I AM AN ID:
NON/PERSISTING OUR SOCIOTECHNICAL DIGITAL IDENTITIES

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ABSTRACT

Our online identities are collaborations between user behavior and technology. Increasingly, computers speak on our behalf, representing our identities in configurations that are shaped by the technological systems through which they are communicated. This sociotechnical relationship is particularly evident in the user profiles seen on social network sites. Given the rise of technologies that utilize identity, this thesis examines the role of persistence by considering the ways in which users and technology collaborate in the creation of digital identities, the ways in which technology structures and stores these identities, and the social behaviors these identities enable.

The concept of identity persistence is explored through two case studies: persistent identities on the popular social network site Facebook, and non-persistent or "single-use identities" seen on craigslist Missed Connections, an online equivalent to "I saw you" personal ads. Facebook allows users to capture and store personal and interpersonal information that can then be reused across social activities and system features. This universal profile however, results in a singular self-presentation that

must represent the user across the various social networks to which his Facebook profile is exposed. Users on craigslist engage in much of the same behavior, but without technology to structure and maintain their identities. Instead users produce "single-use identities" for each post by resourcing interpretive resources from outside of the craigslist system.

This thesis concludes with a consideration of digital identities and identity persistence as a part of our larger social and institutional infrastructures. Software such as Facebook is built around essentialized conceptions of identity that, once stored as a set of categories and classifications in a database, can become rigid and unusable. Approaching identities from the perspective of the work they perform, I argue for a reexamination of digital identity as a functional unit of larger infrastructures, and articulate some of the potential challenges when storing something as dynamic as identity.

Keywords: digital identity, persistence, single-use identity, Facebook, craigslist Missed Connections

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Chapter 1. Introduction

On February 4th, 2009, Facebook, the world's largest social network site, changed its terms of use. Where the agreement used to state that uploaded user content would be deleted when a user's account was closed, the new terms of use granted Facebook "an irrevocable, perpetual, non-exclusive, transferable, fully paid, worldwide license (with the right to sublicense) to… use, copy, publish, stream, store, retain, publicly perform or display, transmit, scan, reformat, modify, edit, frame, translate, excerpt, adapt, create derivative works and distribute (through multiple tiers), any User Content…" (Facebook, 2009b).

The changes went largely unnoticed until February 15th when a reader of the consumer advocacy blog *The Consumerist* reported the change, prompting an alarming post entitled "We Can Do Anything We Want with Your Content. Forever" (Walters, 2009). The post trafficked over 300,000 viewers, and quickly resulted in Facebook protests, national media coverage, and even a formal complaint to the Federal Trade Commission (Chowdhry, 2009). "So much for Facebook's principle that 'You should have control over your personal information'", lamented one user who joined a Facebook group to protest the change.

To their credit, Facebook actively engaged their user base, both asking questions and explaining in non-legal language the reasons for the new agreement.

"We certainly did not — and did not intend — to create any new right or interest for Facebook…" said spokesman Barry Schnitt, according to the New York Times (Boutin, 2009).

"Our philosophy is that people own their information and control who they share it with", echoed a blog post from CEO Mark Zuckerberg (2009a). Attempting to explain some of the technical difficulties in managing user data, he continued writing that "when a person shares something like a message with a friend, two copies of that information are created—one in the person's sent messages box and the other in their friend's inbox. Even if the person deactivates their account, their friend still has a copy of that message. We think this is the right way for Facebook to work, and it is consistent with how other services like email work" (2009a).

Despite these explanations, three days after *The Consumerist* broke the news, Facebook responded to user outrage by reverting to their previous terms of use and announcing intentions to take the progressive route of vetting future changes with their users. "Our terms aren't just a document that protect our rights," explained Zuckerberg (2009b), when announcing the change. "…it's the governing document for how the service is used by everyone across the world. Given its importance, we need to make sure the terms reflect the principles and values of the people using the service." This statement, however, seems to contradict an earlier post in which Zuckerberg attempted

to reassure users, writing, "In reality, we wouldn't share your information in a way you wouldn't want" (2009a).

The debate over Facebook's terms of use is just the latest public relations challenge for the online site that is an increasingly large repository for our personal information. However, while the majority of user complaints and news coverage focused on issues of privacy and ownership of user data, those are not the topics of this thesis. Instead, I wish to step back and consider how such a debate was made possible by examining the development of online sites that capture and persist our digital identities. The issue of privacy is just one of many potential implications when Facebook's database design persists our user data and makes a "perpetual" content license Facebook's best legal option.

Much of the current research on profiles and social network sites (SNS)[1] focuses on topics such as self-presentation (Gibbs, Ellison, & Heino, 2006; Lampe, Ellison, & Steinfield, 2006, 2007), impression management (Ellison, Heino, & Gibbs, 2006), honesty and deception (Hancock, Toma, & Ellison, 2007), and privacy (Gross & Acquisti, 2005). This research, however, does not specifically consider the role of the technology that speaks on our behalf and its role in persisting our identities.

[1] Social network sites are perhaps more commonly referred to as "social networking sites." boyd & Ellison (2008) specifically choose to use the term "network" instead of "networking," as not all social network sites encourage the creation of new social networks. In this thesis I am using the more inclusive term of "social network site" as well.

Databases store our profiles, photos, and lists of friends, all of which compose our digital identities. Web servers, meanwhile, share this information even when we are not present. Because constructing an online profile is to "type oneself into being" (Sundén, 2003, p. 3), we must interrogate the technology to fully understand the ways our identities are persisted even after we log off. While these digital identities represent us, they are the byproduct of collaborations between users and technology that transform “identity” into an information resource that is accessible apart from its creator.

Our Identities Online

Increasingly, computers represent our identities in configurations that are shaped by the systems through which they are communicated. We are connecting in ways never imagined before, sharing our lives through an every expanding collection of media. Yet as we continue to adopt new forms of communication, we rely on digital proxies for our bodies. Usernames, avatars, and profiles all provide users ways in which to identify each other and target communication online, and as such, each results in a form of digital identity.

The scholarly work on identity is vast, including major influences from philosophy, psychology, sociology, and critical theory. The technologist Dick Hardt, however, might have provided the most useful definition during his keynote address at

OSCON 2005[2]. He defined identity as "what I say about me, [and] what others say about me", humorously adding, "Of course what others say is more trusted…" (Hardt, 2005). His definition hints at the often paradoxical ways in which our identities belong to us, yet are often conferred by others. Technology further complicates this with databases that store identities, and systems that reproduce those identities when we are not present. This allows technology to simultaneously represent and authenticate us.

Identity is often considered in terms of consciousness and bodies as well. This is a split that Mark Poster (2006) describes well: "Identity in modernity has been caught between two opposing directions: one that attempts to contain it within consciousness, and another tendency that associates it… with the body" (p. 102). The issue of the body, and its importance in certifying identity, is a topic that many Internet researchers have discussed. After all, where is identity stored, if not in our bodies?

Online, profiles are arguably the most content rich and ubiquitous form of identity. Gibbs et al. (2006) explain that profiles allow users "the opportunity to represent themselves using a wide range of multimedia content, such as text-based descriptions, photographs, and video recordings" (p. 153). While profile systems differ, users typically answer a series of questions or system prompts on topics that may include sex, age, location, sexual orientation, physical attributes, occupation, or hobbies, to name a few. Similarly, when defining SNSs, boyd & Ellison (2008) assert

[2] The Open Source Convention, or OSCON, is an annual conference sponsored by O'Reilly.

the importance of context, stating that users "construct a public or semi-public profile within a bounded system" (p. 2). Once the profile is created, users may interact with each other, with the profile acting as a kind of digital body to which activities are associated. On Facebook, for example, users surf digital equivalents of geographical spaces and social networks, adding friends and posting comments on various profiles. The availability of the profile in an asynchronous communication environment eliminates much of the definitional overhead in initiating, maintaining, and reestablishing interpersonal connections.

Of course socializing online is not limited to SNSs. Countless anonymous and pseudo-anonymous interactions occur each day via posts on forums, chat rooms, blog comments, and sites like craigslist Missed Connections. Many of these systems do not provide users with ways in which to develop persistent digital identities. Without usernames, accounts, or profiles, authors must include identifying information in the content of their messages and posts.

Users of craigslist, for example, are not required to create an account and there is no formal profile system. Instead, users must construct a legible profile in the content of each post. A description such as "25 years old, white male" imitates many of the attributes included in well-known profile systems such as Facebook. What differentiates these "single-use identities" from the digital identities see on Facebook

are the ways in which the system structures and persists content. Much like the newspaper format after which craigslist was designed, today's craigslist posts will expire and be replaced by newer content.

Identity Persistence

Online and off, our identities allow us to organize social interactions. Strum and Latour (Strum & Latour, 1987) have argued for a performative version of society, claiming that social structures are created and stabilized by "…materials and symbols… [that] define the social bond" (p. 796). Identity is one such "symbol" that structures interpersonal expectations and brings continuity to an individual. Reading Goffman's views on self-presentation through this performative lens, we can appreciate how one's identities can become institutionalized with particular individuals, or in various contexts, as expectations of consistency develop. These identities, and the continuity they promise, help solidify interpersonal expectations and reduce the types of social negotiations Berger & Calabrese (1975) addressed in their Uncertainty Reduction Theory. Digital identities further solidify these identities by utilizing technologies (namely, databases) that can persist our self-presentation beyond a single interaction. Databases allow us to craft a persistent identity by structuring and preserving our information. Meanwhile, profiles assist our social interactions in a virtual environment, but also dictate the types of interactions that are possible.

Persistence, as I use it in this thesis, is derived from the computer science practice of storing information. Given that computer applications, and especially web-based applications, do not permanently store information in short-term memory, information is typically "persisted" to a database, later to be retrieved by any application that is able to access the data. Without a database or other option for long-term storage (what is often referred to as the "persistence-layer" of an application), a user must provide all the necessary information each time they use an application. For many applications this may not be a factor (a calculator, for example), however, a SNS would be crippled without the ability to persist our identities and interpersonal relationships between visits.

The Project

Given two types of systems on which digital identities are used (those with profile systems that persist identities, and those without), this thesis examines the following three questions: first, how do users and technology collaborate in the creation of digital identities? Second, how does technology structure and persist these identities? And finally, what types of social behaviors do these sociotechnical identities enable?

To answer these questions, and to explicitly consider persistence and non-persistence, this thesis will be divided into two halves. First, I will survey existing

work on identity, including social and technical approaches to digital identity, and propose an infrastructural and categorical approach to investigating identity online. In the second half, I will present two case studies with which we can examine identity persistence: Facebook and craigslist Missed Connections. With these two cases we can explore the social and technical aspects of self-presentation on sites that are explicitly designed to persist digital identities as well as those that are not.

In this analysis, I adopt a sociotechnical perspective. In the case of digital identities, this simply means that the social is always technical, and the technical is always social. Our social behavior online is shaped by the technologies we use, but our technology is socially influenced as well. After all, technology is built by people who embed their own values and understanding of the world into their creations. However, this technology is also used by people who have their own vision of the world, and users engage technology based on those understandings.

Instantiating Identity

Digital identity as a subject of analysis presents a number of problems. This is perhaps a result of the various ways in which identity as a concept has been employed. In the social sciences, digital identity frequently refers to the identity a user assumes and presents when participating in a defined environment (Donath, 1999; Ellison et al., 2006; Rheingold, 1993). Given that identity online is presented through

communication technologies, many scholars of computer-mediated communication (CMC) account for identity only as it relates to communicative acts. This results in a definition of digital identity that focuses on the performance of a user rather than the technology that enables that performance.

The technical and industry definition of digital identity is quite different. Industry is less concerned with the ways in which identity is performed, and instead focuses on security, particularly around the topics of access and authorization (Windley, 2005). Digital identity management began as a way of controlling access to network resources via user accounts and can be traced back to 1960s mainframes. But as information-based resources have proliferated, digital identity management has become a crucial component of controlling who has access to information, and under what conditions. As a professional practice, digital identity is organized around architecting information systems to meet technology and business objectives related to the dissemination of information.

This chapter reviews these two distinct approaches to digital identity, couched in social and infrastructural approaches to identity as a topic. During a consideration of the social approach, I survey the research on computer-mediated self-presentation, including theories that account for self-presentation in anonymous spaces such as MOOs, MUDs, and Usenet, as well as work more appropriate for the identified

forms of self-presentation on today's popular SNSs. This is followed by a consideration of digital identity from the technical perspective, including the origins of user accounts, their move to networked environments, and some of the technical fundamentals that shape our current profile systems and the ways in which information is persisted. Finally, this chapter concludes with a discussion of identity infrastructures and classification systems in order to account for the ways in which social software opens the doors to redefining what used to be a largely institutionalized space.

Examining Persistence

The second half of this thesis is comprised of two case studies that explicit consider both persistent identities (Facebook profiles) and non-persistent identities (craigslist Missed Connections). Since its inception in 2004, Facebook has quickly become the most popular SNS on the Internet. Users can create detailed online profiles that include social and geographical affiliations, allowing users to connect with existing and past friends across a number of social contexts. While users can decide what types of information are disclosed and to whom, the system does not allow the user to create multiple, disparate, or contradictory profiles. Additionally, a user's digital identity on Facebook is collaboratively constructed with his peers. This chapter considers the implications of the universal presentation of self that persistence on

Facebook allows, how persistent assists users in capturing existing social networks, find old associations, and how the reproduction of expired social networks is eased by a Facebook system that removes the overhead of social negotiation. This chapter will conclude with a consideration of relationships to these sociotechnical identities once they are stored online.

If Facebook produces a universal identity that represents the user across all contexts, a post to Missed Connections allow a user to limit the implications of their presentation online. The digital identities authored on craigslist Missed Connections function similarly to profiles on Facebook: Authors produce descriptions to represent participants in an interaction and authors, in conjunction with the craigslist software, provide a social context for these posts, identifying geographical spaces, specific locations, ages, gender and sexual orientations, as well as the nature of the relationship between the author and his target. Missed Connections, however, are anonymous and non-persistent. Missed Connections can be read as a kind of temporary SNS in which, unaided by technology, users produce identities and negotiate social roles for each post using material understandings from the physical world when the software does not provide sufficient social structure.

Implications for Persistence

Facebook and craigslist Missed Connections give us insight into the ways in which people negotiate self-presentation and interpersonal connections in mediated environments. By providing a cooperative sociotechnical structure for self-presentation, Facebook allows users to develop a stable identity that facilitates interactions across a variety of contexts with a reduced overhead for users. Digital identities are available as an information resource, and users can refer to them as they need. craigslist, on the other hand, does not allow persistence. This leaves users to construct single-use identities that must negotiate many of the interpersonal variables that profiles manage, but also lets users control the implications of their digital identities through selective self-presentation. Across both systems, digital identities are utilized by users and software to negotiate social relationships. In the final chapter of this project, I compare and contrast these two case studies, highlighting their relationship to a larger identity infrastructure that insists on an essentialized model of identity. I conclude this thesis considering the possible implications when persisting technologies, coupled with social move towards an expansive database archive, are tasked with persisting identity.

Chapter 2. Instantiating Identity

Digital identities are a collaboration between users and technology. Increasingly, computers speak on our behalf, instantiating identities stored in databases, and mechanically producing profiles through web servers. Given the rise of social technologies on the Internet that seek to store and represent our identities, it is important to frame this analysis with a consideration of digital identity from a variety of perspectives.

As a term, digital identity has been used in a number of ways. The social sciences, and particularly the field of computer-mediated communication (CMC), often consider digital identity in terms of self-presentation in a virtual environment (Rheingold, 1993; Donath, 1999; Ellison, et al., 2006). This approach results in a definition of digital identity that focuses on the performance of a user rather than the technology that enables that performance. The technical and industry definition, on the other hand, focuses on the security of networks, and access to their resources (Windley, 2005). As a professional practice, digital identity focuses on architecting information systems to meet technology and business objectives related to the control of networks and the dissemination of information.

Both of these perspectives approach identity as a conceptual entity that can be persisted. Through user accounts and profiles, digital identities can be identified by

their usernames and profile attributes. This perspective encourages considerations about the accuracy of information in these digital identities, the conditions under which digital identities are created, and the ways in which they are used. What may be is lost is a philosophically rich discourse about the nature of identity production, and they ways in which persisting technologies structure and essentialize identity.

In order to frame a larger conversation about persistence and digital identity, this chapter considers both social and technical perspectives through a larger theoretical lens. This review includes work from social psychology, communication, technology studies, and science & technology studies, and is divided into four areas: self-presentation & identity, computer-mediated-communication, social approaches to digital identity (particularly research on profiles, social network sites, and online dating), and technical approaches to digital identity (particularly technical aspects of user/digital identity management). Underpinning this discussion of identity and technology, however, is what I am calling the "identity infrastructure." This infrastructure, supported by classifications systems, identity categories, and interpretive resources, both enables and constrains identity, allowing individuals to rely on stable identity markers that make individuals legible. I conclude this chapter with a consideration of how this identity infrastructure is performed by users, technologies, and the identities that they perform together.

Self-Presentation & Identity

Because digital identities seek to share some aspect of the individuals they represent, it is important to consider some of the key academic contributions that have shaped our understanding of the often ambiguous term “identity.” Lay definitions generally consider identity as the means by which an individual distinguishes himself as unique from others. Asking someone to describe his identity, however, typically results in a list of personal attributes -- specific characteristics used to both compose and distinguish one’s identity.

An academic consideration of the field of identity is beyond the scope of this thesis. Instead, I will cover a number of important themes from this area using two guiding questions: first, where does identity reside? And second, what are our identities composed of? To answer these questions, I will take a historical perspective on identity by first accounting for theories of personal identity that approach identity formation as result of individual psychological development. This will be contrasted with a more sociological approach to identity which defines an individual based on his collection of group memberships. Next we will turn to Goffman’s (1959) ideas on self-presentation to consider how identity is performed. Finally, I will investigate the origins and operation of the attributes and labels that compose our identities. Together, this literature accounts for the often paradoxical ways in which our identities are simultaneously conferred by others and individually maintained.

Personal Identity & Social Identity

Many views of identity are based on a distinction between "the self" and that which is outside of the self. In the 1900s, identity scholars were considering the development of this autonomous self, particularly in relationship to his surroundings. Mead (1925), for example, proposed three stages during which self-identity develops in response to social experiences and environmental factors. He theorized that children develop an autonomous sense of self (what he calls the "I") as well as an understanding of the self that is governed by social rules and external expectations (Mead's "me"). He argued that identity was role-oriented, and emerged out of interpersonal interactions he called "identity negotiation."

Psychologists following psychoanalytic and human development traditions believed in an environmental influence, but maintained that identity was a component of the psyche. In Erikson's model of psychosocial development, for example, the development of personal identity and social identity are aspects of a lifelong process of identity formation (Côté & Levine, 2002). For Erikson, a healthy identity (he used the term "*ego* identity") required a stable and contiguous self. Erikson's work embodies many of the assumptions to which our identities are held today. Namely, that an individual is responsible for his identity, that a stable identity is ideal, and that while

we play various social roles, these roles are aspects of a single, and ideally integrated, self.

In contrast to theories of personal identity, sociologists have produced theories that approach identity based on group membership. Henri Tajfel and John Turner's social identity theory (1979) is perhaps the best known, identifying four elements involved in our group identification: categorization, identification, comparison, and distinctiveness. This theory does not reject a personal approach to identity, but it does consider the personal attributes which are shared across members of a social group. Tajfel & Turner argued that we categorize each other into these social groups, holding a positive bias for those groups to which we belong. Any behavior can then be plotted on a scale between interpersonal and intergroup. When individual characteristics are the most salient, we will interact with others on an interpersonal level. When our group identity is more prevalent, however, group values and rules govern our actions.

Self-Presentation

The role of groups and the public clearly influenced Goffman's when writing *The Presentation of Self in Everyday Life* (1959). Goffman argued that identity was performed relative to social and situational rules, a notion of particular interest when considering online environments. Introducing the now prolific ideas of "front-stage" (public) and "back-stage" (private) selves, Goffman examined the different ways in

which individuals perform when interacting with a group versus when they are alone. Goffman detailed a number of strategies by which people actively shape their front-stage selves, conforming to social expectations as they selectively self-present for social advantage. Self-presentation, however, is not fully in the control of the individual. Goffman distinguished between two types of information communicated during self-presentation: expressions intentionally "given" by the individual, and expressions unknowingly "given off." Because individuals perform in a variety of social contexts, Goffman believed that an individual may develop a number of front-stage selves. The performance of an identity, however, can "also become institutionalized in terms of the abstract stereotyped expectations to which it gives rise, and tends to take on a meaning and stability apart from the specific tasks which happen at the time…" (p. 27). For Goffman, the front-stage self can become "a fact in its own right" as others come to expect behavior in line with that identity (p. 27).

Online, where the boundaries of public and private are easily traversed, we can select our environments and mediate contextual factors. Because our self-presentation is influenced and limited by static digital environments, our front-stage digital selves are always incomplete and selective representations of the individual sitting behind the computer. The digital identity I assume during a bank transaction, for example, is far different from one I may assume in a social chat room. Given the specificity of

purpose assigned to our digital identities, these two contexts produce more than just different versions of my identity. They may produce identities that are completely distinct.

A profile, however, once captured and persisted, may go a long way to standardize a user's self-presentation. Profiles store a particular self-presentation, and reproduce it in a consistent, codified format within a defined social context. Where in Goffman's analysis, social settings and peer groups demanded a particular set of behavior, technological systems can facilitate these exchanges by standardizing identity and offering an infrastructure for both the authoring and reading of identity.

Identity Categories

Up to this point we have consider the origins and locations of our identities, but have yet to explicitly consider the elements with which they are composed. This may appear a rather trivial task. After all, we compose our identities online each day. When signing up for a user account, or updating an online profile, we must type our names, indicate our sex, location, and perhaps answer a security question like "What was the name of your first pet?" Prompts such as these span the spectrum of identity attributes, from the personal to the group. While my geographical location associates me with a large social group, for the sake of my online security I hope that very few pets shared my childhood cat's name.

Some theorists believed that our identities are the byproduct of such attributes. In *On the Genealogy of Morals*, Nietzsche (1966) claimed that subjectivity emerges out of a complex interplay between language and power, a concept that Foucault seized to further his theory of disciplinary regulation (1977). Foucault claimed that practices of disciplinary regulation arose in the years following the middle-ages as the unified Church-regulation of a now mobile and educated population broke down. As result, new disciplines derived from prisons, hospitals, and schools emerged to create manageable categories for the population. Categories such as these, always codified in language, provided a set of terms relative to which we can understand ourselves, and by which we are regulated.

Ian Hacking, in his text *Mad Travelers* (1998), provides one example of how classification systems produce identities. Hacking traces the history of a mental illness named "dissociative fugue," an archaic disorder which the DSM[3] describes as the "sudden, unexpected travel away from home or one's customary place of work, with inability to recall one's past" (American Psychiatric Association, 2000, p. 526). Using dissociative fugue, he explores the ways in which classifications can emerge from sets of behavior in relatively small geographical areas, gain wide-spread support, and eventually fall out of use. However, once established, as Hacking points out, even

[3] DSM stands for the Diagnostic and Statistical Manual of Mental Disorders. Published by the American Psychiatric Association, this manual provides the diagnostic criteria for the mental disorders used in the United States. The DSM is currently in its fourth (IV) revision.

nonsensical classifications can be hard to eliminate: dissociative fugue remains in the DSM today.

We see another example of medical identities in a "table of casualties" included in Bowker and Stars' *Sorting things Out* (1999, pp. 22-23). The table dramatically illustrates the various causes of death in 17th century England. The list ranges from the predictable "Aged" to the confusing "Suddenly," but also includes categories as incomprehensible as "King's Evil." As a list, these causes of mortality illustrate not only the expansion of medical knowledge during this time, but also the ways in which the very definition of "casualty" can change while antiquated categories still persist.

If the classification of dissociate fugue can persist simply due to its continued presence in diagnostic manuals, then we should also account for identity classifications and categories at the personal and interpersonal levels. Work by narrative psychologist Dan McAdams (1996) does this well. Bridging the linguistic and categorical, he highlights the ways in which identity categories are not only socially constructed, but also socially granted. His model of coconstructed identity suggests that while an individual may be able to relate to a particular identity category, the social and personal impact of an identity attribute only occurs after the attribute is integrated into his coconstructed identity narrative that emerges through interpersonal interactions.

Having reviewed the literature on identity and identity categories, today's online profiles beg for a consideration of identity classifications and categories in a digital environment. Online profiles, after all, exist to provide structure to identity. Name, age, and the name of a childhood pet are only the beginning of the categorical work in which digital identities engage. SNSs are rampant with personality quizzes promising your Meyers-Brigs type as well as the Marvel superhero with whom you are most similar. Engaging in identity through these SNS-based classification systems also ensures an identity that is amenable to persistence in a database. In the next chapter, during an examination of Facebook's approach to digital identity, we will see how identities are produced, codified and stored.

Computer-mediated Communication

Regardless the origins or make-up of our identities, we increasingly share these identities online. Here, both the identity attributes we can share and the technical means by which they are transmitted play crucial roles in the types of identities that can be effectively communicated online. The choice of communication technology can have dramatic impacts on the types of information we intentionally "give" and unintentionally "give off."

In the 1980s, as computer-based forms of communication proliferated, social science scholars began to consider the impact of interpersonal communication over

technology that prohibited nonverbal and paraverbal communication cues. Early work by Sproull & Kiesler (1986) suggested that CMC was less personal than face-to-face (FtF) communication. Their study of CMC over corporate email found greater levels of self-absorption, and a reduced importance of social hierarchy between the sender and receiver (i.e., workers were less likely to use a formal tone when addressing a boss). However, their research also showed that CMC resulted in lower levels of personal inhibition and increased levels of information-sharing that otherwise would not have occurred.

Meanwhile, a number of non-academic pieces (Dibbell, 1993; Van Gelder, 1985) documented cases of CMC that were anything but impersonal, and Rheingold's work in virtual communities (1993) showed that even via restrictive text-based communication, participants can produce relationships that are equally deep as those developed FtF. One explanation that has enjoyed a good deal of success for such findings can be seen in Walther's Hyperpersonal Model (1996). Walther argues that even though CMC may reduce interpersonal cues, overtime communication partners will develop media-specific equivalents to paraverbal and nonverbal cues that will offset any negative impacts of having lost FtF-cues. This hyperpersonal communication, Walther claims, may be more socially desirable than FtF communication under certain circumstances as the slow rate of communication in a

medium such as chat affords users the ability to edit and revise their speech acts, selectively representing an optimized version of themselves.

These findings are partially in line with the Uncertainty Reduction Theory (Berger & Calabrese, 1975), a theory that originally spoke to FtF communication, but has been successfully applied to CMC as well (Ellison et al., 2006; Gibbs et al., 2006; Nowak & Rauh, 2005; Parks & Floyd, 1996). URT suggests that communication in new relationships is motivated by the unpleasant nature of interpersonal uncertainty. During the entry phase of a relationship, URT predicts that conversation will be dominated by information-seeking behavior structured by the shared norms and rules of appropriate interpersonal behavior. This type of probing communication can be seen throughout CMC, but the quick intimacy experienced by CMC users may suggest that digital environments have an alternative set of interpersonal rules by which normative behavior is judged.

Regardless of the particular rule set by which CMC is judged, both the Hyperpersonal Modal and URT are best suited for considering multiple CMC interactions across time. The Social Identity Model of Deindividuation (SIDE) theory, on the other hand, has been successful at accounting for the absence of verbal and nonverbal cues, particularly between new or anonymous communication partners (Postmes, Spears, & Lea, 1998, 2002b). SIDE argues that because nonverbal cues are

not possible during CMC, users base judgments on the discernible social categories of online communicators, often exaggerating the cues that are available. This is particularly salient when considering digital identities. Profiles are a form of interpersonal communication (boyd & Heer, 2006), but they are not a part of an ongoing synchronous conversation. For interactions that occur between users who have not had the time required for Walther's hyperpersonal model to take effect, SIDE theory explains how a reader's impression of a user might be based on the social categories included in, and implied by, the digital identity.

Social Approaches to Digital Identity

If CMC represents a loss of paraverbal and nonverbal cues, then the rapid increase of digital identities on the Internet has provided new sets of cues by which users can be judged. In this section I will consider user behavior relative to online identities by examining the literature on self-presentation in various forms of social software. While it is impossible to divorce CMC from its underlying technology, in this section I will focus predominantly on user behavior and the contexts in which this behavior occurs.

One of the key features of CMC is the obfuscation of its participants. Unlike the physical world in which "the self may be complex and mutable over time and circumstance [but] the body provides a stabilizing anchor" (Donath, 1999), computer-

mediated communication places identity wholly in the content of communication acts collaboratively produced by the user and the technology. Given the absence of the body as an anchor for identity, one can have "as many electronic personas as one has time and energy to create" (p. 1).

In order to overcome this absence of the body, digital identities must find new ways to represent the body if they are to be read as authentic. As a society, however, we have a long history of identifying the body with other markers. Mark Poster, in his book *Information Please* (2006), outlines a history of government identification to explain how an individual's identity could ever exist separate from an individual's body. Poster argues that beginning with government-issued identification such as the passport, and today via documents as varied as immunization records and the census, identity attributes are allowed to speak on our behalf. At issue are the means by which these technologies of identification mark behavior. A driver's license, for example, includes a picture of its owner as an authorizing technology. Websites, however, rarely require more than a username and password.

This does not mean that users are not more discerning. Donath (1999) explains that users pay attention to signifying cues such as email addresses and message signatures to authenticate both the identity and intent of their fellow users. Likewise, Ellison et al. (2006) show how users attend to subtle cues when evaluating profiles in

the context of online dating services, such as links to favorite websites and the timing of email. That said, on SNSs such as Facebook and online dating sites such as Match.com, it appears that users represent authentic, if not idealized versions of themselves. For example, one study found that 89% of Facebook users use their real names (Gross & Acquisti, 2005), while a good deal of the remaining users provide nicknames or clever alternatives.

So what do software designers build into their profile systems? A substantial amount of research has documented the types of information requested by SNSs and what information users actually choose to provide. Stutzman (2006) published one index of digital identity attributes across sites, along with frequency with which those fields were used. His findings show that an individual's name is the most common identifying information disclosed on Facebook,[4] followed by academic information, gender, email, and network of friends. Stutzman continued by asking users about their desired use of this information. He found that students felt most comfortable with their friends accessing their information (4.55 on a 1-5 scale where 5 indicates the highest level of comfort), followed by family members (3.78), and fellow students (3.76). Although students indicated a lower level of comfort at the prospect of a stranger accessing their profile information (3.15), Stutzman's findings showed that students

[4] At the time of Stutzman's study, Facebook was still named "TheFacebook."

have a level of apathy regarding the availability of the information they place in a profile.

This may be due to the idea that social network sites create a kind of public space in which individuals can "gather" and share the details of their lives. boyd (2007) refers to this as a "networked public" and speculates that self-presentation online may be a youth response to a society increasingly restricted by concerns over safety. This idea has a good deal of face validity. The role of environment was crucial to identity scholars, and Erikson even contended that social contacts against which identity can be negotiated are critical to the development of a healthy psyche. "Safe" online, users can perform their identities in front of a set of digital peers.

Social space then emerges between profiles. boyd & Heer (2006) considered profile information as a type of performative conversation, contextualized by connections to other profiles. Focusing on the performance of social identity, they contend that "communication is not only a linguistic process" (p. 1) and that "communication emerges when actors can interpret and create social contexts while sharing their ideas" (p. 10).

If these profiles are performing identity, then users appear to be active audiences. In their examination of Facebook, Lampe et al. (2006) note that people spent the majority of their time on the system surfing user profiles, engaged in a kind

of digital crowd-watching. To the extent that SNSs represent some kind of public, a legible identity is required for participation in this space. Lampe et al. (2007) found that the number of completed profile attributes was positively correlated with the number of "friends" associated with that profile on Facebook. Open-ended attributes, however, had little impact.

The research presented thus far only accounts for persistent forms of digital identity. These digital identities may recreate a persistent virtual body to which successive user behavior can be tethered, but other social sites do not persist user identities. In previous work (Brubaker, in press) I have accounted for non-persistent forms of self-presentation on craigslist Missed Connections, an idea that I build on in Chapter 4 with what I call the "single-use identity." Ostensibly due to the relative anonymity guaranteed by the craigslist system, authors create targeted digital identities, crafted for the single purpose of identifying themselves in a specific context to a specific audience. The use of a single-use identity is one strategy by which individuals can engage in social behavior online without having to account for what might otherwise seem like an inconsistent presentation of self. Retaining a base level of anonymity through the craigslist system, users divorce their single-use identity from their physical body and any persistent understanding of their identity.

Technical Approaches to Digital Identity

In the end, the shape and form of our digital identities are influenced by the various technologies that capture and represent these profiles. Like many of the technologies we enjoy today, digital identities are so integrated into technical architectures that their structure frequently appears invisible. Few people outside of the field of information technology ever stop to consider the ways in which a system like Facebook technically stores their identities. The design of these systems, however, has very clear impacts on the day-to-day experiences of users. In this section, I will provide a brief history of user accounts, explaining, where appropriate, the technical practices and conventions that underpin the digital identity system on which social software relies.

I should clarify that digital identity is not a well recognized specialty. There are a number of policy and technical working groups,[5] conferences,[6] and emerging standards[7] focused on the topic, but the majority of digital identity design and management work is assumed by any number of technical professionals at various points during the development or implementation of a technical service or product. Software developers, for example, play a design role when considering the kinds of

[5] See the Future of Identity in the Information Society (FIDIS), as well as the Identity Gang and their website *Identity Commons*.
[6] Internet Identity Workshop and Digital Identity World are two of the larger conferences.
[7] Security Assertion Markup Language (SAML), OpenID, OAuth, and Extensible Resource Identifier (XRI) are a few.

user information their applications might require. Network administrators are also frequently involved with digital identity management, but their work is usually limited to the management of user accounts and network access.

These approaches to digital identity are the most common. They are simple, well-defined practices, and are typically bound within a specific system such as a website or a corporate network that are, relatively speaking, quite small. Digital identity experts, however, are interested in much larger systems. This sometimes includes the management of digital identity systems that have an extremely large number of identities (Windley, 2005), but experts today are also interested in designing digital identity systems that permit the sharing of information across distinct, and often completely autonomous systems (Hardt, 2005). The OpenID project, for example, ambitiously hopes to allow individuals to use one username and password for every site they visit on the Internet. While this is a topic of interest for most Internet-based organizations, the scale at which a solution such as this would need to be implemented, combined with value of holding a user's identity information, has prevented widespread adoption of a solution.

Where do I sign up for an account?

User accounts arrived with the advent of corporate mainframes in the 1960s, and proliferated via time-sharing[8] and multi-user operating systems like Unix in the 1970s. These system-centric user accounts had little identifying information beyond a username and password.[9] However, as networks grew more complex, network applications began utilizing user accounts as an anchor for other identifying information; corporate directories are a good example.[10] Many corporate networks still utilize this basic architecture, linking files, system permissions, and email to a user account that typically represents a single employee. This makes sense inside of a bounded system. When an employee quits, removing the user account retires his files and information (his digital identity, essentially) and prevents unauthorized access to network resources. This ensures both the security and performance of the network.

With the advent of the Internet we interact with any number of systems in a given day, and a system-centric approach to digital identity seems less appropriate.

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[8] Time-sharing was a critical break-through in the development of computer operating systems that was first theorized by Bob Bemer in an 1957 article feature in *Automatic Control Magazines.* A predecessor to the more-common term "multi-tasking," time-sharing systems had the ability to lend hardware resources to another process. This effectively paved the way for multi-user systems, allowing for the operating system to distribute resources between the system and its users.

[9] In Unix-based systems, accounts are also identified by a user identifier, a theme we will see repeated in Facebook in Chapter 3.

[10] Another interesting example is the "plan file." On text-based terminals, users could "finger" each other in order to gain identifying information. The plan file allowed users to display auxiliary information. Originally intended to provide information about one's current location and near-future plans, users often placed creative messages in their plan files, resembling a type of predecessor to our instant message and Facebook statuses today.

Still, this system-centric model persists, requiring users to create a new username and password for each website, providing redundant personal information for each new service. Given that this information is unverified, a username and password is little more than authentication, and only "proves that you are a directory entry" (Hardt, 2005). While ensuring security and performance is important for network administrators, server-centric digital identities may no longer serve their intended purpose, and certainly do not serve the interests of the user. However, server-centric digital identities are more than just annoying. The inability to transfer my personal information from one state to another as I move, for example, presents both usability and data integrity issues as I recreate my government records.

During his keynote speech at OSCON 2005, Dick Hardt highlighted the problem of these server-centric digital identities (what he calls "Identity 1.0") using the eBay reputation score.[11] While a user may build his eBay reputation over time, the idea of moving that reputation over to craigslist is simply not possible. "Is it your reputation, or their reputation?" he asks. "Today, verified digital identity is not anything you can give to the site, but it's what a website knows about you."

[11] eBay, the popular auction site, allows users to earn a "reputation score" based on positive feedback from other users in the site, ostensibly when acting as a good merchant or customer.

Identity 2.0… perhaps.

As the number of online services has risen, alternative user-centric models of digital identity have emerged. The rise of user-generated content and web2.0 technologies has made the need for a portable and seamless identity system all the more apparent. A so-called “Identity 2.0” model (Hardt, 2005) has yet to gain a critical mass, but Hardt believes that the move to a non-proprietary, user-centric model is inevitable: “simple and open wins.”

Broadly speaking, the objective of Identity 2.0 is to allow easy access, management, and transmission of digital identity information across systems, as well as control over how and when that information is used. This is not trivial. Because system-centric models of identity are still required to link users to appropriate content, developing an Identity 2.0 infrastructure involves the sharing and synchronizing of personal data across multiple systems, many of which have little reason to move beyond their existing digital identity architecture.

John Clippinger (2007) complicates the issue by reminding us that privacy concerns require digital identity systems that also abstract our identities. He provides the real world example of providing identification when ordering a drink at a bar. By handing your driver’s license to the bartender, Clippinger claims you are actually releasing far more information than is required. The bartender only needs your photo

and date of birth, but a driver's license includes your name, address, and occasionally your social security number. Clippinger, moreover, asserts that even your date of birth provides more information than is necessary. All a bartender requires is some indicator of your legal ability to drink alcohol. Digital identity sharing, in many of the emerging systems, is an online equivalent to this driver's license, sharing entire identities when only a single attribute is required. Allowing the identity consumer (the website requesting the identity) to ask questions about an individual is one solution (e.g., "Is this user over 21 years of age?"), but this is clearly a complex leap forward from a username, password, and a static set of identity attributes.

Clippinnger's argument, however, only works if we can agree on a standardized set of attributes. Liquor laws mandate age requirements, making that a fairly straight forward classification system, but how do we create attributes for the rich complexities of our social lives? Even if a set of classifications could be agreed upon, the Identity 2.0 approach still produces an essentialized model of identity by trying to reproduce the body online so that a "single you" can easily traverse multiple online spaces.

Since 2005, the push towards Identity 2.0 has somewhat waned. A number of open source projects and standards compete for adoption, none of which has garnered widespread support.[12] Likewise, solutions presented by commercial vendors (for

[12] One exception can be found in the OpenID project, sponsored by the OpenID Foundation. OpenID has gained some adoption in open source communities by creating software clients for popular social media

example, Microsoft's Passport system) have largely been rejected due to limited functionality and proprietary designs. Ironically, interest in Identity 2.0 technologies may have been replaced with a focus on user-behavior inside siloed SNSs.

While portable digital identities may benefit users across sites, there remains little incentive for a site such as Facebook to implement Identity 2.0-like technologies, and plenty to lose. After all, SNSs obtain their value through the identities they host. Providing that information freely and openly to other services and risking the loss of users is not in their best interest. Instead, Facebook appears to positioning itself as the central location for all socially-oriented identity information on the Internet. In 2008, Facebook announced a new service named "Facebook Connect" aimed at allowing "users to 'connect' their Facebook identity, friends and privacy to any site" (Morin, 2008). While having the appearance of openness, this actually results in an identity siloing that supports business while simultaneously undermining Hardt's "simple and open" prediction. Until a user-centric digital identity system gains widespread adoption, the site-specific values of software and network architects will fundamentally structure the means by which digital identities are captured, utilized, and shared.

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software such as Wordpress and Drupal. Recently, Yahoo! adopted a modified version of OpenID, marking it as a clear leader over other projects. OpenID is a federated authorization-based digital identity model whose primary focus is on authentication. Their "attribute exchange" specification was published on December 5th, 2007, and has yet to have gained the level of adoption the authentication system has enjoyed.

Identity Infrastructure

Currently, neither the technical or social definition of digital identity is sufficient. Profiles are little more than user accounts augmented with a list of personal attributes. Yet with the rise of SNSs and so called web2.0, identity-powered applications have turned digital identities into commodities. Digital identities are the latest hot thing in marketing, promising to connect retailers with ideal consumers. The market value of these identities is evidenced by Facebook's 2006 rejection of a $750M acquisition (Rosenbush, 2006). But the value of these identities is personal as well. After all, we do not log into Facebook and update our profiles with the aim of staying in touch with Coca-Cola.

Profiles have the particular qualities of representing an individual while simultaneously being preserved by a technical architecture. To account for the interplay between the authorship of our identities and the profile platforms that structure this behavior, we need to consider the ways in which identity categories are adopted, as well as the practices of capturing and persisting these identities in a database. As social software collapses user behavior and user accounts into a single notion of "digital identity," the sociotechnical configurations of our digital identities carry increasingly large implications. What underpins these digital identities, in addition to the databases designed to store them, is the adoption of identity categories,

the negotiation of their use, and digital identity's place in a general move towards what Bowker calls "databasing the world" (2005).

In this final section, I turn my attention to digital identity's relationship to our existing identity infrastructure. Here, Star & Ruhleder's (1996) approach to infrastructures is instructive. While they admit that infrastructures are often paradoxical to define ("both engine and barrier for change; both customizable and rigid"; p. 3), infrastructures are embedded understandings, learned as part of group membership, and linked to conventions of practice. Power grids, the educational system, and the Internet are commonly understood infrastructures. Infrastructures help us accomplish our objectives by doing work for us.

Still, Bowker & Star (1999) claim that well performing infrastructures are "hard to find" as they become hidden once they are normalized and embedded in their users. Although these are social structures, temporally, spatially, and contextually contingent, infrastructures only become visible when they rupture or cease to perform as expected. Using Bowker & Star's definition, infrastructures can rely on a variety of classification systems from the rigorously defined (e.g., the United States Census, surveying over 281M citizens in 2000) to the seemingly arbitrary and ad hoc (e.g., Facebook's "What Pokémon Are You?" application, currently used by almost 1M Facebook users).

I have already detailed the ways in which our identities are defined by various labels and categories. However, it seems that this task is ideally suited for SNSs where categories are encoded into software, becoming classification systems. The opportunities for self-definition within SNSs are countless, and we can see the presence of encoded classification systems when Facebook recommends various sports while completing the "Activities" section, or when articulating more specific identity categories through thousands of third-party applications such as "I Like Chocolate!" In this way, SNSs change the scope of identity as new classifications "tie the person into the infrastructure" (Bowker & Star, 1999, p. 319).

Infrastructures, however, are not supported by classification systems alone. Infrastructures rely on users' understandings of people, spaces, and culture (to name a few) as interpretive resources. Here I am using interpretive resource to refer to the knowledge used by an individual to situate classifications and categories into an understanding that makes them comprehensible and functional. The classification of sex, for example, may strictly refer to an individual's physiology, but sex is also loaded with other understandings that vary regionally and culturally. As Hacking (1995) claimed, all categories come "under a description" (p. 235), a point echoed by Bowker (2005) when he states that "data comes in a dizzying set of categorical bins. You always have to know some context" (p. 116).

Social software deploys classification systems that source the necessary interpretive resources, while enabling digital identity's place in the broader identity infrastructure. As Star & Ruhleder (1996) claim, "an infrastructure occurs when local practices are afforded by a larger-scale technology, which can then be used in a natural, ready-to-hand fashion" (p. 6). Our diminishing distinction between the "real world" and the "digital world" evidences the place of digital identity in this infrastructure. After all, "an infrastructure occurs when the tension between local and global is resolved" (p. 6), a point demonstrated each day as individuals turn to forms of social media in order to define, negotiate, and maintain their interpersonal relationships.

Despite the important impact that SNSs are having on our identity infrastructure, the impact may not be intentional. Earlier I mentioned the ways in which the technical designs of digital identity are typically embedded into other forms of technical labor. This is particularly true on the Internet where web application developers have to account for many, often anonymous, users accessing their software from any where in the world. Web developers, after building a system that accomplishes all of their business requirements, secure their applications with usernames and passwords. Mimicking the pattern historically seen on networks, these developers divide their users into defined user-types (e.g., "Administrators,"

"Customers," etc.) based on the needs of the application, but rarely on the uniqueness of the individual user.

Issues of security, more than digital identity, are a fundamental part of learning to become a web developer. As an experiment, I recently walked into a local bookstore and pulled five web programming books from the shelf, careful to grab a spread of different development platforms and programming languages.[13] Without fail, each book addressed the issue of digital identity indirectly by addressing authentication instead, typically with warnings about "the attacks of malicious users" (Syme & Aitken, 2001, p. 425). This makes sense when developing an e-commerce site for "Bob's Auto Shop" (as was the tutorial in one book) that allows users to place orders, and employees to manage inventory. However, this security-oriented approach to digital identity may leave web developers with poor metaphors for developing SNSs, let alone the myriad third-party applications. Identity, in these cases, is decidedly functional.

"Bob's Auto Shop" is just a contemporary example of identity's historical relationship with functionality and its close ties to authentication. By now, the logistical role of passports, driver's licenses, and government identification should be

[13] The list of books included *Sams Teach Yourself C# Web Programming in 21 Days* by Syme, P., & Aitken, P. (2001); *PHP and MySQL Web development* by Welling, L., & Thomson, L. (2003); *Java for the Web with Servlets, JSP, and EJB* by Kurniawan, B. (2002); *Beginning Ruby on Rails* by Holzner, S. (2006); and *Python web programming* Holden, S., & Beazley, D. M. (2002).

clear. However, consider a more essential form of identity: your surname. Commonly understood as an emotionally important aspect of identity, surnames were originally state-imposed; yet today their regulatory function goes largely unnoticed. More than a genealogical system, Scott (1999) argues that the invention of a permanent and inherited surname was the "last step in establishing the necessary preconditions of modern statecraft" (p. 65). Predating identity cards, photographs, and fingerprints, the imposition of surnames "was a state project, designed to allow officials to identify, unambiguously, the majority of its citizens. When successful, it went far to create a legible people" (p. 65).

This is not to suggest that ad hoc approaches to legibility did not exist. Prior to the adoption of surnames, individuals in some regions would, as was the case in fifteenth century Tuscany, provide their first name, followed by the name of their father, grandfather, great-grandfather, and so on. Similarly, occupations, geographical locations (origins, as was often the case with royalty, or current residences), and self-assigned names (often used by property-owning lineages as a kind of family brand) have each been used in various parts of the world to accurately identify an individual (Scott, 1999).

The case of surnames, however, reveals an interesting tipping point. While populations often resisted surnames, "fearing, with good reason, that an effort to

enumerate and register them could be a prelude to some new tax burden or conscription" (Scott, 1999, p. 65), the state's growing role in the lives of its citizens made the need for legible identities increasingly important, particularly in financial matters. Once property claims were subject to state validation, and individual tax payments were state verified, the adoption of the given surname ensured that a citizen could maintain his land rights and avoid paying taxes twice.

Accounts such as Scott's expose the ways in which forms of identification are forced onto a population, and are eventually adopted as a means of gaining access to services. And here we discover an interesting parallel to our current practices of identification on the web. Without a body to identify us, we must perform a legible identity in order to gain access to the services we desire. This may simply be a username and password when logging into "Bob's Auto Shop," but in the case of SNSs, this is more often a complex performance involving our complicity with a variety of techniques designed to capture and persist identity.

Still, legibility requires more than an infrastructure that supports identity labels. It requires stability. This presents an interesting paradox when considering Lessig's thoughts about the immutability of software and his famous declaration that "code is law" (2006). The ease with which any software developer can contribute to our identity infrastructure takes on new meaning when considering the permanence of that

contribution should it be adopted. Identity persistence is the issue at hand, and the drive to make all information always available may, at least in the case of online identities, also fix them in place. Bowker claims that databases drove the computer revolution, rather than being a byproduct of it, giving us a new lens through which to consider social technologies:

> …the significance of the underlying information technology is not particularly a deterministic or reductionistic one: the development of that technology is based itself on a noncentralized but philosophically highly rich discourse about the nature of record keeping… (Bowker, 2005, p. 136)

The profile systems of SNSs can be viewed as more than the inevitable byproduct of technological progression. We can understand them as part of a broader move to classify, categorize, and perhaps most important, make legible.

While CMC scholars may view the Internet as a space for "identity play," stable digital identities play an increasingly central role in our social organizing, both online and off. Profiles statically perform identities that previously were re-performed and negotiated with each interpersonal encounter. Goffman claimed that performed identities can become solidified with certain individuals and context; profiles, however, allow users to negotiate a single-self with the social software, letting a profile

serve as both digital identity and context, preserved as an information resource for use in future interactions.

Conclusion

The research and practices outlined in this chapter reveal distinct social and technical approaches to digital identity. CMC scholars and researchers of user behavior online follow in the tradition of identity scholars from the social sciences, researching self-presentation and performance on sites such as Facebook. Technical approaches to digital identity, meanwhile, are better attenuated to managing and authenticating identities via technologies that evolved from usernames and passwords. Digital identity management is concerned less with self-presentation, and more with the creation and management of digital proxies for our real world identities.

The user behavior on SNSs is predetermined by the functionality provided by the software, and can never include all of the complex ways in which individuals understand themselves individually, and in relationship to each other. Moreover, software, like all technology, emerges out of social conventions (Latour, 1991). The systems on Facebook that power user profiles are socially constructed entities whose effects need a joint sociotechnical consideration. Woolgar's (Woolgar, 1991) essay on "user configuration" teases at the ways in which users change their behavior to comply with system designs, and Souza, et al. (2005) have addressed a number of variables

from the software development environment that impact the final piece of software. The full implications of the configured user and the socially influenced software, however, have yet to be appreciated in the area of digital identity. Even the seemingly trivial act of filling out a profile represents a complicated negotiation between the user and technology in which the user conforms to a system design in order, ostensibly, to make the system behave appropriately. Online, digital identities may represent a type of identity configuration by which users produce an identity in conversation with the values embedded into the software they are using.

Chapter 3. Persisting Identity

We increasingly live online lives. 55% of US households now have broadband Internet access (Horrigan, 2008), 2 million emails are sent every second (Tschabitscher, 2008), and with over 200 million active users (Facebook, 2009a), Facebook is now the 5th most visited site on the Internet (Alexa Internet, Inc., 2009). Every day, millions of users log into the system to update their profiles, post pictures, and communicate with "Friends." This continuous online production of personal information results in a growing collection of information with which our digital identities are composed.

Internet based digital identities are an increasingly ubiquitous information resource. Social network sites (SNS) like Facebook provide access to personal details via user profiles, as well as opportunities to interact with these identities from any Internet connected device. A plethora of users using myriad devices across countless locations now connect to Facebook to produce and interact with digital identities that both materially and symbolically speak on their user's behalf. The result is an online identity infrastructure that plays an increasingly central role in our lives.

Captured as digital artifacts, the persistent nature of these digital identities provides new opportunities, individually and interpersonally. Given that "American culture generally regards identity as the basis of subjectivity, as the center of the self,

its spiritual core" (Poster, 2006, p. 87), the production of a persistent identity, and the technological structure imposed upon it, has real social implications. At the most mundane, these digital identities can capture the intimate details of our day to day behavior, codifying identity at newly granular levels. Perhaps more interestingly, as a new social mediator, the sociotechnically produced digital identity persists self-presentation, allowing digital identities to become stable and legible units of a larger identity infrastructure.

Identity Persistence on Social Network Sites

In this chapter, I turn to Facebook as a means for considering identities persisted by a database. Surpassing similar social network sites such as MySpace, Friendster, and LiveJournal, today Facebook is considered the most popular social network site (Arrington, 2008). Facebook is a useful a heuristic for considering identity persistence due to the ways in which it structures and stores profiles and interpersonal interactions, the amount of information available on the technical architecture that powers the site, and its overall popularity.

Along with similar sites, Facebook has shaped the template of what we understand as a social network site. boyd & Ellison (2008) define these sites as "web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a

connection, and (3) view and traverse their list of connections and those made by others within the system" (p. 2). As I enumerate later in greater detail, users on Facebook satisfy all of these criteria as they self-present via their online profiles, "friend" other users, and navigate a series of other user profiles. The prerequisite to this definition, however, is a technical systems that capture and persist a user's self-presentation and behavior, and later intelligibly reproduce that information for other users. Technical constraints and affordances made by actors such as the database and the user interface influence or outright constrain the types of identities possible on the system, as well as the types of interactions that can occur.

In an investigating of SNSs and the persistent digital identities they help produce, I have turned to user and system observations, user interviews, reverse-engineering,[14] documentation published by Facebook, interviews with Facebook application developers, and knowledge of standard web application development. In many cases I turn to the Facebook Platform application programming interfaces (API) and technical documentation to gain insights on how the system is built. Third-party Facebook application developers use this documentation when building systems that leverage Facebook data, and as such, the structure of this system provides a sufficient

[14] Reverse engineering is a process by which an individual examines a piece of software and attempts to document the way in which the product was produced. In the case of a web-based interface like Facebook, this is done by viewing the exposed programming code, or "source code," as well as the data interactions between the web browser and the Facebook server.

proxy for our current discussion. Facebook, of course, is constantly changing, as are the practices of its users. It is for that reason that I focus on foundational technical concepts, such as the role of databases in web applications, rather than on Facebook's specific technical implementation of these concepts. Throughout this chapter, and when applicable, I point to historical changes in the system and their potential implications.

The trajectory of this chapter is as follows: First I provide a brief history of Facebook, and outline some of the technical infrastructure employed to handle the millions of visitors Facebook receives each day. Second, I examine the sociotechnical creation of a profile on Facebook. Given their almost universal availability, profiles provide a persistent anchor to a particular individual. Finally, I examine the types of work these persistent profiles enable: namely, the production, reproduction, and maintenance of social networks. We will see how a Facebook profile performs identity and lowers the barriers to interpersonal behavior. This persistence, however, is not without its unexpected outcomes. Throughout this chapter I will share demonstrative stories from Facebook users that expose some of the ways in which these identities, persisted outside of the individuals they represent, result in new types of personal and interpersonal negotiations that would not have otherwise existed. While Facebook does not persist and publicly expose all data, it is a useful heuristic in as far as it

demonstrates the potential for identity persistence to lower the interpersonal overhead of social relationships by storing and displaying identity information.

Growth of an Infrastructure

Mark Zuckerberg started Facebook with his roommates while an undergraduate student at Harvard University. The site was launched in February 2004 as "TheFacebook," borrowing its name from the physical notebooks circulated in high schools and universities to help individuals learn each other's names. The Facebook system was originally limited to Harvard students, but was quickly expanded to include other Boston universities, followed by Ivy League universities on the East Coast and Stanford University, and eventually all U.S. based universities.

Facebook was an instant success. Within 24 hours of its launch, 1200 Harvard students had joined, and after one month, over half of the undergraduate population at Harvard had signed up for an account (Phillips, 2007). In 2005, Facebook opened registration to High School students and universities in the United Kingdom, and in

2006, Facebook removed its educational institution affiliation requirement,[15] allowing anyone with an email address to register for the site.[16]

Facebook now boasts over 200 million active users,[17] and has shed some of its focus on college aged audiences as parents and professionals rapidly join the service. In fact, according to iStrategyLabs (2009), 35-54 year olds are currently the fastest growing age group in the United States (276.4% over a six month period), followed by the 55+ age group (194.3%).[18] Evidence of Facebook's growth also extends beyond new accounts. According to Facebook, the average user spends eight hours on the site per month (Facebook, 2009a), up from three hours a day in 2008 (Sorensen, 2008). As is the case with all rapidly growing services, Facebook has had to proactively work to meet this increasing user demand.

Persistence begins with a User ID

An extensive amount of work is required to make this large piece of identity infrastructure perform reliably. Facebook's developers hide much of the system's

[15] Facebook determined academic and network affiliations based on email addresses. For example, a Harvard student had to verify that he was the owner of a particular @harvard.edu email address via an email-based verification technique. In this way, Facebook outsourced the authentication of identity (that the user was affiliated with an institution of higher learning) by relying on the identity verification ostensibly performed by university email administrators.

[16] Facebook continues to restrict the site to users under the age of thirteen, and anyone under the age of eighteen who is not in high school or college (Facebook, 2009b).

[17] As of April, 2009 (Facebook, 2009a)

[18] Growth rates were measured between 6/18/2008 and 1/04/2009, a period of just over six months. Statistics were calculated from Facebook's Social Ads platform, and actually show an acceleration of adoption in the 35-54 age group with the entire population doubling approximately every two months (iStrategyLabs, 2009).

complexity from their users, allowing user to focus on the behavior the SNS allows. In this section, I consider some of the relevant technological capabilities and constraints that influence the functionality and design of the Facebook system. Specifically, I consider the role and structure of the database, and how Facebook's database design is engineered to persist expansive identities while preserving their legibility.

Facebook's system generally follows a standard web-application architecture: an Internet browser, such as Firefox, requests a webpage from the Facebook web server, which then contacts the appropriate database in order to retrieve the necessary information. The server then formats the information, renders it into a webpage, and returns it to the Internet browser.[19] However, Facebook has also created a number of other services beyond the web-based interface with which many users are familiar. Two of these services are worth considering. First is the Facebook Platform, an application framework that allows non-Facebook organizations to build third-party Facebook applications that both augment the basic profile system, and can leverage information in the Facebook database. Second, Facebook Connect, one of Facebook's newest services, allows independent sites to access the user's Facebook account and information by allowing users to log into their Facebook accounts outside of the Facebook website.

[19] This is often referred to as a three-tier web server architecture. For a more comprehensive review of the technological aspects of web based server architecture, see (Kurose, Ross, & Ross, 2003).

A high level examination of Facebook's persistence-layer is particularly useful when considering the persistent identity. Databases, like the ones Facebook uses,[20] divide data into logical groupings called "tables." Much like a Excel spreadsheet, database tables have "rows" or "records" for each entry, and "columns" for different types of data that pertain to that record. The way in which data is segmented is ultimately dependent on the system design, but designers attempt to model real world concepts that reflect the purpose of the application. Facebook, for example, has a "User" table that contains a record for each user. Likewise, the columns in the user table contain much of the primary information seen in a user's profile (e.g., name, location, sex, etc.).

Many database tables, including Facebook's User table, include a dedicated column that stores a numerical identifier that is unique to each record. This is called the "primary key." There are many naming conventions for primary keys, but database designer often use the name of the table and the label "ID", for example "UserID".[21] Given that primary keys identify a unique record, they permit some interesting work. When designing databases, for one, a primary key allows developers to build

[20] Facebook uses MySQL, arguably the most popular open source database. MySQL is a "relational database," one of the most common types of databases on the Internet. Relational databases allow information to be organized and grouped in a human-comprehensible manner, but also support database queries that join information from across distinct data groups to produce meaningful sets of data.

[21] I would ask that database designers, and other technically minded individuals for give me for suggesting that "UserID" is a good name for a primary key. I am presenting it in this way for the sake of clarity, as well as consistency with Facebook's non-technical documentation.

relationships between different sets of data. Consider a hypothetical photo album application. This application might store user information in one table ("User"), and photos in another ("Photo"). Uploaded photos would have a unique PhotoID, but the system needs some way in which to identify to whom the photo belongs. Storing a unique PhotoID in the photo table for each record as well as a non-unique UserID from the User table creates a relationship between users and photos: users have photos. In this way, the database stores both information and data relationships. Data that is not associated in this manner can be difficult to manage, and the absence of an association might limit its functionality in the overall system.

Even more interesting, developers sometimes take these well-articulated relationships for granted. When loading a particular user's photo album, the developer might bypass the User table all together, and just ask the Photo table for all of the photos that belong to a specific UserID. In this way, primary keys can also proxy the presence of a database record by vouching for its existence.

In the Facebook system, a User ID is assigned to each new user when they create their account.[22] Much like the historical expansion of user accounts in networked environments (see Chapter 2), Facebook utilizes this identifier to persist

[22] Facebook's documentation does not specify the exact name for the primary key on the User table. Looking through the documentation, Facebook refers to this key as "user id," "user ID," "User ID," and a shorthand "uid." uid is the name used in the Facebook Platform, and it is likely that this is consistent with the name in the actual User table. Using uid speaks to the centrality of the user id in the Facebook environment where "u" unambiguously refers to "user." During this thesis, predominantly for clarity, I refer to the primary key of the User table as "User ID."

myriad information and data relationships about a particular user across the system. User accounts start with a username and password, but quickly expand to capture all of the attributes we associate with a Facebook identity. As users complete their profiles, add friends, and interact with others on the system, associations are made to a User ID, rather than an account or the individual that account represents. In this way, the User ID begins to stand in for a user and his account. We will see examples of this in the next section as I examine the ways in which users interact with the Facebook system. This includes the creation of a user account, addition of profile information, and the adding of other users as friends. While a database can capture almost any type of data relationship, Facebook is organized around the User ID.

Constructing a Persistent Identity

Users create their primary digital identity on Facebook through the Facebook profile. These profiles capture and present identifying information about a particular user, and make up the bulk of the Facebook system. From a user's perspective, the Facebook's profile system is fairly straight forward. Users provide indentifying information, often in response to a system prompts. This form of self-presentation, however, relies on numerous classification systems, categories, and interpretive resources. Users must negotiate their identity within a system that prompts the user for

specific identity attributes, often suggesting or outright limiting the responses the user can provide.

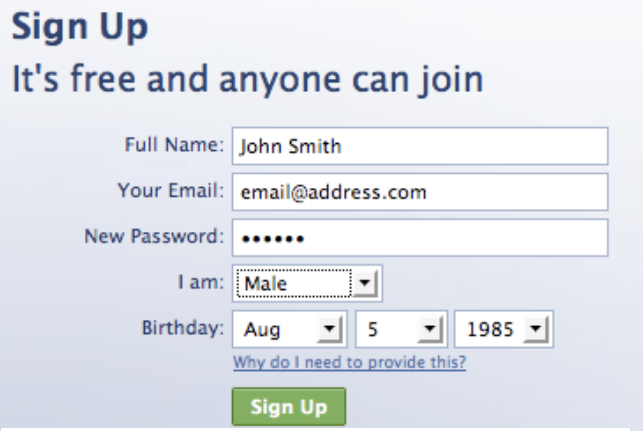


Figure 1. To signup for a Facebook account, users must provide the basic information the system needs to create a profile.

Facebook's profile system is not particularly unique. It includes many of the same features seen in other SNSs. While creating an account, new users are required to provide their full name, email address, sex, and birthday (see Figure 1). Users are then prompted, as applicable, to indicate their high school, college or university, and current employer. Once complete, the Facebook system associates this information to a User ID and creates the basic profile, at which point the user is added to the Facebook system. The demographic information the user provided populates basic profile attributes, and education and employment information is used to associate the user account with various "networks," digital representations of existing non-digital social networks. Together, this information allows the user to find other Facebook users he might know, and allows the user to more easily be found.

Once a user has created an account and logged in, the Facebook system prompts him to view and edit his personal information (see Figure 2). Here, users upload photos, video, and edit responses to self-descriptive labels in order “to help your friends recognize you.” Much of the personal information captured in the profile is based on identity attributes such as relationship status, political views, activities, and favorite music, to name a few.



Figure 2. The Facebook software encourages users to create robust profiles in order to "help your friends recognize you."

Many of these attributes are the result of Facebook developers who recreate commonly understood classification systems that are also used outside of Facebook. Contact information, for example, draws on existing classification systems for physical addresses, email addresses, phone numbers, and personal web addresses. The implementation of these classification systems in Facebook, however, can have unexpected results. Users indicating their sex, for example, select from a drop down list defined by the system that restricts the available answers to “Male” and “Female.”

Without any additional option for gender, the selection of “Male” or “Female” collapses biological sex and gender identity, giving priority to a user’s selection of sex.

Facebook also implements classification systems of its own. Sexual orientation serves as a good example. While a number of classification systems exist for sexual orientation, Facebook does not make any of these available to their users. Unlike MySpace where users are explicitly prompted to select from a dropdown list of responses such as “Straight,” “Gay,” and “Bi,” Facebook presents the user with an identity attribute of “Interested in,” allowing the user to check “Men” and/or “Women.” On Facebook, the sex or sexes in which a user is “Interested in” serve as a proxy for sexual orientation, requiring the user to perform the necessary translation of the profile attribute using the various interpretive resources at their disposal. A classification system such as this requires viewers of the profile to employ their interpretive resources about sexual orientation in order to discern the sexual orientation of a particular user.

Conforming to Facebook’s profile and classification systems can be limiting. First, the prompt-driven profile system limits the user’s self-presentation and the overall structure of the identities the system supports. Pet preference, for example, is an identity attribute not included in the profile system, leaving avid dog-lovers to find

other ways in which to express their enthusiasm.[23] Second, the available options for a particular attribute can also be limiting. “Relationship Status,” for one, presents the user with six options that can be somewhat frustrating when one’s current interpersonal circumstances do not neatly fit into one of the provided categories. Facebook solves this particular limitation with a miscellaneous option (“It’s complicated”), but this ambiguous category presents problems of its own as users interpret this label in different and often contradictory ways (Brubaker, 2008).

Some types of personal information are not restricted to predetermined values. Attributes such as About Me, Activities, and Interests present users with an open-ended text box, allowing the user to include any information they might like. However, even when including this information, Facebook often prompts users with potential matches to the words they are typing. For example, a user typing “soccer” in the activities text box will be prompted with a list of possible matches the Facebook system has determined are related to soccer. This may add some level of convenience for the user, but also allows Facebook to more easily classify and organize users by the information they provide.

Using a User ID, the many features of the Facebook profile and system can remain organized and indexed around its user. Other identity concepts may be captured

[23] Humorously, “Religious views” is a popular field in which to indicate extemporaneous, and often quirky self-identifying information.

in additional database tables, but content in these tables is linked to a user via a User ID. This results in a functional persistence that only requires the user to create his profile once, drastically reducing the overhead of interacting with other users and systems in the future. In the next section, I will explain how this hierarchically organized system can leverage the profile, producing a universal identity that can speak on a user's behalf.

Presenting a Universal Identity

Universal identifiers are nothing new. As I explained in Chapter 2, state organizations have long had an interest in unambiguously identifying their citizens. However, SNSs such as Facebook may represent the first time when personal information has been so freely accessible and interpersonally available. Across its many fields and classification systems, the Facebook profile allows an almost endless amount of identity content. There is, however, one fundamental assumption: a user only has one identity.

Users can decide what pieces of information are disclosed, and to whom, but the system does not allow the user to create multiple, disparate, or contradictory profiles. A college student cannot, for example, display a list of prurient "Interests" to their college friends, while also presenting a more studious set to his parents. In order to accomplish this goal, individuals have to create an additional Facebook account

associated with a second email address. While this is a somewhat common practice (teenagers often report this behavior as a way of managing their parent's access to their information), it requires the overhead of maintaining two (frequently redundant) accounts. Unlike virtual worlds in which users are encouraged to create any number of characters (Rheingold, 1993; Turkle, 1995), or even blogging software like Blogger that lets the user "Choose an Identity" when posting a comment, Facebook is designed to persist the "real you."

Whether Facebook achieves this goal is debatable. Facebook, however, does an excellent job of constantly knowing some version of you. Because Facebook is more or less a bounded system that requires users to login before participating, the user and his User ID are always unequivocally known. This approach allows Facebook to maintain a striking level of user legibility, associating all of a user's profile information, friends, messages, and even behavior with his User ID. Nowhere is this better evidenced than on the user's "Wall," a profile feature where, among other things, a user's "Recent Activity" in the system is listed.[24] Fellow users are also able to leverage this always-identified state. In addition to recent activity, the Wall allows friends to write short

[24] Recent updates to the Facebook interface have changed the role of the Wall substantially. While it used to be a simple space that allowed other users to author short notes, as of this writing, the Wall now allows other users to post links, photos, videos, virtual gifts, as well as including a detailed list of the user's "Recent Activity" on the system.

public comments. Once posted, a comment is listed along with a link to its author's profile.

Facebook's universal self-presentation allows users to reference these digital identities as a type of information resource. This enables interesting social interactions, both inside and outside of Facebook. Consider Andy: He explained to me that there are some friends that he prefers to stay in touch with over instant message conversations in addition to, or instead of though Facebook. "We are still friends on Facebook, but I'd just rather have a conversation with them, you know?" What I found interesting in Andy's explanation, however, was the role Facebook profiles played, even during the course of a casual online chat: "You know, there will come this point in the conversation where you would say 'what are you up to?' or 'are you still with that one girl?' but then I just realize I should be looking at their profile page… so [the profile] kind of becomes like a way to catch up… it helps the conversation."

Andy's scenario is specifically helped by the fact that Facebook is typically not a space for experimentation with multiple identities. This stability in a user's self-presentation facilitates any number of interpersonal behaviors, not the least of which is being found by other users in the first place. In the next section, I consider how the presence of a stable universal identity facilitates the development of the social networks for which Facebook is known.

Persisting the Social

A Facebook User ID can be linked to a number of networks, groups, photos, educational institutions, and employers. Most importantly, a User ID can be associated with other users' User IDs: This is what Facebook calls "Friends." "Most [social network] sites support the maintenance of pre-existing social networks" (boyd & Ellison, 2007, p. 1), and on Facebook, users "articulate a list of other users with whom they share a connection" (p. 1). Facebook has a number techniques to help users expand their list of friends, including importing connections from other email systems and digital address books, suggesting "People You May Know" when the user logs in (see Figure 3), the ability to search for individuals via the Facebook search engine.



Figure 3. The Facebook software encourages users to link their profiles to other user profiles using prompts such as this.

Facebook users are typically connecting based on real-world networks. Lampe et. al (2006) found that "users are largely employing Facebook to learn more about people they meet offline," and Haythornthwaite (2005) explained how

social network sites enable connections between individuals with whom they share some offline connection, what she refers to as “latent ties.” The Facebook profile is well engineered to support these types of connections: Almost every identity attribute on the profile page is converted into a link by the Facebook system, allowing the user to quickly search for users with similar responses.

Given its historical focus on university campuses, Facebook is particularly adept at connecting users based on their educational affiliations. Users can easily search for all of the students graduating from a specific high school or university during a given year. For users no longer in school, this allows them to quickly reconnect with old friends and reestablish old social networks. Such was the case with Katrina, a busy mother or three who initially resisted the idea of joining Facebook, stating “I have better things to do with my time.” However, after joining, Katrina was delighted by the series of friend requests from old high school buddies, and the ease with which they were able to reconnect. It is my belief that profiles can serve as a kind of current life snapshot that facilitates these particular reconnections. When combined with the asynchronous communication available through Facebook’s messaging system or the profile Wall, users are able to quickly learn about current circumstances of their friends lives, and reconnect in a non-imposing manner.

However, the availability of a persistent identity can also facilitate some unexpected connections. Consider Lindsey, a medical student who joined Facebook at the urging of some friends who wanted to "stay in touch." Lindsey explained that within an hour of setting up her account she received numerous friend requests from high school friends, college buddies, and much to her dismay, an uncomfortable number of former boyfriends and one night stands. "We might as well just rename it Fuckbook!" she exclaimed.

Fortunately for Lindsey, the database design for Facebook friendships is bidirectional. After one user "friends" another, Facebook sends a "friend request" to the second user. The second user can then either confirm the friendship or ignore the request. Once the friendship is confirmed, the database associates the two User IDs and each user is added to the other's profile page as part of their list of friends.[25]

Managing one's list of friends is a common practice on Facebook, but each user seems to have their opinion on what signifies a friend. James, a graduate student who is somewhat proud of his list of over one thousand friends, is also quick to defend his network, claiming "I will recognize [each of] them and know them by name."

[25] In addition to simple database associations, users can also provide details about these relationships. For example, users might indicate when the relationship began, and under what circumstances (e.g., "Steve went to college with Ali."). This feature, when used, provides a wealth of interpersonal information about the digital identity of both users. Until recently, Facebook had a software feature called "Social Timeline" that would graph a user's life history, plotting personal and interpersonal events that had been persisted in the Facebook system (e.g., "2004: You and Chris traveled to Europe."). When Facebook removed the feature, users created groups in protest of the decision; however, the feature has not returned.

Regardless of what signifies friendship, users frequently manage their friend list by adding and removing friends in accordance with their social circumstances. Brad's management of his Facebook friends is fairly straight forward. When I asked him about his friends list, he explained that he adds people that "I do not want to loose touch with, or people I want to regain touch with." In response to my request for some examples, he quickly rattled off a list of criterion: "High school people, regardless of if we were really friends; college people that I lived with or was friends with; work people that I socialize with in or out of work; and family, except my aunt that I do not like."

Brad's aunt reveals the ways in which the persistent identities on Facebook require that users account for new interpersonal configurations and interactions. Some users, such as Brad, elect not to recreate all of their offline social networks in the Facebook system. When I asked him about his aunt, Brad described a complicated relationship, not with his aunt, but with his uncle. Even though his uncle is not a Facebook user, Brad is not comfortable with the possibility that information from his profile could be communicated to his uncle via his aunt. While users cannot control the ways in which their information might be used, users do engage in a practices such as these in order to mitigate the potential effects of their online information.

The criterion for "unfriending" users on Facebook are as plentiful and personal as those for adding another user as a friend in the first place. Brad explained that he only unfriends other users he has lost touch with and with whom he no longer associates. In general, these unfriendings were passive acts that occurred during general maintenance of his account. There was, however, one noteworthy exception: an ex-fiancée who he unfriended after the relationship ended "'cause I wanted to lose touch with her."

Indicating a change in a romantic relationship on Facebook is one behavior that has received a great deal of popular attention. When editing their profiles, Facebook users can select a relationship status, along with the Facebook friend with whom that status is shared. Once the other user verifies the relationship, both users' profiles are updated to reflect the change (e.g., "In a relationship with John Smith") and the action is listed under each user's Recent Activity. However, should either user remove the status, both users' profiles are changed and both users' Recent Activity is updated. Predictably, the public nature of this status and its changes has caused its fair share of disgruntled lovers. The relationship indicator on Facebook has resulted in numerous blog posts bemoaning the status, complaints about Facebook broadcasting its changes, and even articles about Facebook "dating etiquette" (The Dating Lame, 2008).

A young man named Jason told me how the presence of this relationship status even prevented him from an accurate profile. “I had been dating this guy, and he had sent me a relationship request…” he explained. “Well the relationship eventually ended, but… it really hurt him… well, us both, I guess. Anyway, I didn’t change my Facebook status because it would have changed his too. It would have been like advertising to the entire world that I had broke his heart.” Jason told me that he waited for his ex-boyfriend to change the status, but “it took a long time.” Currently, Jason is in a new relationship that is not reflected in his profile. “Now I do not have a relationship status. I just don’t like having to be responsible to it.”

The universality our digital identities on Facebook facilities a number of connections, but stories such as Jason’s show circumstances in which such exposure is detrimental. It may be that relationship statuses are a sensitive area for users as they become an attribute over which a user no longer has full control. If we think about profiles relative to the identity infrastructures in which they operate, the difficulty of creating a classification system and application that can successfully support the various complexities of romantic relationships becomes clear.[26]

[26] Digital identities enable a host of technical business functionality as well. Advertising is a key part of the Facebook business model, and Facebook users are delivered advertisements that are sensitive to their social information. Outside of Facebook, third-party developers also write their code linking their data to Facebook accounts in a way that leverages the user’s User ID. Through the Facebook Platform and Facebook Connect, the digital identity has become expandable, performing well in a larger identify infrastructure that requires it be both “customizable and rigid” (Star & Ruhleder, 1996, p. 3). Moreover, Facebook has started producing innovative new features that can leverage a user’s network of friends.

Reconciling the Persistent

In this last section, it is worth considering the increasing importance of our online identities to our offline lives. Others have considered the role of online identities in relationship to our offline lives (see (Vitak, 2008) for a Facebook-specific example), demonstrating how the ostensible "realness" of the profile eliminates much of the online/offline distinction seen in earlier virtual communities. It is clear that the functional benefits of Facebook profiles are allowing Facebook to play an increasing role in our larger identity infrastructure.

I have demonstrated the ways in which users create persistent identities that are universally accessible to specified social groups and networks. This information, however, is tethered to a central User ID, ensuring legibility of the identity, and the performance of the Facebook system. As the user increases their presence on the site, the User ID, account, profile, and social network attached to the User ID, are all called on to represent the user's identity.

While many are simple, they speak to the potential of available identity and social information. One example is Facebook's "address book," a mobile phone application that is populated with the contact information included in their Facebook friends' profiles. The adoption of features such as this will be interesting to watch. After all, Facebook's databases are far more durable than a mobile phone, and the potential uses for the information stored across a user's network extend far beyond making phone calls. This type of expanded use of our profile information signals a move away from simple profiles bound to a single website to a more ubiquitous personal information repository. However, across all of these services, the User ID remains.

The persistence of this identity allows new types of social behavior. As was the case with Katrina and her high school friends, persistent identities allow users to quickly negotiate their social relationships, enabling users to more easily reconnect and re-establish expired social networks. Work by Golder et al. (2007) gives evidence to this idea, showing that Facebook friends are more often "weak ties" (a Granovetter neologism for lose social affiliations rather than more intimate connections). In a survey of Facebook users, individuals had 180 Facebook friends, substantially more than the number of friends they reported from the "real world."

This is a good example of how a label like "Friend" can come to have its own symbolic meaning, a distinction worth considering for each of the attributes that compose our digital identities How else, then, to explain the dismay Ashley Parker (2007)felt about a change in relationship status that she knew was coming, but still surprised her when it occurred:

> Sam and I broke up this past fall -- amicably and mutually -- and I was more or less doing fine. Then Sam sent me an email that said: "Just wanted to let you know that I changed my Facebook profile to incorporate our current status."… [And] for the first time, I felt oddly crushed. Sam was no longer "in a relationship with Ashley Parker," and I was no longer "in a relationship with Samuel Reeves." Innocently enough, Sam had cemented our break-up for the

> entire world -- well, online world -- to see. In the click of a button, everything suddenly seemed more permanent, more tragic somehow. (Parker, 2007)

The important centrality of Facebook in the real world was also the theme of a story a New Yorker named Tom shared with me. He had just begun a serious relationship, and while things appeared to be progressing well, he confessed some worry. It seems he had approached his new boyfriend about changing their relationship status, but the issue had casually been dismissed. While their Facebook statuses defiantly remained "Single," Tom proceeded to enumerate a list of hypothetical reasons his beau would not want to change his status online. Unfortunately, the majority of the scenarios questioned his boyfriend's commitment or possible infidelity. In every case, the long term potential of the relationship was questioned.

What is compelling about these stories is how changes in these relationship statuses were not considered "real" until they were represented online. Our New York couple has since changed their statuses, but this seemingly momentous milestone is, at its roots, a construct of software: Two User IDs associated with each other in a database, and assigned one of a predefined set of relationship statuses.

It is through stories such as these that we can reject any distinction of the "real" and the "virtual," and consider all of our self-presentation relative to the larger identity

infrastructures through which the social is performed. Identity infrastructures are powered by more than just government documents. They rely on shared understanding of space, class, and culture; the difference between “work colleague” and “college buddy,” how to break up with someone, and how to propose marriage. It is strange that we should come to be so invested in what is fundamentally just a dressed-up database ID. Perhaps it is like Scott’s account of the surname: we come to own what was once an imposed identity attribute. However, the distinction here is that we never see our User IDs. They are hidden from us, silently organizing our self-presentation and social networks. Instead, we come to emotionally own our digital identity. They do not just represent us, they are us.

In the next chapter I will examine social behavior online that is not aided by a profile system. Users of craigslist Missed Connections enjoy more freedom in the specifics of their self-presentation, but the overhead of self-presentation also limits interpersonal behavior. Here we will see how users must perform the necessary work to structure identity and interpersonal relationships when no technological system is provided.

Chapter 4. The Single-Use Identity

Long before the emergence of personal blogs, public profiles, and social network sites, the Internet was often considered a haven for the anonymous. Despite this anonymity (or perhaps because of it), the Internet was still a social space in which rich interpersonal relationships were developed in chat rooms (Van Gelder, 1985), forums and newsgroups (Donath, 1999), MOOs and MUDs (Dibbell, 1993; Kendall, 2002; Markham, 1998), and other virtual communities (Rheingold, 1993). Many scholars have considered the perhaps paradoxical ways in which users of these deindividuated spaces experienced rich opportunities for self-expression and interpersonal connections. Technically and socially, users of these spaces presented various identities, from the very real to the fantastical.

In the last chapter I considered the ways in which SNSs allow users to develop persistent digital identities that enable a variety of interpersonal connections and interactions. While Facebook appears to have created an infrastructure for one increasingly dominant form of digital identity, in this chapter I will examine digital identities created without the assistance of a profile system. Despite the socializing influence that web2.0 and read-write technologies have brought to the Internet, there are many social spaces that do not persist the digital identities of their users. The

"Missed Connections" section of the popular classified advertisement site craigslist is one such space, and the focus of this chapter.

Posts submitted to craigslist Missed Connections, an online equivalent to "I saw you" personal ads, often include descriptions of individuals that mimic a profile's functionality. Authors on Missed Connections submit anonymous posts "filled with near misses, brief encounters, strange sightings, lusty longings, and a little hope for love" (Wertz, 2009). Unaided by user profiles or accounts, authors describe themselves, their targets, and detail their encounters from the physical world with the hopes that their target will recognize the post and respond. Readers, meanwhile, cued only by the content of the original author's post, interpret these descriptions of physical spaces, individuals, and interactions. Despite the popularity of the site, however, there is no guarantee that the author's intended target will read the post, recognize the interaction, or respond. Anonymized by the craigslist system, and obscured by the volume and variety of content, Missed Connections authors must balance disclosure and anonymity in these public posts while constructing what I am calling the "single-use identity."

In the absence of a profile system, users must recreate all of the interpersonal and contextual information that would otherwise be provided by a site like Facebook. The lack of a profile system that persists digital identities allows users to customize

their level of self-disclosure through descriptions of themselves and the reader they are targeting. The single-use identity is always customized, targeted, and unique, side-stepping social pressures to present a consistent identity. In contrast with Facebook, where identities are always standarized, the anonymity of the craigslist system allows users to author multiple, potentially contradictory, digital identities. craigslist may provide authors a degree of flexibility in their self-presentation, but such flexibility requires that users negotiate the relationships between the identities they include, the spaces and contexts described, and the craigslist system itself (Brubaker).

The Single-Use Identity on craigslist Missed Connections

Missed Connections can be read as a kind of temporary social network site. Post authors typically describe themselves and their intended target in very profile like terms, detail the nature of their relationship, the context in which that relationship existed (often social and spatial), and outline the details of their interaction. While craigslist does not meet all of boyd & Ellison's criterion for a SNS (2008), the missing characteristic is persistence.

In contrast with other socially and romantically geared websites, the digital identities that populate Missed Connections are not bound to any account or profile.[27]

[27] craiglist allows user accounts for easy management of posts, but they are optional and do not include profiles. According to craigslist's help section: "You can manage posts efficiently with a craigslist user account. The process of creating posts, editing and deleting them, and re-posting ads that have expired is

This prevents users from being able to consistently find other user on the site, and connect their content in any enduring way. As we saw earlier, social network sites such as Facebook allow users to register for an account and create profiles that include pictures, physical descriptions, personal interests and preferences through the profile's interface. Missed Connections on the other hand, embedded in a site and format famous for selling bikes and futons, avoids profiles and persistent descriptions. Even the use of pictures is discouraged in the Missed Connections section.[28]

What results is a single-use identity constructed by a Missed Connections author for each of the individuals he or she describes. These identities, and the interactions the author describes, however, are not persisted beyond the existence of the post. Each post, and the details it conveys, is self-contained, allowing the author to customize their level of disclosure and anonymity. Missed Connections authors must instantiate and represent the relevant information with each post.

If we accept Strum & Latour's (1987) performative vision of society, then craigslist provides a compelling example of the ways in which users, given the absence of a profile system (and the resulting standardized digital identities, relationships, and

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much easier. If you post frequently, or if you need to post paid ads, it makes sense to set up a user account."

[28] Given that post authors are physically describing their targets without explicit consent, posting a picture is a clear a violation of craigslist's Terms of Use that, paradoxically in the case of Missed Connections, prohibits inclusion of "personal or identifying information about another person without that person's explicit consent."

social networks), must "define, for themselves and for others, what society is, both its whole and its parts" (p. 785). Each Missed Connection performs its own version of society while capturing and re-presenting interactions that might have otherwise been lost. Together, these posts perform a host of higher level cultural understandings and rituals, not the least of which is the remorse of lost opportunities. What results is a space in which users, potentially emboldened by anonymity, actively re-perform interactions while configuring relationships between identities, contexts, and shared informational understandings.

To consider the authoring, reading, and implications of the single-use identity, I have turned to user observations, an analysis of the craigslist system, craigslist documentation, published interviews with craigslist staff, and a personal interview and email exchanges with craigslist's founder, Craig Newmark. In this chapter, I will start with an overview of the craigslist system, including a brief history, technical description, and the way in which the system is structured for both authors (those submitting content to the site) and readers (anonymous users who navigate the site, reading content). Next, I will examine a number of the identifying practices used by authors in the description of their single-use identities. These descriptions draw from a number of labeling practices that are also seen in Facebook, and utilize a variety of categories, classifications, and interpretive resources with which the identity is

constructed. Finally, I will consider the ways in which Missed Connections perform a kind of social network. Missed Connections authors engage in many of the same behaviors seen on social network sites, often performing the role of the technology when the craigslist system does not sufficiently structure interpersonal behavior.

A brief overview of craigslist

craigslist is a community-focused Internet website that resembles the form and function of newspaper-based classified advertisements. The site was launched by Craig Newmark in 1995 and features advertisements (or “posts”) that can be submitted free of charge.[29] The craigslist system is geographically divided into sub-sites (sometimes called “channels”), typically representing a metropolitan area such as "Washington D.C." or "SF bay area". Each channel features advertising areas including jobs, housing, for sale, and starting in 2000, a personals section that includes an area for "Missed Connections". craigslist's success has frequently been credited to its ease of use (Newmark, 2007); authors can quickly add content without a user account, and readers can anonymously search the large number of posts.[30] craigslist has increased in

[29] craigslist does charge for job and housing posts in select metropolitan areas. craigslist first began charging for listings in August 2004.

[30] On average, the New York City channel of craigslist Missed Connections received over 307 posts post per day during the period of April 2008 to July 2008.

popularity over the years and is now the 45th most visited website on the Internet, and the 12th most visited site inside the United States.[31]

In his interview on *IT Conversations*, Craig Newmark described craigslist's architecture as "a bunch of generic PC servers running Linux, Apache, Perl, mod_perl, MySQL, qMail, Squid cache, that kind of thing" (Magid, 2006). While this casual statement is indicative of the company's founder, craigslist's web architecture is critical to its success, and the company focuses most of its resources on keep performance high.

craigslist's server architecture is quite similar to the architecture used by Facebook,[32] but with notably less augmentation. "Our site is not cutting edge in any conventional sense…" Newmark said, listing the various front-end technologies in which they have decidedly not invested (2009a). "Underneath, the technologies are fairly cutting edge in terms of database use, the use of caching to keep the site fast… and there we just have a good technical team who's serious about keeping up with technologies that matter." Noteworthy is the way in which Newmark's statement prioritizes web server and database speed over investments into site design, user interfaces, and novel features. In a personal interview, Newmark summed up the

[31] Alexa.com ranking as of April 29, 2008.

[32] Some might describe craigslist's web architecture as "LAMP". LAMP most commonly refers to Linux-Apache-MySQL-PHP, but sometimes PHP is substituted for Perl, an older scripting language commonly used for script-based web development. While neither craiglist or Facebook utilize PostgreSQL, it is also a common choice for an open-source database.

technical ethos of craigslist well: “It’s more important for the site to stay fast than it is to have something fancy” (Newmark, 2009b).

Unlike Facebook, craigslist is not seeking to leverage digital identities in order to provide new interpersonal functionality. In fact, one might rightly claim that in a technical sense craigslist is only marginally interested in interpersonal behavior. While the introduction of the Personals sections has been a tremendous success, when I asked Newmark why the interface for submitting a Personals post more or less replicated the user interface from other sections of the site (rather than creating a profile system similar to Match.com), he simply explained that users have not asked for a more complex system.

Back in 2000, craigslist did consider the implementation of some matching software for the Personals sections, but ultimately decided to retain the flexible structure seen throughout the rest of the site. “There are people who want a freeform structure; there are people who want something much more structured… [but] people in the [craigslist] community aren’t asking for that [structure]. I guess if you want structure you use one of the more structured services, and if you don’t, you might use our site – and that way, everyone gets what they want” (2009b). Knowingly or otherwise, the decision to keep personal advertisements unstructured has allowed posts

to reinforce the site's community-centeredness as authors utilize and embed local knowledge, values, and in the case of Missed Connections, spaces and interactions.

Since Newmark's simplified characterization of the craigslist architecture in 2006, there have been few enhancements to the user interface or the overall feature set. On the back-end, however, craigslist is currently in the process of migrating to a higher capacity server farm, and the technical team has recently integrated Sphinx (an open-source engine for full-text database searches) into their MySQL-based database servers (Newmark, 2009b). These two changes, in addition to the web server caching and optimization technology used by craigslist, indicate the types of stresses on the current infrastructure (particularly a high number of page requests, ostensibly the result of less than optimized searching of the site). However, rather than design new software, implementing new standards and an infrastructure to increase the performance and usability of the site, craigslist has opted to maintain their existing user interface, and upgrade their back-end infrastructure instead.

The structure of data is paramount in a comparison between craigslist and Facebook. One of the benefits to Facebook's structuring of user data is a decreased load on the database servers as users navigate through for efficiently organized data. Data normalization has played an important role in transforming Facebook into a resource for digital identities. craigslist, on the other hand, does little more than

structure posts relative to categories that mimic the different sections of classified advertisements (e.g., “Jobs”, “Missed Connections”).

This lack of structure, however, may have worked to craigslist’s benefit. In contrast to the iterative changes to the Facebook interface (each resulting in its own crop of users demanding the changes be reversed), craigslist lets users drive the site’s features. “Pretty much everything on the site is based on user engagement,” Newmark explained (Newmark, 2009b). “We thought of a few things ourselves… we realized we needed a baby-sitting section after thinking that single moms don’t get a break. But we are engaged all of the time.” Still, numerous bloggers and web designers have bemoaned the craigslist system and user interface, and proposed redesigns and new features of their own.[33] When I mentioned these to Mr. Newmark, asking if he was concerned about staying ahead of the curve, he shrugged his shoulders. “It turns out you keep something simple… you automatically satisfy a lot of customer needs.”

Identity begins with a Post

Posts to Missed Connections are fairly formulaic (see Figure 1). The typical Missed Connection describes a sighting or exchange that occurred in the real world,

[33] Two prototypes worth mentioning were created by Design Eye (http://craigslist.thebignoob.com/) and Steven Snell (http://www.smashingmagazine.com/2009/03/11/redesigning-craigslist-with-focus-on-usability/). It is worth mentioning that each proposed redesign is met with its own resistance. One commenter, in response to Steven Snell’s design wrote, “Congrats. You took a perfectly unique and usable website and turned into another boring cookie-cutter POS”. Another option can be found at UserStyles.org. This site collects community generated designs of popular sites, and lets Firefox users override the design of the craigslist site, updating the presentation and format with any number of “themes”.



washington, DC craigslist > district of columbia > missed connections email this posting to a friend

Please report suspected exploitation of minors to the appropriate authorities

please flag with care:
miscategorized
prohibited
spam/overpost
best of craigslist

capitol south to l'enfant - m4m (orange line)

Reply to: pers-58fat-1089214819@craigslist.org [Errors when replying to ads?]
Date: 2008-04-22, 7:19AM EDT

Monday at about 10:30 am, I got on the metro at capitol south, you were with two other guys, you and I were in shorts and you had what appeared to be some hot pecs, you caught my glance and said hello. We all got off at L'Enfant. If you see this, coffee at Starbucks on the Hill?

- Location: orange line
- it's NOT ok to contact this poster with services or other commercial interests

PostingID: 1089214819

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Figure 4. A typical craigslist Missed Connection details an encounter that did not result in a persistent interpersonal connection.

but did not result in the inter-personal connection desired by the author. [34] An author will submit a post to craigslist that details the events of the encounter with a title and message, and then hope that his intended target will read the post, recognize the description, and respond. To this end, authors utilize myriad categories when

[34] As a space, Missed Connections has been used for any number of purposes, many of which do not conform to the prototypical description I am providing here. While users cleverly re-appropriate the space, for the sake of considering the single-use identity, I will be limiting this discussion to the most common and ostensibly intended use of the section.

describing the participants involved and the physical spaces in which the interaction occurred. Posts often include physical descriptions (“in shorts”, “hot pecs”), logistical details (“you were with two other guys”, “We all got off at L’Enfant”) and any interaction (“you caught my glance and said hello”). Many, like the post in Figure 1, involve simple sightings and perceived romantic or sexual interest. Others might include contact on the dance floor, kind words shared in the lunch line, or repeated sightings at a common location like the gym. Virtually any interaction that does not result in the exchange of phone numbers, email addresses, or a name with which one can be found on Facebook might result in a Missed Connection.

Outside of the post’s content, the craigslist system does provide some organizing structure to the posts. In addition to the details provided by Missed Connections authors, craigslist prompts authors to select a geographical channel (e.g., Washington D.C., New York City, etc.), allows custom secondary locations (e.g., “Connecticut Ave.,” “Castro,” “In my dreams!”), and labels Missed Connections based on the author's indicated gender and sexual preference (i.e., m4w, w4m, m4m, w4w). Along with the Description, these details allow authors to produce robust digital identities.

Instead of organizing data at the level of an account or profile, the craigslist system organizes its data by posts, assigning each a “PostingID”. Data provided by the

user (i.e., geographic channel, title, location, and description) is associated with the PostingID, along with data generated by the craigslist system such as date and time at which the post was submitted. With the exception of a form field for "Price", there is no difference in the user interface when posting a Missed Connection or an advertisement to sell a futon.

Users navigate, browse, and search for posts much in the same ways users submit posts. Users select a geographical channel, section, and in the case of the sub-sections in Personals (including Missed Connections), a gender/sexual orientation category. Users are the presented a list of posts in reverse chronological order (see Figure 2). Listed posts include the date they were added, the title, gender/sexual orientation, as well as the age of the author and a custom location (when provided). Over time posts appear lower on the page, replaced by newer posts, until they eventually expire and are removed from the site.[35]

In the next section, I will examine some of the techniques authors use to construct these single-use identities. These techniques demonstrate how authors utilize descriptive practices seen in both newspaper personals and online profiles. Additionally, we will see ways in which authors utilize persistent information from the

[35] craigslist has a somewhat complicated algorithm for determining when a post is removed from the site that varies across geographical location, section, and amount of content. In their Frequently Asked Questions, craigslist claims that they expire posts to the personals section after seven days in more populous locations (e.g., Washington D.C., New York City) and after forty-five days elsewhere. However, I have observed that posts often persist after forty-five days in cases where there is little content in a particular section.

real world such as locations, and shared cultural understandings to bolster otherwise ephemeral descriptions.

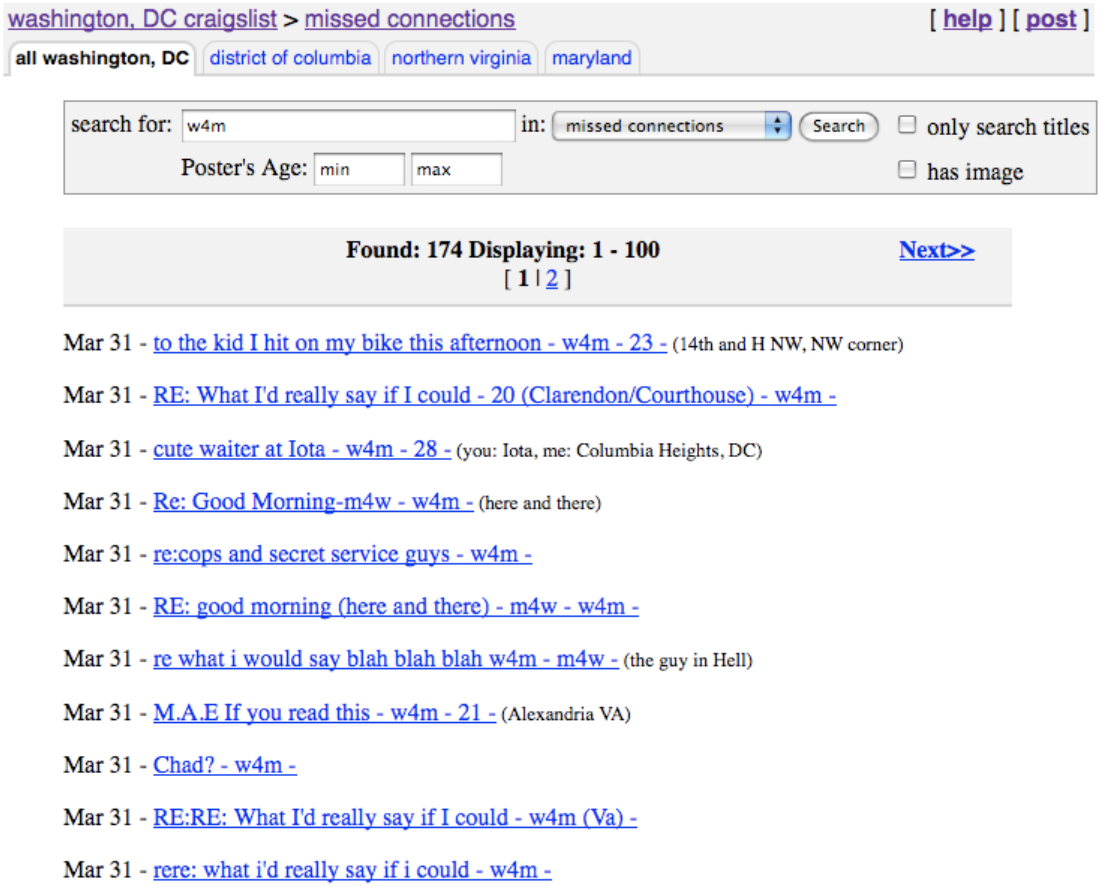


Figure 5. craigslist displays the posts in each section in reverse chronological order.

Authoring a Single-Use Identity

When writing a Missed Connection, authors identify interactions and participants using a variety of techniques including descriptive lists of personal characteristics, qualitative evaluations of the individuals, and interactions when they occurred. Some authors create single-use identities by providing short lists of categories that frequently include physical attributes and material objects such as clothing. When a 23-year-old in Washington D.C. posts “me: white, 5’9, grey t-shirt”, he is describing himself in physically descriptive terms. Authors also describe their targets with descriptive categories, such as one 46-year-old man posting into the m4w section of San Francisco for a “tall, blonde haired” woman. Many authors provide more specific descriptions, sometimes mixed with a bit of flattery. One 25-year-old man in New York City describes his target as wearing “skin tight black leather jeans” featuring a “perfect ass” which the author describes as “f-cking hot.”

Authors also use qualitative descriptions. “I am a very out going person,” says one 20-year-old woman from the San Francisco area after describing herself and a failed encounter. In her extensive post she quickly moves beyond a physical description to a qualitative form of identification: “I like to go out and go dancing, go to movies and I also like to just stay home and have a nice quit [sic] night, just cuddled next to the one I care for.” Descriptions such as these move beyond descriptive lists to include nuanced interpretations that qualify otherwise profile like descriptions.

Most posts include some interaction, but some skip descriptive and qualitative descriptions and rely on the interaction alone. “what i told you at the end of the night was the truth, i had to get home or else i would be in trouble!” posts a 21-year-old man about an interaction outside a Washington D.C. dance club. He skips a codified self-description, and instead attempts to reinforce the impression he made during the originating interaction. These interaction-only posts lend themselves to narrative, and while the most descriptively rich, also limit the author’s profile to the smallest deciphering audience. In a New York City post entitled “Hows your resume going”, a 48-year-old man simply writes: “Saw you today we spoke briefly just wondering how it went---.” Without including categories this author preserves his anonymity, but has possibly restricted the ways in which readers might find his post. This post may not appear when would-be readers use the craigslist search engine to search for pertinent physical attributes or other legible marker of identity.

Authors typically blend a number of these techniques, sometimes with a douse of creative flair. A Wall Street businessman who described himself as “damn good at anticipating the price of oil” wrote to a “Non-herpetic hipster.” He attempted to evoke a response by revealing an intimate conversation in which they “were talking about the practicalities of life and love, and divulged the shared fact of our Herpes-free bodies to one another, and how rare that made us in this crazy town.”

Non-Persistent Identities, Persistent Categories

Knowingly or otherwise, authors often include categories and contexts from the non-digital world when describing their interactions. While Missed Connections authors may selectively construct their single-use identities by including categories and descriptions, these identities are also understood relative to each other, and the the reader's understandings of the categories. craigslist's requirement of a geographical area and the option of specifying a secondary location, age, gender, and sexual orientation provide a large amount of information which readers can understand using relevant interpretive resources. Many of these divisions create social spaces within the Missed Connections space (particularly sexual orientation), but each also represents a persistent context that transcends any individual post.

As readers interpret these persistent categories, posts to Missed Connections bridge "real" and "digital" space. Take, for example, a New York Missed Connection written to a fellow tourist:

> We crossed paths several times while in New York City. Once at The Met, then the following day near NYU at Washington Square. And finally at a bar in Williamsburg at which point I came up to you and we spoke briefly- you introduced yourself as Emily sightseeing from Texas. I told you I was Chad sightseeing from LA.

Readers may choose to interpret these identities based on their knowledge of men from Los Angeles, women from Texas, tourists in New York City, or any of the places their paths crossed while visiting the Big Apple. As Castranova writes in his book *Synthetic Worlds*, "There is certainly a relationship between the synthetic world and the real one... People are crossing all the time... carrying their behavior assumptions and attitudes with them" (2006, p. 147). Authors are ostensibly seeking to bridge these spaces. The author's narrativized Missed Connection, after all, is the digital instantiation of a non-digital experience, but whose primary objective is to return to the real world.

Authors often bridge these spaces by including specific locations in their posts that are embedded with cultural meaning. One 23-year-old woman in the San Francisco area, for example, describes an encounter at "the drag king show at the White Horse on Wednesday night." This description places her and her target in a specific cultural context, as well allowing readers to infer characteristics about the author (namely, someone who would attend a drag king show).

Some identifying information is unavoidable. Because the craigslist site requires that authors post Missed Connections into a geographical space, readers can always make some basic geographical assumptions. Anonymity might suggest a separation from the restrictions of physical space, but unlike yesterday's MOOs, and

today’s virtual worlds, Missed Connections seek to re-present the real world. Indeed, even the Missed Connections system itself becomes a context against which authors must negotiate a relationship. Nowhere is this more apparent than in apologies for not establishing the desired connection in physical space and resorting to posting a Missed Connection. "I really think that this is a long shot, but it's worth a try", writes one 27-year-old man in Santa Clara about a Jamba Juice employee with "beautiful eyes and a great smile!" A woman in the Castro writing "to carly at the cafe" sums up the frustration of many authors nicely: "why didn't i get your number????"

Single-use identities created by anonymous users may inhabit craigslist, but it is neither an autonomous digital space nor fully representative of the real world. Instead, craigslist acts as digital proxy for the real world, and while single-use identities are non-persistent, they are made possible by a multitude of persistent understandings. While craigslist authors selectively present personal attributes, a reader's interpretation of the various categories communicated by the craigslist system cannot be avoided. By describing single-use identities in descriptive and categorical terms, and placing them into more persistent understandings, authors are able to anonymously perform identity while reworking their societal configuration.

Infrastructures of Identity

So far I have discussed the various ways in which authors identify themselves, their targets, and the ways in which user and system content inform these descriptions. What remains, then, is to account for the sources of these descriptions and categories in the first place. While Missed Connections may appear unstructured and populated with seemingly random posts, both authors and readers engage with a number of categories and classification systems understood through shared interpretive resources. Here we can consider two types of categorical understandings: global (those categories that exist across the system as a whole, often as encoded classification systems) and local (those categories that are more narrow in their use, often regionally produced and maintained).

While varying from place to place, I am arguing that global categories and classification systems hold Missed Connections together as a sociotechnical phenomenon due to their deployment within a community of users, and embeddedness into the craigslist system itself. The descriptive labels discussed above provide good examples. Unique physical characteristics such as “red hair” or “green dress” become effective terms with which readers can search for themselves in the craigslist search engine while reproducing biopolitical labels. Some of these have even become part of the craigslist software itself, as is the case of posts organized by gender and sexual orientation.

Missed Connections, however, are also structured by even more fundamental identities. Post after post, each Missed Connection presents an author who gazes, and a target that is gazed upon. As Laurier et al. (2003) explain in their analysis of I Saw You advertisements (Missed Connections' newspaper equivalent) each "*I* writes a message that will find its *you*" (p. 115). The I/You, Author/Target dyad is embedded into each post. For the single-use identity, this notion is intriguing. For Benveniste (1986), the self (his "I") is reliant on another individual (his "you") in relation to whom the self is form.

If global infrastructures provide a means by which to facilitate and ensure the sociotechnical function of the Missed Connections, smaller, local infrastructures, perform a similar function at the regional level. These infrastructures include specific locations, locale-based understandings, linguistic conventions, as well as relationships and reappropriations of global infrastructures like the craigslist software. To the extent that the craigslist system presents its structure linguistically, terms such as "m4m" represent shared understandings that can vary. The gay and lesbian population (ostensibly proxied by the "m4m" and "w4w" subsections of Missed Connections) naturally vary across geographical regions. One m4m post to the New York City region, for example, simply describes the location ("David Barton Gym" in "Chelsea"), a description of his target ("you were in a white tank and light blue nylon

pants") but seems to need no qualitative evaluation. In contrast, a similar encounter at a gym in St. Louis is quite different:

> I saw you at the gym a couple times this week in the late evening. We made eye contact by the water fountain... I saw you talking to a shorter guy with a shaved head one night last week....*I'm pretty sure he's gay but I'm not sure about you.* (emphasis added)

Each of these posts were made to an m4m section, but in the case of the St. Louis post, the author finds it necessary to qualify the assignment of a sexual orientation to the single-use identity that he produces for his target. The New York post, on the other hand, has no such misgivings. The m4m category, in conjunction with other local infrastructures such as "David Barton Gym" and "Chelsea", appears to do all the necessary sexual orientation work for the post to function, situating both author and target as members of New York's gay community.

This is not the case for the St. Louis post. Even in a section of Missed Connections designed to be authored and read by men sexually interested in men, this author hesitates in his assignment of a sexual identity. This pattern is indicative of smaller and/or more socially conservative regions, and may reveal a fragility of the gay community as an infrastructure in both St. Louis and its digital craigslist proxy.

Having utilized a multiplicity of interpretive resources, Missed Connections produces one of its own. While speaking about Missed Connections at a recent conference, a colleague of mine asked, “Do not those always happen on the subway?” Indeed, this cultural narrative of missed interpersonal opportunities shares a parallel track to Milgram’s phenomena of the “familiar stranger” (1977), and appears to be reaching a level of phenomenological ubiquity. As a system, craigslist provides a user interface to capture our Missed Connections; as a site, it tells us what they are.

Performing the Social on craigslist

In the last section, I examined the ways in which users of craigslist Missed Connections create posts by including single-use identities composed of identifying descriptions and contextualizing information. We also saw how these descriptions employ a variety of global and local infrastructures that facilitate the authoring and reading of these posts. It is clear that the prototypical Missed Connection, while digitally non-persistent, relies on a host of persistent infrastructures, not the least of which are those from the physical world that produced the experience.

Given the myriad ways in which individuals are defined, spaces are described, and social mis/connections are captured and re-presented, it is pertinent to assert Missed Connections as a type of social network site. Authors trying to digitally reclaim the potential of lusty looks from across a bar must erect a non-persistent social network

site, including all of the profiles, networks, and associations. Take, for example, a post describing an encounter that occurred in downtown Portland: A 27 year old author creates a profile for himself ("Me: olive complexion.. short black hair goatee and sideburns. I was wearing a grey thin type of jacket. and light blue jeans") and one for his target ("you were wearing a cap you had blue eyes and dirty blonde beard of some type. and wearing shorts."). He describes the context for the profiles ("Jefferson Street", "downtown", "heading towards Safeway") as well as other individuals in the social network ("A woman was walking with you."). Finally, he articulates a relationship ("You walked past me… I think that you look back at me but not sure.") and describes his objective ("I would like to run into [you] again if thats possible..").

It is true that Missed Connections does not meet boyd & Ellison's (2008) criterion for social network sites: with only non-persistent identities, users do not "articulate a list of other users,"[36] and therefore cannot "view and traverse their list of connections." However, users do author connections with other identities, and Missed Connections provide a perpetual stream of connections constantly traversed by its readers.

The motivations behind a post on Missed Connections also support my claim. As I explained in Chapter 3, "users are largely employing Facebook to learn more about people they meet offline" (Lampe et al., 2006) and social network sites enable

[36] For an account of ways in which craigslist posts "converse", see Brubaker (in press).

connections between “latent ties” -- individuals who share some offline connection who then find each other online (Haythornthwaite, 2005). The objectives of SNS users are strikingly similar to those of Missed Connections.

While specific identities are not persistently available, we have already discussed the many types of information that are. Across the entire craigslist site, this information structures the contents, creating identities made legible by their organization into defined categories and tasks. Readers traverse identities, not by their connections to each other, but by their connections to the infrastructures by which they are defined.

Of course users are a clever bunch, and Mr. Newmark suggested to me that they are quick to learn about the social textures that various infrastructures encourage. “I remember hearing a few times that women were sometimes visiting the roommate ads for guys to meet men… because they figured in roommate ads [that] guys do not lie...”, Newmark explained (Newmark, 2009b). “A roommate situation is immediately a somewhat intimate one, and it’s not in the guy’s interest to lie…”

More than the single-use identities, perhaps what is performed are the classifications and categories themselves. Without the means by which individual identities can persistent, we are left with deindividuated evaluations of persistent categories that together form an ephemeral, single-use identity. Authors deploy a

number of categories in their descriptions. The most generalizable of these may even be invisible to the authors, embedded into the craigslist system itself. The performance and simplicity of the craigslist system, from the optimized database and caching, to the user interface that notoriously does not change, do little to persist our identities and individual connections, while reinforcing the invisibility of any number of social infrastructures, not the least of which is the Missed Connections phenomenon. Anonymity may be an integral part of the craigslist community, but it is reliant on plethora of infrastructures that enable its existence.

If craigslist does not meet the criterion for a SNS, it produces an alternative network instead. Temporary virtual bodies are associated with the few materials ideas persisted by the craigslist system -- most notably, cultural identities related to geography and sexual orientation, as well as craigslist's information architecture that breaks content into sections or purposes, rather than identities. What results is a type of community level identity where profile attributes such as "activities," "favorite movies," and "relationship status" can now be filled with countless posts announcing yard sales, local film festivals, and the inevitable Missed Connection.

Chapter 5. Non/persisting the Social

Each day, countless digital identities are roused from their database records, instantiated on servers, and sent off to authorize bank transactions, contribute to market research, or just stay in touch with friends. This increasingly "human" side of computing is best demonstrated through social sites such as Facebook and craigslist Missed Connections, where users are ostensibly in control of the shape and behavior of their digital identities. However, when computers speak on our behalf, representing our identities in configurations that are constrained by profile systems, we must account for the impact of this technology.

Facebook and craigslist Missed Connections present two different outcomes to a sociotechnically produced digital identity. On Facebook, user profiles are structured around a central User ID that ensures a legible identity across various systems. Users develop robust identities inside of a structured profile system, utilizing a variety of categories and classification systems, many of which are decidedly embedded into the software infrastructure. The persistence afforded to these profiles by the Facebook database, and the structure the profile system demands, allows these digital identities to act as digital resources that can be utilized by other users and systems. The persistence of these profiles enables countless other systems to leverage the unique User ID for their own purposes, even contributing to the digital identity in an extensible manner.

Persistence, in conjunction with popular adoption, also allow a profile to enable a host of interpersonal functions. These include the finding of friends, establishing existing and past social networks, and a decreased overhead in social interactions. As users begin to interact in the system, these digital identities are negotiated in relationship to their digital contacts.

At a low level, craigslist Missed Connections resembles the type of identity work seen on Facebook. In their posts, users establish a kind of temporary social network, describing themselves and others, the relationships they share, and the social spaces in which those relationships existed. However, without long-term persistence, these single-use identities that exist in these posts must be reconstructed for each interpersonal exchange captured on the site. While increasing the overhead for participation, this allows users to perform multiple, disparate identities, for a variety of interpersonal exchanges, without the possibility of these identities becoming persistent. Because there is no profile system to structure these digital identities, users turn to sources of identification that persist beyond the lifespan of their post, often from their physical world. Few identity categories and classification systems have been encoded into the craigslist system, requiring that users author their own categories into these descriptions and rely on shared interpretive resources that vary both regionally and culturally.

Taking Identity to Task

There are a number of clear differences between these two systems and the digital identities they contain, not the least of which is the tasks to which they are assigned. While the social practice of presenting oneself is similar, these are different types of identities with different content, tasked with distinct purposes. Digital identities perform inside of working infrastructures, and as such the specificity of the work they are expected to perform is clearly seen in their sociotechnical composition.

Facebook and craigslist provide us with good templates for the circumstances under which a persistent versus single-use identity might be ideal. On Facebook, users benefit from producing general digital identities in anticipation of a high degree of reuse. Users and the profile system present detailed identities based on the classification systems the software is programmed to utilize. The database, meanwhile, persists this information, ready to endlessly reproduce its content. The same identity can be used when posting a note on any one of 200 million profile walls, or when RSVPing to one of the over 2.5 million social events organized through the site each month. These are activities that place a high requirement on identity, albeit not one that is task-specific.

The identities on Missed Connections are far more surgical. Users produce digital identities whose purpose is limited to a single task: detail specific individuals in a particular space and time. This may require less information, leaving the digital

identities better suited for fulfilling their assigned task. Single-use identities may be a preferred strategy when the required amount of identifying information for the task to be accomplished is small or negligible. While some Missed Connections are fairly long, when considering the larger craigslist site, a single-use identity comprised of "futon owner" may be detailed enough when the task is to find some unwanted furniture a new home.

Classifying Identity

RSVPs and futon sales are two tasks that exemplify how these digital identities, in relationship to working social infrastructures, facilitating a variety of interpersonal behavior. To gain access to the types of services we want, we must perform a legible identity, both technologically and socially. Any technological structure to the digital identities on each of these sites is produced by software developers to help facilitate the tasks the sites present, but this is also performed in the larger context of user objectives and the systems through which these objectives are communicated.

On Facebook, a site whose tasks center on the personal and interpersonal production of a digital identity, the profile system provides the identity categories and classification systems by which the identities are defined. Users must produce themselves within this structure, constructing their identities relative to the system's classification structures. However, in the absence of technologically imposed

structures, users turn to other sources to ensure the legibility of their identities. craigslist Missed Connections users situate their single-use identities relative to a variety of geographic, cultural, and contextual understandings.

Perpetuating Persistence

By now it should be clear that any claim that persistence as anything other than performed is spurious. The amount of work required to establish and operate identity infrastructures that can present identity in some stable or persistent configuration is awesome. If nothing else, this is evidenced by the difference between craigslist's 25 employees (Newmark, 2009b) and Facebook's more than 850 (Facebook, 2009a). Beyond employee rosters, however, we need to acknowledge the work performed by the Facebook servers, software, and the categories and classifications encoded into each. As a whole, Facebook performs persistence so invisibly that we might never consider an alternative.

This persistence, however, comes with its own expectations. Aside from a handful of curious investigators scattered across various web forums, few people seem to question the duration for which Facebook will actually persist user content. Despite my research, the only limit I could find on any user content was 90 days for the Facebook chat logs, available only to Facebook employees in the first place. By all appearances, the future of our identities on Facebook is ensured.

Still, it would be nice to get it in writing. Facebook has yet to have faced the wrath of large user populations who have found their content inexplicably missing, but if user reactions to the recent discovery that Twitter does not indefinitely persist all of their users' content is any indicator, then we can rest assured that the reaction would be intense. It is in breakdowns such as these that the assumptions we bring to our interactions with a technology or service (and in this case, our persistence) are reexamined.

Persistence, however, can also pose a threat to Facebook as an infrastructure as well. As I hinted earlier, there is a growing conversation about Facebook's inadequate classification system for friends. Users are left wondering how to continue the functionality of the system once "friends" no longer discriminates between any of the categories we might ascribe to our social contacts. *Wired* columnist Scott Brown (2008) sums this up nicely when he describes his online list of friends:

> A perusal of my Facebook Friend roster reveals that I, a medium-social individual of only middling lifetime popularity, have never lost a friend. They're all there: elementary school friends, high school friends, college friends, work friends, friends of friends, friends of ex-girlfriends… I've never

> lost touch with anyone, it seems. What I've lost is the right to lose touch. (Brown, 2008)

This may or may not indicate a move towards a ubiquitous identity archive, but proprietary approaches to capturing and persisting digital identity will have long-term implications. “The bottom line is that no storage medium is permanent… our emergent information infrastructure will require a continued maintenance effort to keep data accessible and usable as it passes from one storage medium to another and is analyzed by one generation of database technology to the next” (Bowker, 2005, pp. 115-116). Users should be concerned about loosing their pictures, wall posts, and other media, as well as the inability to export and persist this content. As it stands, our identities are stored in servers. Perhaps now it is important to revisit Dick Hardt’s notion of Identity 2.0, where identity is portable, and is organized and utilized based on the needs of the user, and not the limitations of non-interoperable databases and corporations more interested in our chocolate and Pokémon preferences then the information that matters to us. While infrastructurally we are overdue for such a change, Hardt’s declaration that “simple and open wins” might have inappropriately assumed that the type of collaborative social exchanges seen in open-source software culture can be reproduced on the population at large. “Simple” simply cannot encapsulate the complex reality of

identity in either its digital or non-digital form. The growing importance of these identities suggests that we may be due for a robust conversation about the ways in which our identities are structured and persisted. Perhaps then we can place our trust in the hopes that "open" is enough.

Reexamining Identity

I opened this thesis with a story about the recent debate regarding Facebook's terms of use and the ownership of user content. The visceral rage of Facebook users was perhaps a justified response to Facebook's claim that they owned any user content uploaded into the system. These complaints, however, are contingent on users engaging in the creation of identities outside of themselves on a website designed to maintain and persist those identities. This sociotechnical configuration exposes anxieties over where our identities reside, as well as the right to control these identities once they are maintained outside of our active self-presentation.

It is striking that amidst the entire conversation surrounding Facebook's claim to a perpetual content license that the topic of identity persistence did not arise. Instead, users were preoccupied with content control and ownership, topics that functionally require persistence in the first place. Persistence is so embedded in our identity infrastructures that we do not see it operating. It is presumed.

The issue of persistence, once exposed and interrogated, reveals a number of ways in which our operating definitions of identity are contingent on sameness through time. Much of this thinking is wrapped up in our understanding of identity as simultaneously stored in consciousness and the body. Historically this distinction was awkward in the digital domain. Social spaces online were populated with disembodied consciousnesses, performing half-composed identities seemingly in search of a body. Where users could, over time, develop a digital footprint that could approximate a physical presence, users lacked the "stabilizing anchor" granted by our persistent bodies. When we account for the infrastructures required to persist identity online, we can appreciate Poster's claim of "the modern Western concept of identity… [as] a remarkable cultural construction that, when the time dimension is considered, appears most unlikely" (Poster, 2006, p. 105).

Still, persisting identity appears to be exactly what we are doing. Facebook has designed a system that reinforces a centralized and essentialized view of identity, and then persists it in a database. Today, stability is granted with the assignment of a database ID. The world wide move that Bowker describes towards an ever expansive archive seems to have turned its attention towards us, demanding legible identities that can be captured and persisted. This is not an abstract notion. Even the type of name

assignment Scott described (see Chapter 2) continues today as a response to the database technologies.

China, in its attempts to modernize its database of over 1.3 billion citizens, has recently standardized on a database that cannot functionally support many of the names of China's inhabitants. "The bureau's computers… are programmed to read only 32,252 of the roughly 55,000 Chinese characters... The result is that… 60 million… Chinese with obscure characters in their names cannot get new [government identification] cards — unless they change their names to something more common" (LaFraniere, 2009).

Where legible identities are not state imposed, we seem happy to impose them ourselves. Our Facebook User ID allows for an endlessly extensible, albeit always classified, digital identity that remains legible and persistent. Extending beyond the technological is an increasing social pressure, as we saw earlier with Katrina. Not participating in one of these SNSs may produces a interpersonal overhead, while the outright rejection of these sites comes with the kind of costs to which Marcuse (1969) spoke when discussing the prospect of disengaging from society.

The risk, however, is more than interpersonal. The information in our databases is stored based on categories and classifications that meet our needs today. But what about tomorrow? Facebook's classification of sex and Male and Female not only

naturalizes these two categories, but also constrains the possibilities of new categories of sex in the future. Similarly, while Facebook asks users what sexes they are interested in sexually (ostensibly a proxy for sexual orientation), it was not too long ago that such a question would not have been asked: Men are always be sexually interested in women, and women in men.

Bowker (2005) sees this in terms much larger than identity:

> We aim to create (we call it ‘preserve,’ ‘conserve,’ 'maintain’) in the future a world whose history will be the history recorded in our databases. Exclusion from databases has drastic consequences for entities… you can only protect… that which can be named, that which can be shown to have been important in the past. What we are doing now – globally, willy-nilly—is setting the agenda for what the world will be based on… [and our understanding] of what the world has been (p. 127)

Even the brief, but diverse, approaches to identity theory presented in this thesis demonstrate the problem of persisting something as dynamic as identity in something as rigid as a database. As we have seen, identity is more than just an expression of our minds and our bodies; it is a complex component able to facilitate the tasks of working social infrastructures. Databasing something as fluid as identity might

represent an irrevocable violence. For Bowker, the risk of such a move is clear. We "risk losing both the past and future" (p. 110).

The task, then, is to recognize identity in all of its persistent or non-persistent forms and be attentive to the categories and classification systems by which these identities are instantiated. We have made little progress if we remain fixated on a single identity attached to a single body. We can move through the world, deploying multiple identities with their own levels of persistence, perfectly tailored to their tasks. If identity is its own infrastructure, while also being an inextricable component of others, then we need to move beyond identity as the singular, and consider the duplicitous opportunities our various identities afford.

We need to remember that the relationships we design in our databases are encoded into our software, our infrastructures, and become part of the material of our lives. We need to pay attention to the ways in which data is stored. We need to pay attention to the database relationships that structure our profiles. We need to be aware of the ways in which technology shapes our self-presentation. Identity is one infrastructure that must not be invisible.

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