how today messages are presented, differences in the today message *content* posted by users reflects how the actual Transient Life tool is used.

Between February 24, 2006, just seven days prior to Transient Life's release, and February 28, 2007, 1132 today messages were sent to the community (this excludes other messages that may have been posted elsewhere). This year's worth of emails has been analyzed for content, counting the frequency of elements within each section. Of the 1132 messages analyzed, 686 were sent from Transient Life, and 446 were text-based vanilla emails. For each element in the Transient Life Bar (*Today I.., To-Do List, Links*, etc) we will discuss the content as it appears throughout the today messages. We will talk about the frequency numbers, each item in use, and if applicable, why it was not used. We will also compare the section's content as generated by Transient Life against its occurrence in those generated by text-based vanilla emails.

From these today message emails we use four Transient Life messages and two text-based vanilla messages (Figure 5.3 - Figure 5.8 displayed on the next pages) as reference examples. These today messages were chosen to demonstrate the different characteristics that appear in Transient Life and text-based vanilla emails. As we proceed through this section we will refer to different aspects within these example messages.

For the remainder of this chapter, while we discuss the messages we will refer to Transient Life as "TL" and text-based vanilla emails as "Vanilla".

Figure 5.3 Sample TL today message with added location details and mixed social/work content

About me today...

Wednesday, March 15, 2006

Today I ...

- finally a complete draft of the cscw submission
- lab meeting: cleaning, ed's media talk, communications student demo
- talked to natalia a lot about study results
- did a few more interviews
- helped jim with keywords for technote submission

On my ToDo list ...

- polish rest of cscw submission
- write chapter 1 draft

Links I thought were interesting:

- I Am Done With Violence / Enough scenes of horrid brutality, bloodied faces, tire irons to the knee. Can you purge?
- PBF archive
- YouTube - Chris Bliss Diss Video
- ART
- Urban Dictionary: Goo-diligence
- Oil Standard, Greasemonkey conversion of US Dollars to Barrels of Oil
- BBC NEWS | Americas | New Venezuela flag divides nation
- Sea Salt â€“ Guide

Today messages are emails outlining a person's activities throughout the day.This rich today message not only provides details on what has been done though out the day, but also personal status information and tidbits about interesting things that are worth sharing.

Figure 5.4 Sample TL today message with all work tasks and to-do items. Also contains lots of links, unrelated to work or each other

About me today...

July 26, 2006

This week I ...

- Updated two papers on line (see links; includes Carman's new paper and Gregor's final plugins paper)
- Had 5 videos and 1 paper accepted with many of our students - Yahoo!
- Went through a gazillion emails (the cost of vacationing)
- Scramled up Mt. Sparrowhawk
- Cycled 'round Mt Rundle
- Climbed in the bugaboos with Bill Buxton; great trip

Links I thought were interesting:

- http://grouplab.cpsc.ucalgary.ca/papers/2006/06-CalendarStudy-Neustaedter-Report/abstract.html
- http://grouplab.cpsc.ucalgary.ca/papers/2006/06-GroupwarePlugins-Mcewan-Collabtech/groupwareplugings-collabtech06.pdf

Pictures I ran across today:

Today messages are emails outlining a person's activities throughout the day. This rich today message not only provides details on what has been done though out the day, but also personal status information and tidbits about interesting things that are worth sharing.

Figure 5.5 Sample TL today message containing many images, a task list that covers more than a single day, links that are related to tasks, and mixed work/social tasks.

About me today...

Friday, March 02, 2007

Today I ...

- laundry
- watched reactable videos (thanks Saul!)
- more driver headaches
- took a stress-relief break and got some more good books at the bookstore sale; now, I need time to read them!
- emailed Sun support about some issues I'm having
- thought I would go to abs/core then realized the indoor link is closed, so decided not to
- got a new monitor!
- coding, not much progress; will have to trade computers for Martin's old one tomorrow
- going to do some reading tonight for EuroVis paper revisions

Mood(s)

a bit overwhelmed and behind schedule (11:32 PM)

Location(s)

ilab (7:27 PM)

Activity(s)

learning opengl / coding (7:28 PM)

Comment(s)

will I finish this project on time? (7:28 PM)

On my ToDo list ...

- finish Eurovis revisions
- beat someone at squash
- fix Java Web Start problems
- do ethics applications
- plan a study of DocuBurst
- finish U of T seminar on applying to faculty positions
- write abstract for CL journal survey article
- develop model of distributional profile for second layer of multi-structure word vis

Links I thought were interesting:

- http://www.joelonsoftware.com/articles/customerservice.html
- http://headrush.typepad.com/creating_passionate_users/2007/02/what_tail_is_wa.html
- http://twingly.se/ScreenSaver.aspx (cool vis of blog postings around the world; screensaver download doesn't seem to work)

Pictures I ran across today:

award-winning microscope photo of gnat, post hitting windsheild

Today messages are emails outlining a person's activities throughout the day. This rich today message not only provides details on what has been done though out the day, but also personal status information and tidbits about interesting things that are worth sharing.

Figure 5.6 Sample TL today message, containing mix of social/work content, Mood etc, items, captions on link and photo

Subject: [ilab-today] Monday et al
From:
Date: 2006-12-04 8:30 PM
To: ilab-today@cpsc.ucalgary.ca

Last Week:
- arrived back from Australia and New Zealand on Friday
- weird... no jet lag yet

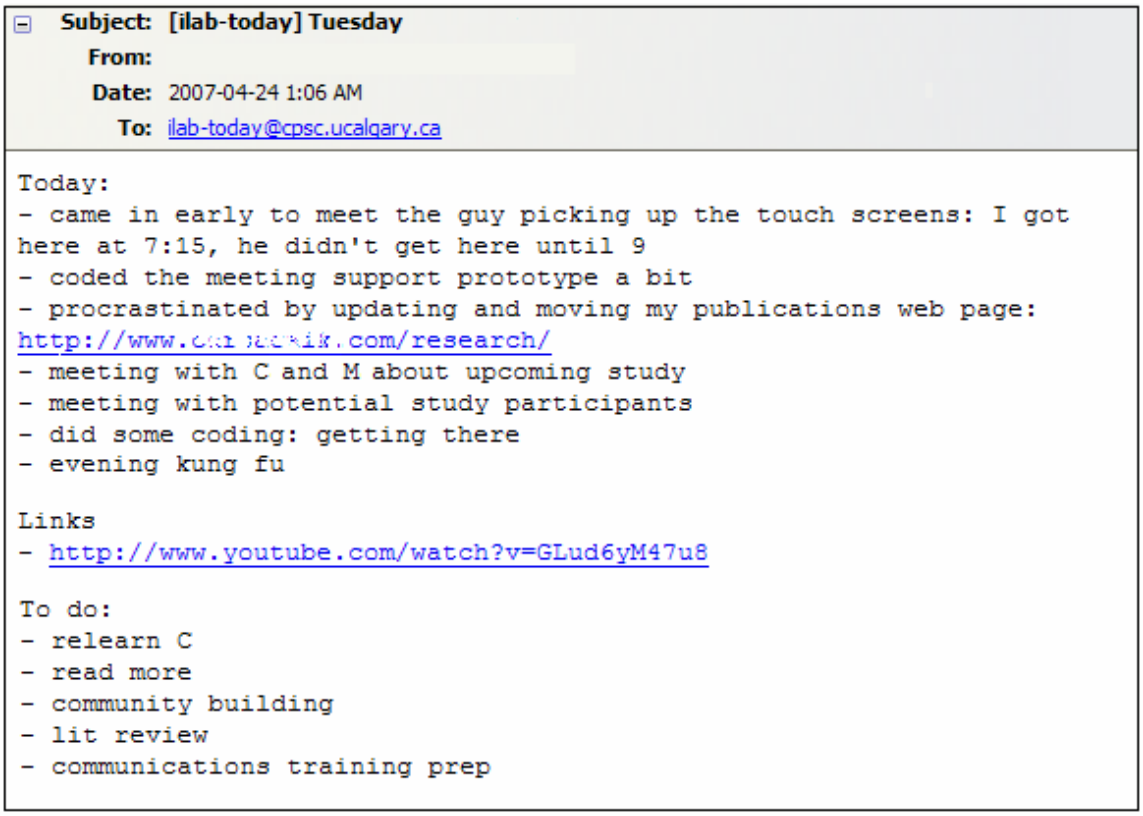
Yesterday:
- made slides for job talk

Today:
- checked out some CHI review rebuttals and commented
- put in my corrections for ch 1-7
- practiced job talk (uggg, not going well)

Tomorrow (at university briefly):
- pick up corrections for chapters 8-10
- print out a whole bunch of things

Coming Up:
- Thursday fly to Vancouver for interview
- next week, final thesis draft due for committee

Figure 5.7 Sample Vanilla today message with spilt task and to-do lists



Subject: [ilab-today] Tuesday
From:
Date: 2007-04-24 1:06 AM
To: ilab-today@cpsc.ucalgary.ca

Today:
- came in early to meet the guy picking up the touch screens: I got here at 7:15, he didn't get here until 9
- coded the meeting support prototype a bit
- procrastinated by updating and moving my publications web page: http://www.[illegible].com/research/
- meeting with C and M about upcoming study
- meeting with potential study participants
- did some coding: getting there
- evening kung fu

Links
- http://www.youtube.com/watch?v=GLud6yM47u8

To do:
- relearn C
- read more
- community building
- lit review
- communications training prep

Figure 5.8 Sample Vanilla today message with links and personal blog reference

Today I… (Task List)

Since the main purpose of today messages is to communicate tasks accomplished over the day we expected that this section would be the most used in both the TL and Vanilla messages. This bore out in practice. Only three messages out of the 1132 counted did not contain anything in this section. This absence seemed to be because those messages were follow-up messages to ones sent previously, e.g., sending additional information, such as a link.

When looking at the task lists, 75 of the 1132 messages counted had task lists split over several days. This occurred occasionally when a person had not posted in a while and wanted to report several days of activity. Figure 5.7 provides an example of a message where tasks are split over several days. A one-way analysis of variance (ANOVA) was calculated on

whether these task lists which encompassed more than one day differed from a single day's task list, as measured by the number of items it contained. The analysis was significant, $F(1, 1130) = 210.66$, $p < .05$. On average the number of items on a split task list ($M = 9.77$, $SD = 5.25$) had almost twice the number of items than a single-day task list email ($M = 5.20$, $SD = 2.35$). These loaded task lists with larger counts created outliers when looking at all 1132 emails in general. Therefore, these 75 email entries are ignored when evaluating the *Today I..* section for frequency information.

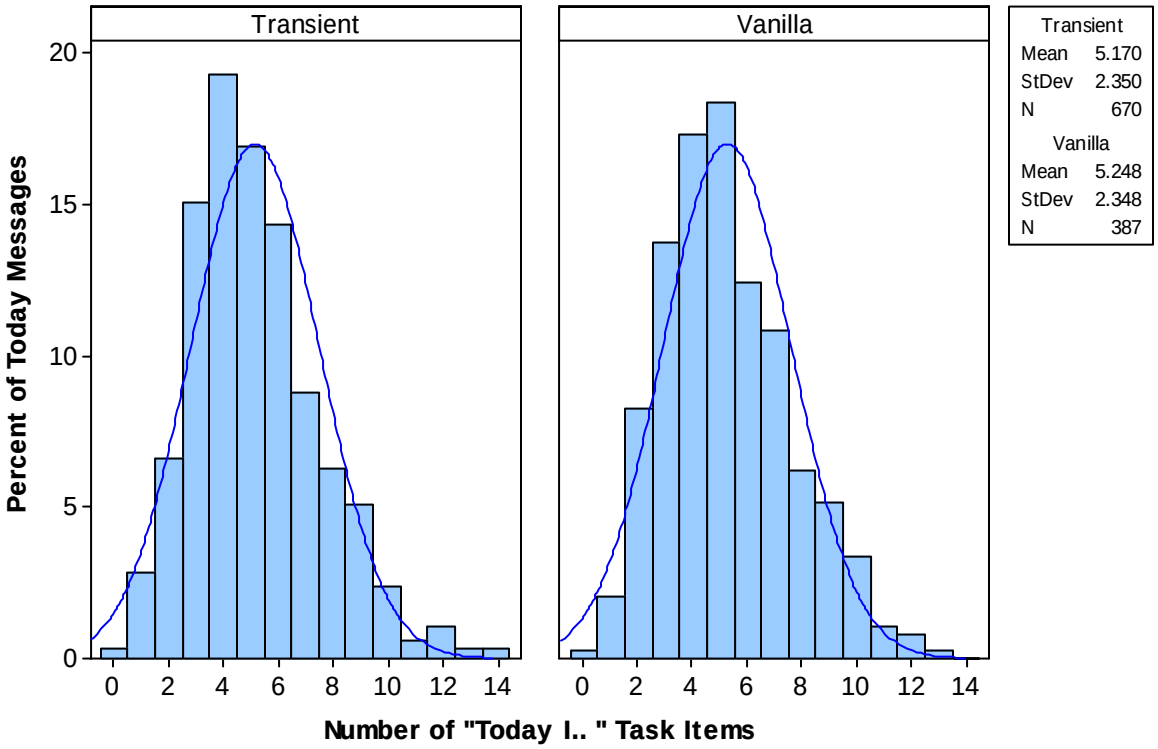


Figure 5.9 Frequency distribution of task items in the *Today I..* section of Transient and Vanilla today message emails

Of the remaining 1057 messages, 1027 (97%) had more than one item in the day's task list under *Today I..* showing that it is a significant part of a today message. Figure 5.9 displays the distribution of the number of items in both TL (left) and Vanilla (right) today message emails. The average number of items in the task lists of both TL and Vanilla messages are very similar. An ANOVA calculation on their means demonstrates that they are not in fact significantly different, $F(1, 1055) = 0.27$, $p > .05$.

This result was a bit surprising to us given that we supposed more items would appear in TL lists since people could add to it over the day rather than trying to remember everything that happened at the end of the day. Several people in fact mention this as a selling point for TL:

- *"[TL] provides a nice interface for me to produce today messages. Before I used to try and recall everything I did throughout the day, but with TL I put things in as I go."*
- *"When I don't use [TL], my today messages are usually shorter because I don't recall all the things I wanted to say. "*
- *"The collection of personal 'today' information is definitely the feature I like the most. Previously this was somewhat of a pain because I would always have to keep a draft email open to write down items."*

It is this last comment provides one reason for why there is no difference between the mean number of items in Vanilla and TL task lists. If they were not already in the habit of keeping an email window open, use of TL could have also influenced this behaviour upon returning to Vanilla:

- "*now, when I use straight text, TL has taught me the benefits of having an always open mail window to build my today messages.*"

We have no evidence that TL influenced everyone who tried it in this way, but it does support the notion that some people who use Vanilla emails may keep a window open for just this purpose.

When we look beyond the numbers and onto what activities people share with others, several things are worth noting. First, although today messages tend to be communication tools for team-mates they often contain non-work related content. Each of the task lists of the messages shown in Figure 5.3, Figure 5.5, Figure 5.6, and Figure 5.8 contain different mixes of work-social content. Second, the level of detail in the task description varies considerably, such that some shared tasks require prior contextual knowledge of the person and their activities whereas others can be understood easily.

To-Do List

The to-do list on any today message is second in importance to the task list. It follows that with any list of accomplished tasks or activities that one often has a to-do list. Although not quite as comprehensive as the task list occurrences, the majority of the today messages held to-do lists. Of the 1132 today message emails, 956 (or 84%) contained to-do lists. It must be noted that although a to-do list may be missing from an email, it does not mean that one is not being used or maintained. As one TL user noted *"I use the To Do list, but I don't always share it with others when I send today messages (i.e., I delete that section)."* This demonstrates that the area in TL is being used but the person does not wish to share this information. This notion follows two points: one, that TL allows the user to control what is being shared, and two, that it provides a mechanism for users to record personal information for their own purposes. On the other hand, you may get someone who uses the to-do list as a communication tool, rather than as a personal reminder:

- *"I believe I use the To-Do list to tell others that I do recall that, yes, I have things to do that they may be waiting for and that I will shortly get to it. Sometimes I put on major to-do items just so that others will also know that I am going to be busy with other duties"*

Similar to the task list, when we look at the to-do lists, we noted that 53 of the 1132 messages had to-do lists that were divided over several days or categories. Rather than reporting on several days of activity, a split to-do list occurred if people had specific events planned on certain days or if they tended to maintain separate short-term/long-term to-do lists (see Figure 5.7 for an example). Again these split lists were shown to be significantly different from the undivided to-do lists $F(1, 1130) = 39.60$, $p < 0.05$. On average the split to-do lists ($M = 5.038$, $SD = 2.394$) had two more items than an undivided list ($M = 2.903$, $SD = 2.409$). Because of this difference, when we look at the to-do lists in general from the today messages, we omit these 53 messages from the analysis.

Of the remaining 1079 messages, 762 (or 71%) had more than one item in the to-do list. Figure 5.10 displays the distribution of the number of to-do items in both TL (left) and Vanilla (right) today message emails. Although they appear to be similar, the number of items in TL messages is significantly different from those in the Vanilla messages $F(1, 1077)$

= 36.42, $p < 0.05$. On average TL messages had more to-do list items ($M = 3.240$, $SD = 2.535$) than Vanilla messages ($M = 2.339$, $SD = 2.063$).

This result is more in line with our expectations. Two TL factors may contribute to this result. One, as new to-do items come up, if TL is always open they are easily recorded at that moment. This also helps build the task list when the item is completed. Two, TL maintains a person's to-do list. Unlike all the other items in the bar, the to-do list remains when the bar is cleared for the day, since those items are still ongoing. A Vanilla message obviously does not do this, and the list must be reconstructed. As a result, in Vanilla messages to-do items are rarely repeated across emails, whereas in a TL message this happens often.

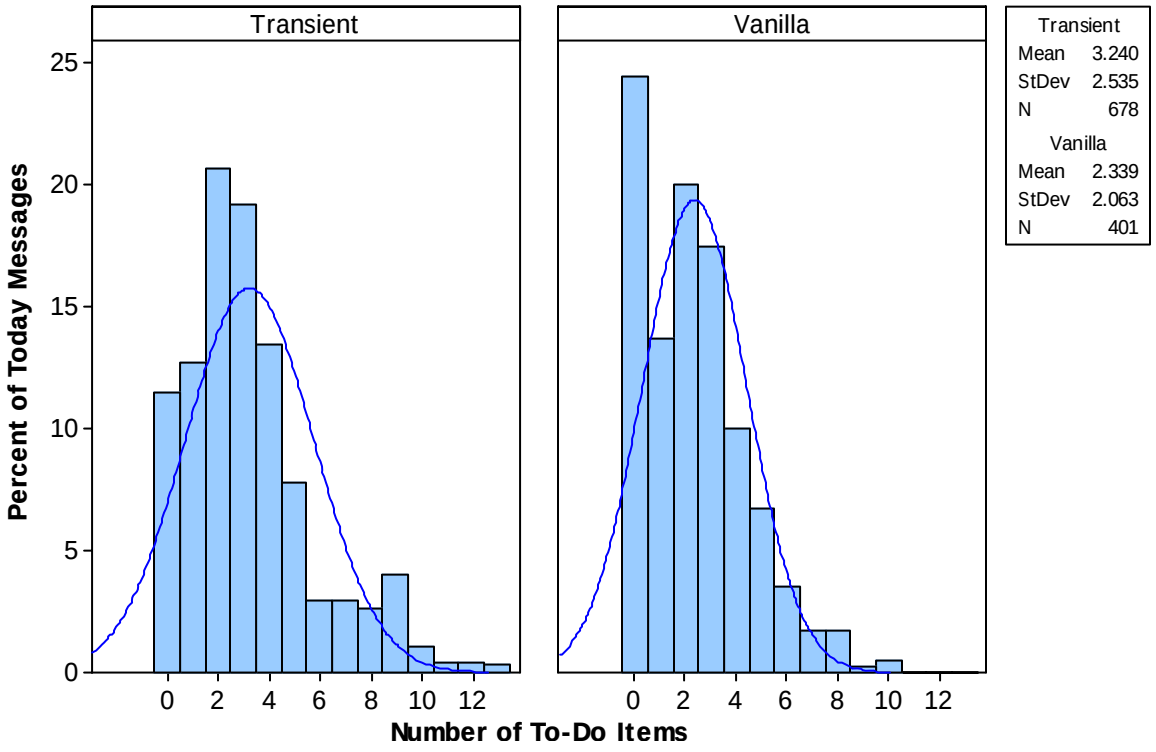


Figure 5.10 Frequency distribution of task items in the *To-Do List* of Transient and Vanilla today message emails

When we look at the to-do items meaning, we note that unlike the task items, to-do items are primarily work related. Although personal or social items do occur, they are rare. When they do occur it may be to account for blocks of time or to share an upcoming event.

Of the today messages that contained task lists (75) and to-do lists (53) split over several days, the majority were Vanilla emails (79% and 85% respectively). There may be different possible reasons for this, one that favours TL and one that does not. These lists that comprise tasks over several days may occur because the message had been forgotten, and as a result they were compiled together at the end of the week. By having TL open and items added to it over the day, the opportunity for forgetting to construct and send a today message email may be less than when using standard Vanilla emails. However, TL does not provide a way to date tasks and place them in several date "buckets". Several people have mentioned that they have short-term/long-term to-do lists. TL does not provide the mechanism to support task-date separation at present and it must be done with effort by editing the HTML message. This is obviously not an issue in Vanilla messages.

Today's Photos

As described in the previous chapter, photos are easily added through drag and drop into the TL bar, where they are automatically added to the today message without any additional effort by the user.

Although they are not always used, photos appear in 40% of the TL messages compared to 2% of Vanilla messages. Figure 5.11 illustrates this difference. In fact, the eight Vanilla emails that contained photos were actually sent by those who normally used TL. The effort required to send images combined with their attached status (rather than as an embedded display) pretty much dissuades the use of images in Vanilla today messages. One user says that, *"Probably I would not send any links or pictures [in Vanilla emails]…because that's just too complicated to do with my email program and the messages that are created look ugly."* The ease of addition and the attractive presentation of embedded images in the TL emails have guaranteed their frequent appearance.

The types of images that people share are mixed. Photos appear that fall into different categories, some of which we list here:

- Personal - unrelated to work (and each other), but are personal in nature and relating to their interests. Often they are photos from a person's camera.
- Activities - images of activities that occurred during the day. These are often referenced in the *Today I..* task list (see Figure 5.5).
- Community - images that are community related, either of special activities that have occurred, or involve members of the laboratory community.
- Funny - images shared for humour's sake
- Harvested for shared interest - A subgroup of the community whose studies are in Information Visualization often share work related visualizations that they encounter.
- Just because - images that have caught someone's eye as they surf the internet that they wish to share with others.

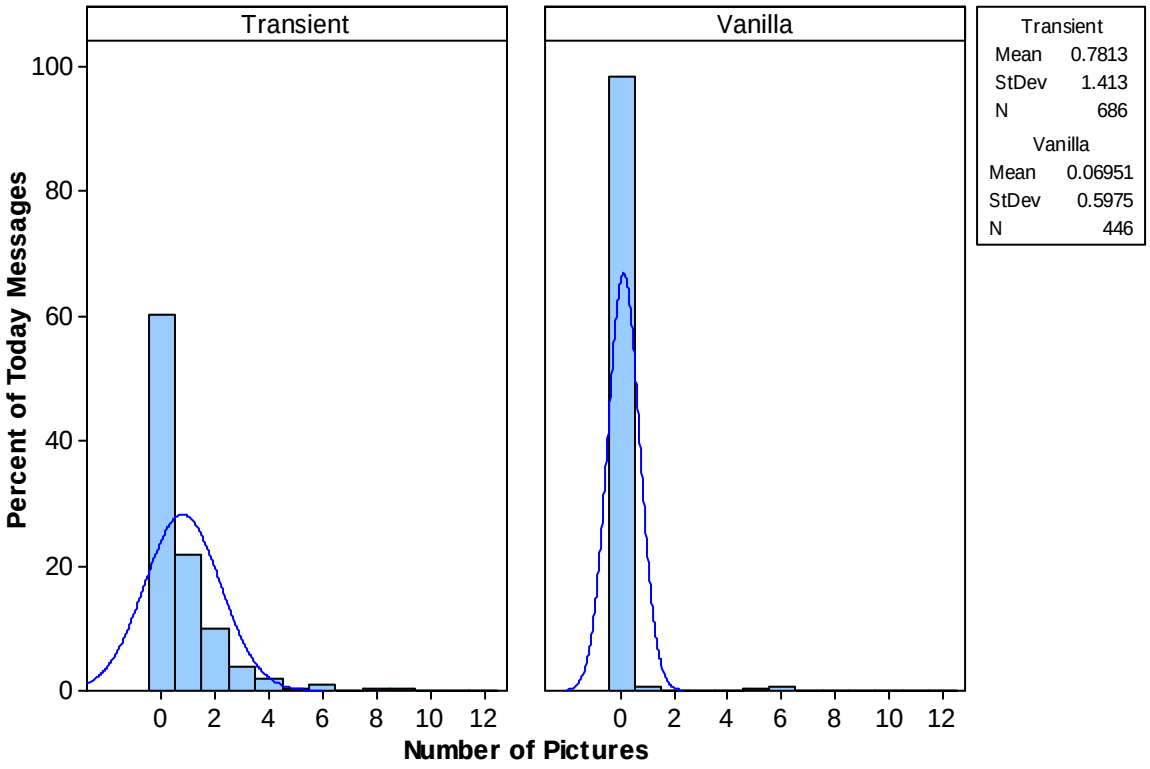


Figure 5.11 Frequency distribution of the number of Pictures in Transient and Vanilla today message emails

Transient Life does not explicitly support the captioning of photos, but titles are sometimes added by users to describe the image. To provide a caption they must modify the HTML message (see Figure 5.6). This adding of captions has occurred often enough that it should be considered as a future addition to TL. With an explicit mechanism to support captioning, it may become common. At present, though it occurs, it requires some effort by the sender.

Cool Links

From the beginning, links in TL were a popular addition to today messages. Although they did not appear in all today messages they did appear in 39% of the Transient messages and 15% of the Vanilla emails sent over the year. Figure 5.12 shows the frequency distribution of links in Transient (left) and Vanilla (right) messages.

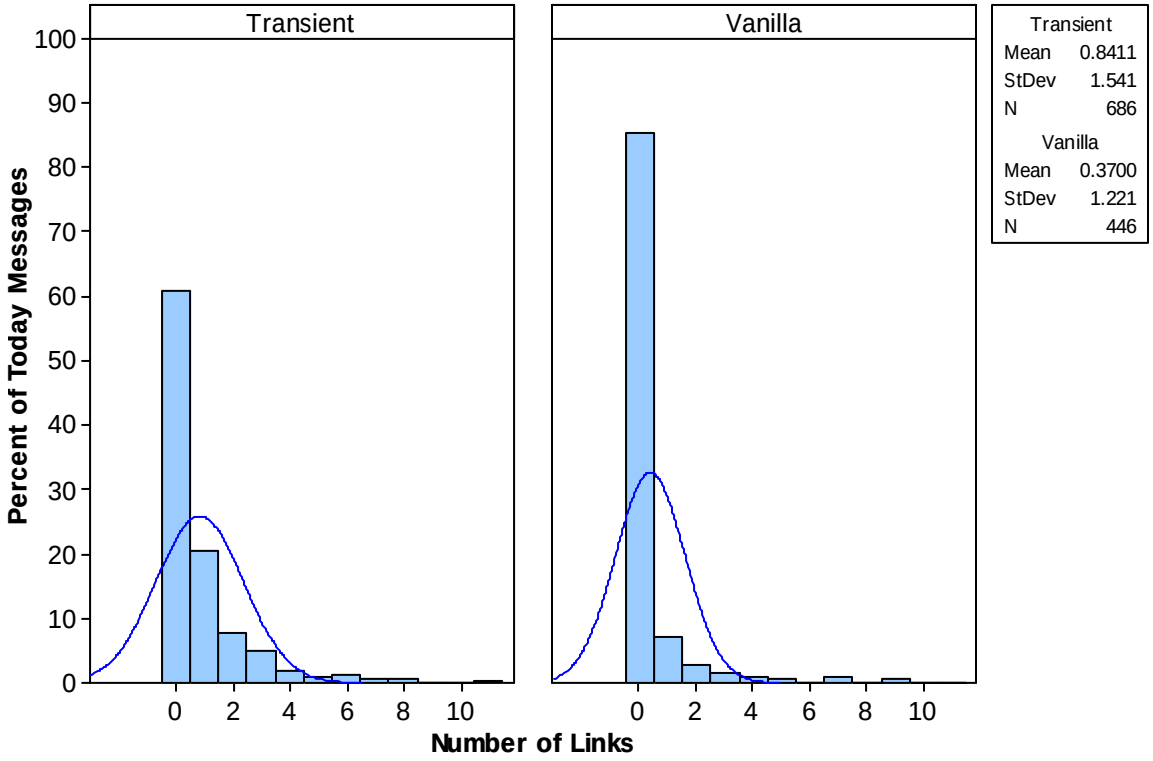


Figure 5.12 Frequency distribution of the number of Links in Transient and Vanilla today message emails

Prior to the release of TL, links did appear occasionally in Vanilla messages, but it was not very often. After TL was released and people became used to seeing links in today messages, they became much more common in Vanilla email. As some people moved from TL to Vanilla (for whatever reason), they took the practice of adding links with them. Figure 5.13 shows the number of links in both TL (top, black diamonds) and in Vanilla (bottom, red dots) today messages over the year. The appearance of links can be seen across the graph to increase in Vanilla emails as time passes. In TL their appearance stays relatively constant. Although the mean number of links over the year is significantly different $F(1, 1131) = 29.58$, $p < 0.05$ in TL and Vanilla messages, this difference may decrease as time goes on and more and more links appear in Vanilla messages.

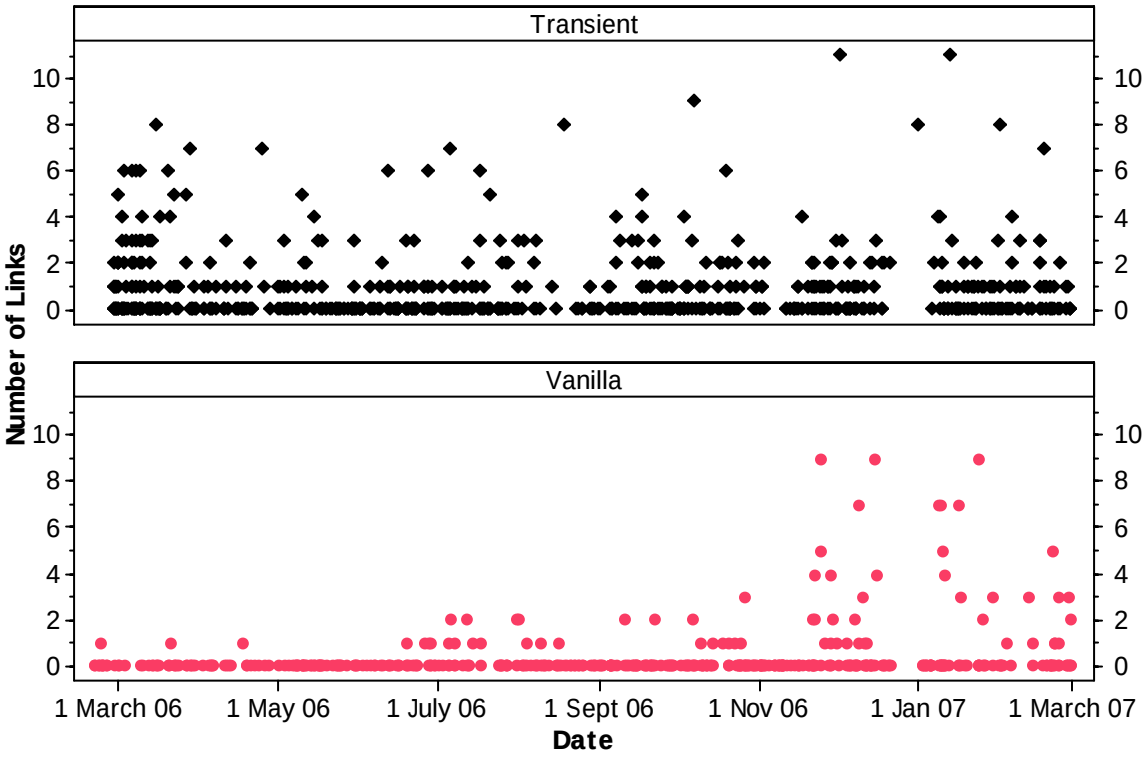


Figure 5.13 Scatter plot of Links versus Date, showing number of links in the Transient (top) and Vanilla (bottom) today messages over the period of the year

How the links appear in TL is dependant on what internet browser used. For instance, a drag event from Firefox[14] collects both the page title and the link address, so the drop event into TL, and subsequently its appearance in the message, displays the title giving the reader a better notion of where the link leads (Figure 5.4). Internet Explorer (IE) only gathers the address in the drag and drop which is not as informative (Figure 5.5 and Figure 5.6). To better communicate the link's direction, occasionally people will modify the outgoing HTML message that TL constructs in order to include a caption for the link (Figure 5.6). This manual captioning occurs primarily on links dragged from IE where there is no title indicator. As with photos, captions for links in TL are a desired addition by users:

- *"[If I could] I'd add something for captioning photos or explaining links to be shared…but as an extension to the existing links and photos sections."*

The type of links shared in today messages varies. We see links that are:

- related to work and/or referenced in items in the task list (Figure 5.5),
- unrelated to work, but are being shared because they may be of interest to members of the CS community (Figure 5.6),
- related to photos that are also in the message, either as a mechanism to show more content, as a retrieval reference, or as a type of caption for a photo, and
- completely for fun, unrelated to anything or each other (Figure 5.4) !

The practice of sharing links varies between individuals. Some contributors are known for adding multiple links for others to explore, such as in the message shown in Figure 5.4. Others do not include any, feeling that their primary use of TL and today messages is to share tasks and activities. In the same vein, some readers are particularly interested in exploring the links that others send, where some ignore them completely. Overall though, the feeling towards links is best described by this user:

- *"[Links are] a way to make the message content more interesting, more playful, and more informative. I think that (along with photos) cool links do more than pass on raw information, but it also gives insight into my personality to others (and vice versa). It makes it engaging."*

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[14] http://www.mozilla.com/firefox/

Links are the one section that truly shows the potential of capturing at-the-moment content of interest. Links to interesting web-pages are items that have an immediate reaction or desire by the viewer to share. If a person decides not to pass it on to someone immediately, it is likely forgotten. If it is not forgotten, the effort to retrace your steps to recapture the link weighs heavily on the desire to share. In Transient Life links are quickly dragged and dropped at the moment of discovery from the browser into the TL bar, and added without any additional effort to a today message. Links are not time critical, and the information is not out of date when it reaches the reader. In TL, the inclusion of links in today messages was immediate after its release, and they continue to be a popular item to share in today messages.

Today I am… (Mood, Location, Activity & Comments)

The Mood, Location, Activity and Comments spaces under the *Today I am…* section of the TL bar were initially used often in the first month of TL's release but quickly fell to sporadic use. In processing the different emails that contained these elements, it was noticed that when someone added something to one of these fields only one or two entries were recorded, rather than steady updates over the day.

Of the four fields, mood is most likely recorded when a person is frustrated and felt a need to express or share that emotion. Location was the most consistently used, especially if a person tended to work both at home and at the laboratory, to the point where one user would rather have the entry of their location automated: *"I never use the 'Today I am' part because I have to manually type stuff in (it'd be better if it automatically added (e.g.) that I'm at home/school."*

In TL, only 34% of the today messages contained items of these elements. Figure 5.14 displays the infrequency of which these areas are used. The total occurrences in each of the four fields have been combined since the individual counts are so small. One message has been omitted from the analysis as an outlier. The outlier message contained multiple entries in each element field, but it was the first-use message of TL and the action was never repeated.

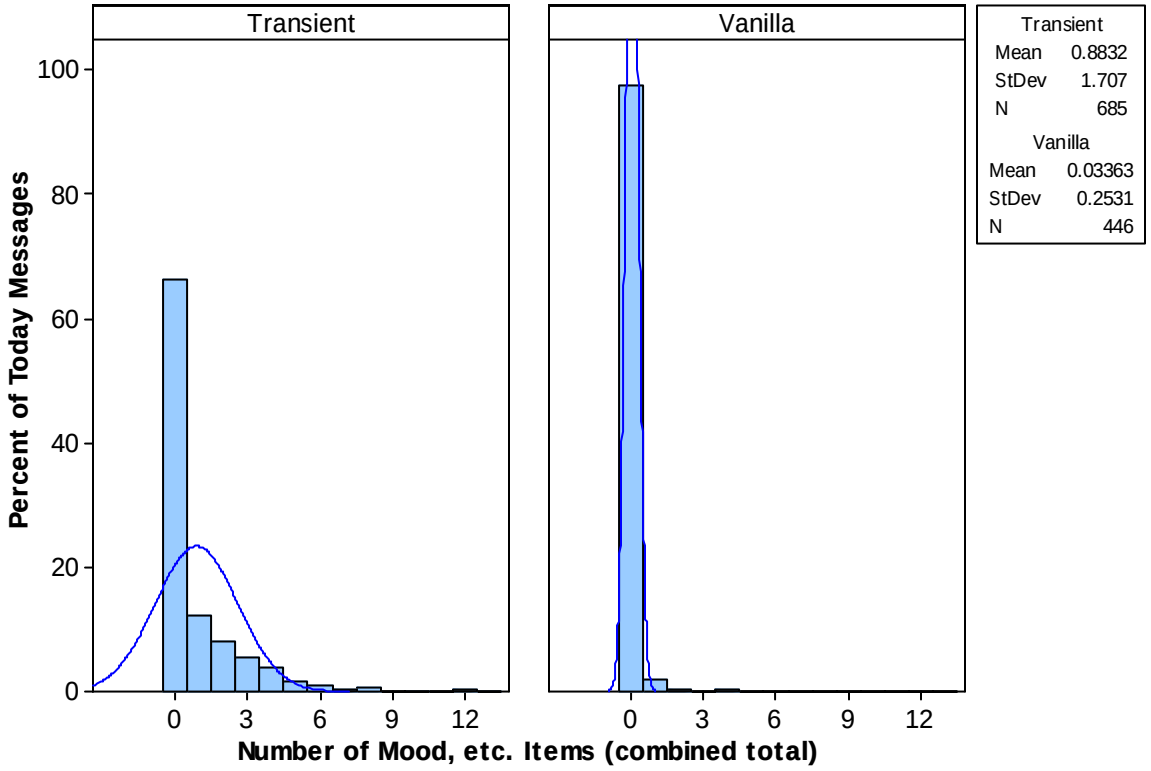

Figure 5.14 Frequency distribution of the number of Mood, Location, Activity & Comments (combined total) in Transient and Vanilla today message emails

In Vanilla emails these elements were a very rare occurrence (11 total). When these type of items (Mood, etc.) appeared in Vanilla messages, they were often embedded within the *Today I..* task list and associated with particular tasks. A few of the appearances of these items in Vanilla messages were patterned off prior TL usage. This was apparent by the explicit labelling of the item (e.g., Location: at a conference).

The relatively low use of these fields is likely due to TL's impoverished interaction with IM clients. As a way of changing the IM display message, the *Today I am..* section is dependent on the use of MSN Messenger. If a person used another client it was not compatible. Due to API restrictions, the functionality in terms of changing IM display message tended to be unreliable. When used after the initial release people would use this as more of a record to share in the today message, rather than to change their IM display message. However, some senders and receivers felt it to be redundant to the *Today I…* section, stating that,

- *"… I don't like to update my TL all the time. I like to update it once I am done one major thing during the day. I wouldn't say I NEVER use [the Mood etc] sections but I rarely use them for that reason. Also "up to" seems kind of redundant wit the "Today I…" part"*
- *"[Something that goes ignored is] Moods, I don't find they have much information that I can't already find in reading their Today I section."*

Although the four fields were initially derived from the IM Display Name study discussed in Chapter 3 (Smale & Greenberg, 2005), the separation of status into the four main areas was actually a detractor. People are used to and would rather have the more general and encompassing single status space, and have it link reliably to all the places where status is presented (e.g., IM, Facebook).

Blog Bits

Blog Bits went essentially unused. In all of the emails sent, only 15 contained references to blog entries made using TL. These few occurred early on and were primarily posted to the TL feedback blog space. In Vanilla emails, personal blog references would be included as links, or an update listed as a task item (see Figure 5.8), rather than in a defined section as in TL.

There are a number of factors that contribute to the lack of use of this TL element. First, although a popular blog type is supported, many others are not. Second, a small percentage of the people in the today message community maintain blogs. Many people found commenting to the feedback blog convenient, but outside of that usage, they either were typically not bloggers. Third, the blog bits mechanism is limited: it allows simple text entry but no multimedia posting. If a person had quick thoughts they wanted to share then this option is functional, however it is not suitable for richer blog contents.

History Calendar

Usage of the History Calendar is not measurable through the study of today messages. However, feedback from the users provides some insight into how it was used and what people wanted from it.

As discussed in Chapter 4, the History Calendar was something that was expected to be used occasionally. General use seems to be as expected: as a way to revisit information, which is reflected in the comments below.

- *"I use my TL history and today messages (when I don't use TL) as a personal log as well as a way to share. I will sometimes mine the history to find the date of an event or activity."*
- *"[I] like having an archive as sometimes I want to revisit something I had posted previously (eg. a link)"*

However, some issues have arisen, as identified by the following comments:

- *"I never use my history calendar because it doesn't keep a history of the things I change in the final version"*
- *"The problem with the current archive is that it is local, but I have multiple machines so there is no consistent record"*

The first comment addresses what stored information is displayed. A date selected in the History Calendar displays ALL the information gathered by the individual over the day. A person may modify a TL message before sending it to prevent certain information from being shared. These edited messages are stored on the computer, but are inaccessible from the bar.

The second comment addresses a basic overall issue with Transient Life. It is a single computer application, and information is not shared across computers. This issue will be addressed in the next section along with other issues which concern the TL experience.

One final comment about the History Calendar:

- *"I think more retrospective features to see my past activities would be cool"*

Although it does the intended operation of providing a basic store for collected information, it is obvious that the History Calendar has greater potential yet to be explored, as considered by this user. The same can be said for Transient Life as a whole.

Other Uses

While not formally studied, we know that TL has been installed and tried out by others outside of our community, and we have anecdotally collected some feedback of their use. Some people used TL primarily as a personal store and record tool, and as a way to connect to IM and blogs; the sending of today messages was secondary. Some were attracted to the fact that links and photos were attached to dates, a nice feature for a personal logging tool. When TL was used in this manner, people focused on the personal rather than the work connection typically seen in our today message mailing list. It was more important that the connections to social sites such as blogs, were available and reliable, since those people tended not to use the email facility.

5.3 Discussion

Transient Life is a tool designed to support the capturing and sharing of small transient bits of personally-related information. From the time of its release up to and beyond this second review period, Transient Life has been downloaded and installed by many different users within a community. Its acceptance was not universal. For some people in the broader community, the program was not a good fit with their personal routines for sharing (e.g., some did not feel interested in sharing), or any technical issues that arose in installing/ configuring/using the system were sufficient to stop them from continuing. However, we did see a sub-group enjoy the features Transient Life provided them, where they continued to use it over time.

This section discusses some of the higher-level issues surrounding Transient Life. First, Transient Life exists in an ecology of other applications and tools, and it is the connectivity between Transient Life and these tools that partially underlie its success and failure. In today's electronic world, users are faced with an increasing number of places where they may share information with others using the internet. Transient Life tries to fill in the blanks between all the personal information sharing mechanisms such as today messages, email, status displays as in the IM display name, and blogs. It partially succeeds; for example, we saw that people enjoyed that Transient Life uses email as its delivery mechanism, and that they can interleave vanilla email and Transient Life use for composing email. Yet it also fails:

the obstacles to reliably connecting to IM and blogs were sufficient to make their use negligible. The challenge of building a tool such as Transient Life is that users then, yet again, have to deal with another tool; consequently it must have strong benefits to the user. Not only must the system have reliable connectivity to other information sharing mechanism, but its configuration and use have to be extremely lightweight, adaptable, and customizable to the needs of the person.

The second issue is the technical challenge of implementing reliable connectivity. As discussed in Section 4.4.2, building and integrating the connections to the various tools is not simple. It is hindered by the multiple, non-standardized, changeable, and often restricted tool API's. Transient Life will always have issues fulfilling its mandate unless it is deeply and seamlessly connected with other tools. Furthermore, for best effect the connection should be two-way. For example, not only should a Transient Life location change result in a change in (say) the IM display, but a change typed into the IM display name should also result in an update in the Transient Life list. These connections need to be seamless, two-way, and easily established if Transient Life is to reach its full potential; if it is effortful, a sub-group will always be inhibited from using it.

The third issue involves the design of an extremely light-weight interface. If Transient Life is to work as envisioned, people must easily be able to use it to capture at the moment, transient pieces of information. If effort is involved - even something as mundane as clicking a button to raise the Transient Life interface - those moments can pass. For example, we saw that Transient Life encourages links and photos, because it exploits drag and drop functionality. If a person has a link or photo in view (e.g., in a browser or on the desktop), they can easily toss it into Transient Life. In contrast, other elements are effortful.

A fourth issue has to do with how information collected is sent to all. Transient Life offers a 'one size fits all' solution, where the contents of a Transient Life message are composed in the same way for all recipients via a generalized format that collates all recorded material. Yet people may want to share different things with different people and in different places. Perhaps Transient Life would better serve its users by providing them with the ability to customize the elements for information to be collected and shared. Still, the current approach is a reasonable place to start. As we saw, people have the opportunity to

edit their Transient Life email message after it is composed, allowing them to add/delete/modify its content as needed.

Finally, other features – both technical and functional – could enrich the Transient Life experience.

- ***Customization and Modularity*** – The different sections in Transient Life should be customizable and modular. A user should be able to select which modules they use regularly (e.g., *Today I..*, *To-Do List*) and remove the ones they have no use for (e.g., *Blog Bits*) from the bar. They should be able to re-title or repurpose them. They should be able to maximize modules for their particular uses, and leave out or minimize elements that are irrelevant to their collecting and sharing habits.

- ***Plug-in Architectur***e – Following from Modularity, those who wish to should be able to design and implement a module component to include in their Transient Life bar (and/or for release to others). A plug-in architecture with an open API should enable this further level of customization by users. In general, this sort of architecture will also allow additional or future outside information sharing tools to be incorporated without having to rebuild the entire tool.

- ***Search*** – Although information is stored by Transient Life and viewable via the History Calendar, there is no way of searching for a particular item in the daily entries, unless a person knows approximately which day it was recorded. Incorporating or utilizing a search mechanism will provide users with greater flexibility when hunting for particular information in their archives.

- ***Web-based*** – More than any other property or improvement, the most requested feature is the ability to access Transient Life and its information via the web. Transient Life is currently a stand alone application where the data exists on a person's personal computer only. To switch the storage of information and current state of Transient Life to a web-based mechanism would permit access from multiple sites or computers. This could be done in a number of ways: information storage only with local application, information storage and web browser interface, or local application with information storage and optional web browser interface. The first is

a local application which accesses a central store for information and state. The second is a complete web-based application where both the information is stored centrally and the interface is through a browser rather than an application installed locally. The third is a combination of the first two which would permit a person to enter information using the local application whether they had an internet connection or not, and have it synchronize when connected. It would also permit access when a person does not have access to their own computer, or even entry via a mobile device. One reasonable approach would be to create a Transient Life gadget for always-visible notification systems such as Google Desktop Sidebar or the Windows Sidebar.

5.4 Chapter Summary

This chapter presented Transient Life in use. We first discussed the initial feedback and impressions upon Transient Life's release. We then returned to the users a year later. This second review provided us with additional insights. We reviewed today messages sent to a mailing list to uncover the components in Transient Life that were in primary use and those that went unused. We found that the elements of *Today I..* and *To-Do List* were the most used, consistent with the function of a today message. However, it was apparent that the addition of photos and links was welcome and provided a way for people to personalize and enrich their messages further. We saw that the addition of links influenced their appearance in text-based emails. From this we have seen that Transient Life has become a rich and integral part of the today message interaction within a community. Furthermore, it supports individuals' work practices, both personal- and group-based. Lastly, we reviewed higher level issues within Transient Life, which in turn suggest future redesigns of either Transient Life or another tool of similar concept.

Chapter 6. Conclusion

This chapter summarizes the contributions of this thesis and explores future directions of this work. This chapter has three sections. First, we revisit the research problems and research goals originally presented in Chapter 1. Second, we discuss the contributions made by this research and how they address the research problems. Third and finally, we suggest directions for future research.

6.1 Research Goals

This thesis was concerned with two main problem areas. First, we need to better understand people's behaviour and intentions for communication when they seek to broadcast information about self to others. Second, as designers we need to design interfaces that better support how people spontaneously generate, collect, and publish personal information tidbits; to consolidate this information to the many outlets available, so that information reaches the desired community. We approached these problems by setting the following goals:

Goal 1: To investigate why people were appropriating the display name space in IM for broadcast messages and how often this occurs.

Goal 2: To design, implement and deploy a tool that lets people collect and publish personal information (as now posted from IM and from other popular tools) from a single interface.

We demonstrated and reached these two goals in the previous chapters. In addition, we showed that there were valid and interesting avenues of research in exploring the different ways that people broadcast and share information about themselves online and considering ways to support the collection and publication of transient tidbits.

6.2 Contributions Revisited

There are two main contributions from this research which form a basis for further research in the area of understanding and supporting the sharing of personal transient information. These are …

6.2.1 Broadcasting information via display names

The first major contribution is an exploratory study into how people have appropriated the display name feature in IM to broadcast messages and communicate information about themselves to their community of contacts (Chapter 3). We exposed patterns of behaviour, where we saw that users changed their display names at various frequencies and that the new information fell into seventeen different categories of communication encompassed by three themes: *Identification, Information about Self,* and *Broadcast Messaging.*

This study was the first real analysis of this phenomenon of appropriation and personalization and is important for two reasons. First, it reveals the importance of communication tools supporting allowing people to broadcast different types of information to their community. Second, it demonstrates that when it comes to sharing personal information, small transient pieces of information are deemed as important as major life details, and can be found in unexpected places.

6.2.2 Transient Life

The second major contribution is a system that allows people to gather personal information tidbits and share the information with others in a single interface. By taking a look at the different mechanisms by which people collect and share information, we created a set of requirements and the *Transient Life* system was developed (Chapter 4).

We explored the use of Transient Life in detail in Chapter 5 and showed that the application provided an effortless way for users to collect their daily personal transient information tidbits on the fly. Although the publication aspects were not as successful as the collection components, this exploration generated important insights and suggestions on how future tools can improve upon the basic concept put forth by Transient Life.

6.3 Future Work

There are several directions for future research that arise from the results of this thesis. These directions include further explorations into the study of people's behaviour in broadcasting transient information and continuing to experiment with other tools that facilitate the collection and publication of personal information.

6.3.1 Further explorations into projecting personal information

Our study of broadcasting within the IM display name (Chapter 3) is just the first of a set of studies that could be done in exploring the types of information people wish to transmit to others across different media types. Within instant messaging, much has been discovered within our study; yet these results should be verified and refined further across different and broader communities. Our study was also limited: we were mostly interested in cataloguing and counting information fragments. Another direction would be to continue this type of exploration with interviews: to uncover not only the author's intentions when broadcasting such transient information, but also the recipient's opinion when receiving this information.

There are also many other ways that people distribute information about themselves in unusual ways. Kindberg and Jones (2007) recently observed people's naming practices of Bluetooth devices, particularly mobile phones, and found that once again users were deliberately projecting aspects of themselves within their chosen Bluetooth names. This is only one example of other possible studies in discovering the ways that people communicate aspects of themselves and express elements of their identity in inconspicuous ways using modern technology.

6.3.2 Transient Life and beyond

In Chapter 4 we introduced Transient Life as one way to illustrate the concept of a single interface to collect and publish personal transient information. The subsequent review of its use in Chapter 5 demonstrated that the concept is valuable even if the implementation was incomplete. Therefore, future work encompasses several directions. If Transient Life were to evolve, its design should be re-evaluated and any new prototype should address the issues raised, and incorporate the feature recommendations discussed in Section 5.3. New designs

can also follow two paths: continue in the piecemeal approach to collection where specific items are created for a particular publication locale, or consider a holistic approach where the publication element acquires what it needs from a large body of interrelated information.

We are not the only ones recognizing that people want to capture and share transient personal information. As our lives become increasingly interconnected with new and exciting technology, there are more and more mechanisms for people to share at-the-moment information with others. Most prominent at present is the advent of applications such as Dodgeball, Twitter, MMS (Multimedia Messaging Service) and the interconnections of social networking sites, instant messaging and mobile devices.

With these developments come many opportunities for research and innovation. However, what also follows is an overload of places where personal information is shared and exchanged, and the concept of consolidating the location of entrance to that information becomes more appealing. Future work in consolidating the collection of personal transient information will need to understand that vendors of new services want to capture and hold a user's interest and not necessarily want to share that interest. They are also particularly focused on whatever niche they have decided to pursue and are not always cognisant of the broader relationships to other mechanisms. Ideas for the future in terms of information sharing will need to cater to the vendor yet satisfy the individual in their need to share information and maintain light contacts with minimal effort.

6.4 Conclusion

In this thesis we have shown that people wish to broadcast information to their community of contacts and will find methods to support that behaviour. It has also demonstrated that the concept of personal information collection and publication can be consolidated to support many outlets. Despite its limitations, we now understand that what seems like the simple act of sharing small bits of information about self is not so simple. If the process is not supported explicitly within a mechanism, people will find a way to appropriate that mechanism to suit their purpose. This discovery has led to a better understanding of how we may better support the sharing of transient personal information. Transient Life has just opened the door to a new way of thinking about how we collect and share information.

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Appendix A. IM Study Materials

A.1 Study Recruitment and Information Sheet

[University of Calgary Logo]
Department of Computer Science

STUDY RECRUITMENT

Research Project Title: Evaluation of display name usage in MSN Messenger

Investigator: Stephanie Smale

Supervisor: Saul Greenberg

Purpose of the Research Project

It has been casually observed that people are changing their display name to do more than simply identify or label themselves. The focus of this research is to evaluate how the display name feature is utilized in MSN Messenger. The experiment will collect data unobtrusively and on analysis be used to determine whether suggestions can be made towards interface improvement or future research into instant messenger (IM) user behaviour.

Procedure:

You will be given a small computer program to install on your personal computer. This program will collect display name usage data and will run in the background of day to day computer operations monitoring any name changes that occur on your IM contact list. This data will be stored in a file on your computer.

When the trial time is complete, you will be contacted by the primary investigator in order to retrieve this data file. The program file and data file will then be deleted from your computer.

You will also be asked to participate in a short interview to gather your insight on display name usage within your IM contact list.

Your involvement in this study will not put you at any risk or harm and your participation is strictly voluntary. You are free to withdraw from this research at any time, for any reason, without penalty. All personally identifying information is confidential and will be accessible only to the researchers involved in this project.

Commitment:

Your participation in this study, in the form of program data collection (including the interview), will last for no more than three weeks.

To participate or for more information:

Send an e-mail to: smale@cpsc.ucalgary.ca

A.2 Informed Consent Form

[University of Calgary Logo]
Department of Computer Science

CONSENT FORM FOR PARTICIPANTS (DATA CONTRIBUTORS)

Research Project Title: Evaluation of display name usage in MSN Messenger

Investigator: Stephanie Smale

Supervisor: Saul Greenberg

This consent form, a copy of which has been given to you, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

Description of the Research Project

The focus of this research is to evaluate how the display name feature is utilized in MSN Messenger. The experiment will collect data unobtrusively and on analysis be used to determine whether suggestions can be made towards interface improvement or future research into instant messenger (IM) user behaviour.

To collect display name usage data a small computer program will be given to you as a participant. Once installed, this program will run in the background of day to day computer operations monitoring any name changes that occur on your IM contact list. This data will be stored in a file on your computer. When the trial time is complete, this file will be copied and transferred to the primary investigator. The program file and data file will then be deleted from your computer. You will also be asked to participate in a short interview to gather your insight on display name usage within your IM contact list.

Each participant will be given a participant number and any reference to an individual participant's data will be made using this number.

In order to gather data, the names and e-mail addresses of contacts will be collected from your IM contact list. Since IM uses a person's e-mail address as their logon id, this is the constant that will be used when comparing the potentially changing display names, and so must be recorded as a reference. When the data is consolidated, the e-mail addresses will be deleted and substituted by a non-identifying participant code. Only the primary investigator will have access to this information. At no point will the e-mail addresses be used for any other purpose or shared with any other party. Any data collected will be reported in either an aggregate form, or --- if identifying data is in the display name handle --- that data will be masked or altered (e.g., by using a pseudonym) to preserve identity.

Your involvement in this study will not put you at any risk or harm and your participation is strictly voluntary. You are free to withdraw from this research at any time, for any reason, without penalty.

At the conclusion of this research project, any papers that have been written as a result will be posted. These will be available for viewing by either asking the investigator or by accessing the website: http://www.cpsc.ucalgary.ca/grouplab/papers/.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

If you have further questions concerning matters related to this research, please contact:

Stephanie Smale, Interactions Lab, Department of Computer Science, University of Calgary

Phone: (403) 220-9501, smale@cpsc.ucalgary.ca

If you have any questions or issues concerning this project that are not related to the specifics of the research, you may also contact the Research Services Office at 220-3782 and ask for Mrs. Patricia Evans.

Participant's Signature	Date
Investigator and/or Delegate's Signature	Date
Witness' Signature	Date

A copy of this consent form has been given to you to keep for your records and reference.

A.3 Ethics Approval

UNIVERSITY OF CALGARY

CERTIFICATION OF INSTITUTIONAL ETHICS REVIEW

This is to certify that the Conjoint Faculties Research Ethics Board at the University of Calgary has examined the following research proposal and found the proposed research involving human subjects to be in accordance with University of Calgary Guidelines and the Tri-Council Policy Statement on *"Ethical Conduct in Research Using Human Subjects"*. This form and accompanying letter constitute the Certification of Institutional Ethics Review.

File no:	**4163**
Applicant(s):	**Stephanie K. Smale**
Department:	**Computer Science**
Project Title:	**Evaluation of Display Name Usage in MSN Messenger**
Sponsor (if applicable):	

Restrictions:

This Certification is subject to the following conditions:

1. Approval is granted only for the project and purposes described in the application.
2. Any modifications to the authorized protocol must be submitted to the Chair, Conjoint Faculties Research Ethics Board for approval.
3. A progress report must be submitted 12 months from the date of this Certification, and should provide the expected completion date for the project.
4. Written notification must be sent to the Board when the project is complete or terminated.

2004/11/05

Janice Dickin, Ph.D, LLB, **Date:**
Chair
Conjoint Faculties Research Ethics Board

Distribution: (1) Applicant, (2) Supervisor (if applicable), (3) Chair, Department/Faculty Research Ethics Committee, (4) Sponsor, (5) Conjoint Faculties Research Ethics Board (6) Research Services.

A.4 Raw Data Sample

All raw data files are currently kept on the archival disk held by the primary investigator. Since the raw data files contain personal information and cannot be displayed publicly, a sample segment of a data file, modified for confidentiality is provided on the below. This sample is used to illustrate the format of the data collected from participants.

Date	Particip't	Display Name	Sex	Age	Categorization by Primary Participant
2004-10-21 17:15	S1	JM	M	45	name
2004-10-21 17:15	S2	(#) Julia	F	34	name with emoticon
2004-10-21 17:15	S3	Johnboy - |-) jobless but not hopeless	M	27	job status
2004-10-21 17:15	S4	anitsirK - 4 hours!!	F	24	handle plus time countdown
2004-10-22 7:53	S4	anitsirK			handle
2004-10-21 17:15	S5	Kim	F	24	name
2004-10-21 17:15	S6	Karen	F	31	name
2004-10-21 17:15	S7	.	F	32	unknown
2004-10-22 15:47	S7	Revamped			statement of personal status
2004-11-04 12:51	S7	STRESSED			personal state/emotional
2004-11-14 22:00	S7	www.sorryeverybody.com			direction to website
2004-10-21 17:15	S8	It's not always rainbows and butterflies...	F	28	song lyrics
2004-10-29 5:51	S8	Working from home -It's not always rainbows and butterflies...			location + song lyrics
2004-11-02 9:30	S9	bijal	f	24	name
2004-11-02 9:30	S10	Priti	f	24	name
2004-11-02 9:30	S11	Dannyboy [Mamma said knock you Out]	m	23	personal message
2004-11-04 9:00	S11	Dannyboy [NHLPA makes Bush look like Einstein]			comment about election

2004-11-13 12:07	S11	Dannyboy [Banned List: website to come]			personal message
2004-11-16 17:18	S11	Dannyboy [New Cell: 555-1212]			announcement
2004-11-04 9:00	S12	Bee - double espresso (c) (c) whee!!!	f	24	mood
2004-07-11 10:26	S12	Bee - tunes stuck in my head			mood
2004-09-11 8:13	S12	Bee - Microsoft Word, I hate you.			school
2004-09-11 11:00	S12	Bee - quite frustrated and irritable... beware			school/mood
2004-10-26 8:31	S13	lance - drinking the mud that is coffee	M	27	mood, joke
2004-10-26 8:31	S13	lance - not that bored			State of mind
2004-10-26 8:31	S13	lance - what the bleep is what the suck			Comment on movie
2004-10-27 12:30	S13	lance - google adsense earnings ~$60US, woo			Comment

A.5 Excerpt from IM Logging Program Code

For ease of replication, the main methods of the study's logging program are presented in an excerpt below.

```
/* MSN Study: HandleIt - Program designed to capture display name data
 * from MSN Messenger on a participant's computer.
 * Authors: Stephanie Smale and Mike Boyle
 * October 2004
 * Created for Display Name Project
 * University of Calgary
 */

static void Main()
{
      Application.Run(new FormMain());
}
private System.Windows.Forms.NotifyIcon notifyIcon1;
private System.Windows.Forms.Timer timer1;
private System.Windows.Forms.Label labelTop;
private System.Windows.Forms.Button buttonContinue;
private System.Windows.Forms.Button buttonQuit;
private System.Windows.Forms.Label labelBottom;
MessengerAPI.MessengerClass messenger;


/* Method to loads the form in the correct location and
 start the timer which is used to watch for logins to MSN Messenger */
private void FormMain_Load(object sender, System.EventArgs e)
{
      this.moveLocation();
      timer1.Enabled = true;
}

/* Checks to verify that the userhas not just started IM but is also
online */
public static bool IsOnline(MessengerAPI.MISTATUS status)
{
    switch(status)
    {
      default:
            return true;
      case
      MessengerAPI.MISTATUS.MISTATUS_OFFLINE:
            return false;
      case
      MessengerAPI.MISTATUS.MISTATUS_LOCAL_CONNECTING_TO_SERVER:
            return false;
      case
      MessengerAPI.MISTATUS.MISTATUS_LOCAL_DISCONNECTING_FROM_SERVER:
            return false;
```

```
            case
            MessengerAPI.MISTATUS.MISTATUS_LOCAL_FINDING_SERVER:
                  return false;
            case
            MessengerAPI.MISTATUS.MISTATUS_LOCAL_SYNCHRONIZING_WITH_SERVER:
                  return false;
          }
}

/* Event method to log the display name change when it is generated by
a contact */
private void messenger_OnContactFriendlyNameChange(int hr, object
  pMContact, string bstrPrevFriendlyName)
{
      System.Diagnostics.Debug.Assert(hr >= 0);
      MessengerAPI.IMessengerContact contact = pMContact as
        MessengerAPI.IMessengerContact;
      string logFileEntry = string.Format("\"{0:yyyy-MM-dd
        HH:mm:ss}\",\"*Name Change*\",\"{1}\",\"{2}\"",
            DateTime.Now,
            contact.SigninName,
            contact.FriendlyName.Replace("\"","&quot;"));
      System.IO.StreamWriter logFile = new
      System.IO.StreamWriter("C:\\Program Files\\GroupLab\\MSN
        Study\\Handles.csv", true);
      logFile.WriteLine(logFileEntry);
      logFile.Close();
}

/* Method to take a snapshot of the contact list each time a user logs
onto IM. This is used to capture any changes that may have occurred
while offline. */
private void messenger_OnSignin(int hr)
{
      MessengerAPI.IMessengerContacts contacts =
        this.messenger.MyContacts as MessengerAPI.IMessengerContacts;
      System.Text.StringBuilder b = new System.Text.StringBuilder();
      for (int i = 0; i< contacts.Count; i++)
      {
            MessengerAPI.IMessengerContact con = contacts.Item(i) as
              MessengerAPI.IMessengerContact;
            string logFileEntry = string.Format("\"{0:yyyy-MM-dd
              HH:mm:ss}\",\" \",\"{1}\",\"{2}\"",
                DateTime.Now,
                con.SigninName,
                con.FriendlyName.Replace("\"","&quot;"));
            b.Append(logFileEntry);
            b.Append("\r\n");
      }
      System.IO.StreamWriter logFile = new
        System.IO.StreamWriter("C:\\Program Files\\GroupLab\\MSN
        Study\\Handles.csv", true);
      logFile.WriteLine(b.ToString());
      logFile.Close();
}
```

```
/* Method to display the data collection form when the icon in the
system tray is clicked */
private void notifyIcon1_MouseDown(object sender,
  System.Windows.Forms.MouseEventArgs e)
{
      Opacity = 100;
}

/* Method to check whether the MSN Messenger client is running */
static bool IsMsnMessengerRunning()
{
      foreach(System.Diagnostics.Process p in
        System.Diagnostics.Process.GetProcesses())
      {
            if("MSNMSGR" == p.ProcessName.ToUpper())
            {
                  return true;
            }
      }
      return false;
}

/* Method to check whether the Windows Messenger client is running  */
static bool IsWindowsMessengerRunning()
{
      foreach(System.Diagnostics.Process p in
        System.Diagnostics.Process.GetProcesses())
      {
            if("MSMSGS" == p.ProcessName.ToUpper() || "MSMSGS" ==
              p.ProcessName.ToLower())
            {
                  return true;
            }
      }
                  return false;
}

/* Method to execute when the timer reaches its limit. The timer
continuously monitors whether the IM client is running and the user is
online */
private void timer1_Tick(object sender, System.EventArgs e)
{
      if(null == this.messenger)
      {
            this.messenger = new MessengerAPI.MessengerClass();
      }
      if (IsMsnMessengerRunning()|| IsWindowsMessengerRunning())
      {
            if(IsOnline(this.messenger.MyStatus))
            {
                  this.messenger.OnContactFriendlyNameChange += new
                    MessengerAPI.DMessengerEvents_
                    OnContactFriendlyNameChangeEventHandler
                    (messenger_OnContactFriendlyNameChange);
```

```
                    this.messenger.OnSignin+=new
                      MessengerAPI.DMessengerEvents_
                      OnSigninEventHandler(messenger_OnSignin);
                    this.messenger.OnSignout+=new
                      MessengerAPI.DMessengerEvents_
                      OnSignoutEventHandler(messenger_OnSignout);
                    this.messenger_OnSignin(0);
                    timer1.Enabled = false;
                    return;
               }
          }
          if(null != this.messenger)
          {
          System.Runtime.InteropServices.Marshal.ReleaseComObject
            (this.messenger);
               this.messenger = null;
          }
}

/* Method to move the data collection form to its correct location
above the system tray */
private void moveLocation()
{
          Rectangle workingRectangle = Screen.PrimaryScreen.WorkingArea;
          this.Location = new Point(workingRectangle.Width - this.Width +
            5, workingRectangle.Height - this.Height);
}
/* Method to exit the application once the user selects "quit" on the
data collection form */
private void buttonQuit_Click_1(object sender, System.EventArgs e)
{
          Application.Exit();
}

/* Method to hide the data collection form once the user selects
"continue" */
private void buttonContinue_Click_1(object sender, System.EventArgs e)
{
          System.Windows.Forms.Form.ActiveForm.Opacity = 0;
}

/* Method to release the messenger object and start the timer again,
once a user logs out */
private void messenger_OnSignout()
{
          if(null != this.messenger)
          {
          System.Runtime.InteropServices.Marshal.ReleaseComObject
           (this.messenger);
               this.messenger = null;
               this.timer1.Enabled = true;
          }
}
```

Appendix B. Permission from Co-author to use Shared Intellectual Property

UNIVERSITY OF CALGARY

November 18, 2007

University of Calgary
2500 University Drive NW
Calgary, Alberta
T2N 1N4

I, Saul Greenberg, give Stephanie Smale permission to use co-authored work from our papers:

Smale, S. & Greenberg, S. (2005). Broadcasting information via display names in instant messaging. In *Proceedings of the 2005 international ACM SIGGROUP Conference on Supporting Group Work*, Nov 6-9 Sanibel Island, Florida, pp. 89-98.

Smale, S. & Greenberg, S. (2006). Transient Life: Collecting and sharing personal information. In *Proceedings of the 20th Conference of the Computer-Human Interaction Special Interest Group (CHISIG) of Australia on Computer-Human Interaction (OZCHI 2006)*. November 20-24 Sydney, Australia.

for Chapters 3 and 4 of her Masters thesis and to have this work microfilmed.

Sincerely,

Saul Greenberg

Appendix C. Permission from Senders to use Sample Today Messages

UNIVERSITY OF CALGARY

November 18, 2007

University of Calgary
2500 University Drive NW
Calgary, Alberta
T2N 1N4

I, Carman Neustaedter, give Stephanie Smale permission to use the body of my today message email(s) as a sample for Chapter 5 of her Masters thesis and to have it microfilmed.

Sincerely,

Carman Neustaedter

UNIVERSITY OF CALGARY

November 18, 2007

University of Calgary
2500 University Drive NW
Calgary, Alberta
T2N 1N4

I, Gregor McEwan, give Stephanie Smale permission to use the body of my today message email(s) as a sample for Chapter 5 of her Masters thesis and to have it microfilmed.

Sincerely,

Gregor McEwan

UNIVERSITY OF CALGARY

November 18, 2007

University of Calgary
2500 University Drive NW
Calgary, Alberta
T2N 1N4

I, Christopher Collins, give Stephanie Smale permission to use the body of my today message email(s) as a sample for Chapter 5 of her Masters thesis and to have it microfilmed.

Sincerely,

Christopher Collins

UNIVERSITY OF CALGARY

November 18, 2007

University of Calgary
2500 University Drive NW
Calgary, Alberta
T2N 1N4

I, Saul Greenberg, give Stephanie Smale permission to use the body of my today message email(s) as a sample for Chapter 5 of her Masters thesis and to have it microfilmed.

Sincerely,

Saul Greenberg