

Interface as Context: Communicating Privacy Expectations through Design Aesthetics

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Abstract:

Every year more legal codes and policy initiatives concerned with the regulation of consumer privacy are created throughout the world, yet the amount of personal information collected and stored continues to increase. Much of this data comes directly from individuals through small “trivial and incremental” interactions that “minimize its ultimate effect” (Cohen 2000, 1397).

Privacy attitudes are neither static nor inflexible. When individuals perceive the potential benefits for information transactions outweigh potential risks, they voluntarily adjust their privacy decision-making to meet the demands of changing social contexts (Friedman, 1997; Murphy, 1964). Architecture itself creates social context and influences human behavior (Tuan, 1977).

The current work examines the effect of certain aesthetics in “architectures of vulnerability” that lead individuals to provide personal information in exchange for security, comfort, a sense of belonging and the ability to perform surveillance. Through the communication of communal aesthetics, online storefronts, social networking sites and other online venues create an image of a contextual paradigm that does not conform to the behaviors of the underlying digital architecture.

In this manner, interface design is used to create false social contexts and illusions of voluntariness that cause individuals to disclose more personal information than they normally would.

Introduction

In the late 20th and early 21st century, the intersection between privacy and new technologies has become one of the most prominent areas of controversy and debate in American politics and cultural discussions. Thousands of Web sites, magazines, television news segments and talk show call-in topics contain opinions and arguments about privacy each year. While a March 2004 search on Amazon.com for books containing the word “privacy” yielded a results page containing 45,751 items, a repeat search in March 2008 yielded 184,398 books (a more than four-fold increase).

Many of the popular books addressing privacy that have been released in recent years take an individual’s right to privacy for granted. Starting from the premise that every person has some inherent right to privacy, the author(s) typically launches into an over-generalized tirade, claiming that the American citizen’s rights to privacy are being “assaulted” and stripped away. The antagonists responsible for this “assault” are generally members of an elite group within the country (authors arguing on the right end of the spectrum often blame the government, while authors arguing from the left end of the political spectrum tend to blame private corporate firms).

To support their claims, the authors will typically present a tortured historical account about how the privacy enjoyed by our ancestors has been eroded by these governmental or corporate agencies. Their message is clear: “Wake up America, You are losing your freedom.”

Unfortunately, the term "privacy" can be used to mean different things in different contexts, and at times, different things to different people within the same context. People disagree not only about how much privacy our citizenry should have, but also how “privacy” should be defined and what activities and behaviors privacy should encompass.

This work is an attempt to demonstrate how interface architecture can be (and often is) used to exploit confusion among data consumers about what constitutes privacy, leading many to disclose their valuable data for little, if any, compensation. In order to grasp how privacy norms are manipulated in online environments, it will be necessary to examine what role contextual clues play in the information disclosure decisions of Internet users.

Rosen (2000) described privacy in terms of context, as decisions concerning information disclosure depend heavily on the circumstances, audience and perceived implications of the disclosure. Palen and Dourish (2003) argue that privacy in networked contexts is a negotiated process conditioned by the expectations and experiences of the disclosing users.

Dey, Abowd and Salber (2001) defined context as “any information that can be used to characterize the situation of entities (i.e., whether a person, place, or object) that are considered relevant to the interaction between a user and an application, including the user and the application themselves. Context is typically the location, identity, and state of the people, groups, and computational and physical objects” (106).

Grudin (2001) cites an earlier example of the effects of aggregation in the formation of a search engine for newsgroups called *Deja News* which changed the experience of newsgroup readers, as one put it “we were discovering things about our colleagues that we didn’t want to know” (281).

Privacy attitudes are neither static nor inflexible. When people see that the potential benefits for an information transaction outweigh the potential risks, they voluntarily adjust their privacy comfort levels (Friedman, 1997; Murphy, 1964). Stutzman (in press) surveyed 200 students and found that while students tend to view protecting their identity information online as important and cite concerns about the consequences of sharing information, they do not feel their online identity is well-protected nor do they plan to curb their future disclosure activities.

McMillan and Morrison (2006) used qualitative analysis to show that college students increasingly rely on Internet technology in each of four primary domains (self, family, real communities and virtual communities). But the relationships maintained in each of these domains can be quite different, and the information disclosure decisions would hardly be consistent between domains. Context would appear to be rather important to how students manage personal information.

Interface design is defined by Steven Johnson (1997) as producing “software that shapes the interaction between user and computer. The interface serves as a kind of translator, mediating between the two parties making one sensible to the other” (14). Manuel Castells (1996) describes the back-end of digital architecture as “unseen logic of

the meta-network, where value is produced, cultural codes are created and power is decided” (508). The purpose of this paper is to examine in what ways the back end and the front end experiences can communicate different contexts to users and therefore encourage different assumptions about what information disclosures are appropriate.

Privacy is about expectations. From its genesis in American culture, privacy advocates have tried to control the circumstances under which certain facts about themselves could be disclosed. However, a brief review of that genesis will demonstrate that the privacy of the early 20th century causes more confusion than clarification for Americans in the 21st century.

Considering the Roots of American Privacy

During the 1890s, America experienced a period of dramatic social and political development, forging the country into a nation. It is difficult to capture the spirit of this radical transformation looking back on it from modern day America. Americans tend to see history as a logical progression that results in our existence, and in our rearview mirrors, those that came before us tend to look remarkably like us at first glance. However, to assume that late 19th century Americans looked like their 20th century descendents is to destroy their individuality and rule out the potential paths they could have followed. We know the end result of the story, but forgetting that the people and events of the earlier period were not constrained by this knowledge challenges our base assumptions about what it means to be an American.

America looked very different in the latter 19th century than it does today. Though the American Civil War had established once and for all that national policy and culture would supercede local and state culture, the country remained, for most intents and purposes, a collection of loosely bound rural subcultures.

In 1879, novelist Henry James observed that the United States had

... [n]o State, in the European sense of the word, and indeed barely a specific national name. No sovereign, no court, no personal loyalty, no aristocracy, no church, no clergy, no army, no diplomatic service, no country gentlemen, no palaces, no castles, nor manors, nor old country-houses, nor parsonages, nor thatched cottages nor ivied ruins; no cathedrals, nor abbeys, nor little Norman churches; no great Universities nor public schools—no Oxford, nor Eton, nor

Harrow; no literature, no novels, no museums, no pictures, no political society, no sporting class—no Epsom nor Ascot!

In this commentary on America, James was pointing to the absence of socially binding institutions in the country. America had no state-established church, no noble class to provide continuity in political leadership and an almost non-existent federal military.

America, rather than being the dominant culture that it is in the world today, was little more than a loose collection of dozens of sub-cultures. Almost three decades removed from the American Civil War, a war that once and for all established that the authority of the federal government would supercede the authority of the state government, few Americans saw a dramatic change in the balance of cultural power. State governments typically governed with a light hand: most state legislatures met only once every two years, and when they did, they rarely addressed long-term problems faced by the state (Cherny 1997, 20). For the most part, local politics were still decided by local authority and what state politics that were resolved were done so in a manner that proved inconsistent with the decisions of other states in the Union. In the daily lives of most Americans, the federal government was a force that was periodically discussed, but rarely seen or felt.

From the 1868 to 1890, America's major political parties were balanced so closely that neither party could exert its will into law. Partisan politics froze into deadlock, and little changed politically in either the parties or the federal law itself. The stagnation that had followed the Civil War soon began to yield to a new age of commerce, technological innovation and the industrialization. It is in the midst of the shift from the American Victorian era (sometimes referred to as the Gilded Age) to the progressive era that a need for legal privacy was born.

In particular, the introduction of several key communication technologies changed the way individual Americans thought about themselves and their relationship to society. The telegraph, the telephone, improvements to mass printing processes and the development of snap photography would forever change American cultural boundaries. These innovations would serve to provide a previously unknown degree of access to information by members of society from all ranks and social classes.

The resulting professionalization of the American news media directly led to the need for an explicit legal construct of privacy located in the one institution that commanded the respect of all classes and groups: law.

The social and legal change in this era was driven by the fulfillment of the burgeoning industrialization of American industry. Though Americans were spread across the nation, the lengthening of railroad lines, the resulting reduction in postage rates and the introduction of the telegraph began to form a standard way of thinking about the emerging industrial age. In particular, the telegraph and eventually the telephone forced standards in terms of language and cultural assumptions, as distant communities were increasingly tied together through communication.

These new communication innovations coincided with several advances in transportation technology that gave the metropolitan development of American cities a corporate dimension, and cities soon became where the elite worked, but did not usually live (Barth 1980, 25). The new urban areas experienced a transformation of social life as the citizenry began to adjust to living and working more closely to one another than ever before. As Americans moved closer to one another, they also became more mobile. People began to travel to between work and the home, first moving between the rural and the urban and eventually moving between the urban and the suburban areas.

But the migration and resettlement of so many people did not occur without consequence. Prior to the urbanization trend, many crafts were passed down through families or guilds, but as people began to mass together, the freedom and close proximity of so many people quickly broke down the boundaries of exclusivity between many professions, and classes began to reorganize. Due to of the industrialization of the American economy, a rising middle class was formed as money markets tied together previously unrelated occupations and the professional workplace brought people together despite differences in background. Urban America was populated by communities of strangers, most of whom had been born or raised in other places (Nashaw 1985, 195).

As the urbanization trends continued, social status began to be measured not by who one's parents were, but by what clothing one wore and what products one consumed. The resulting increase in the importance of money and consumer expression increased the tensions between classes. As the links of paternalism were broken, the elite class was

increasingly seen as separate from the working man. As the distance between social classes increased, the poor began to portray the upper classes as crafty thieves who tried justified their wealth through manipulation and dishonesty.

The growing inequalities between the haves and the have-nots led to rioting over labor and work conditions (Barth 1980, 21). The result of these generalized attitudes led to the blending of society into economic classes: no longer were the boundaries for social interaction formed primarily upon the old loyalties to bloodlines or family standing. But increasingly, those of similar economic status began to identify with others with similar means. Within the emerging urban identity of the modern American came the distrust of members of other classes.

True to the progressive spirit of the age, a role for professional reporters was socially created to allow citizens to keep tabs on the changing culture (Schudson 1978, 65). People began to thirst for news from other places, and from this thirst was born the national awareness that Henry James had noted absent from the United States.

However, as the American urban population became more curious about other places, it also began to develop an interest in the goings on in a more localized sphere. The convergence of so many different groups into increasingly crowded spaces led to an increased level of surveillance between the social castes, and particularly on the part of the lower classes toward the increasingly mistrusted upper classes.

As in most societies, the elites of the upper classes generally possessed more economic and political power in early American history than did the lower classes. However, as the urbanization of the late 19th century drove people of similar class values together, two new forces began to redistribute power to the lower classes: the mass appeal of journalism and technological innovation.

It was during this period that journalism became an increasingly valued and esteemed occupation in urban America. Between 1870 and 1890, the value of newsgathering increased and as a result, the salaries of professional reporters doubled (Hofstadter 1955, 190-191). More and more journalists entered the profession with college degrees (and often in a scientific discipline), raising the level of writing and the standards of ethics in the industry as a whole.

As the professional ties and camaraderie drew individual reporters to survey each other's work, reporters began to compete with one another, each scrambling for the next big story. Reporters began to be publicly identifiable by their personalities, and their adventurous exploits captured the attention of an ever-widening audience (Schudson 1978, 69-70). To hold this attention, journalists began mixing cold, hard facts into an exciting narrative style that fed the public's taste for entertainment, and social investigation became the new newspaper genre. The new mandate of the professional journalist was to root out hypocrisy and corruption in society. As historian Gunther Barth wrote, the rise of the metropolitan press was largely brought about by a "shift in public values that replaced the minister with the editor as the conscience of the community ..." (Barth 1980, 59).

It is difficult to underplay the significance of mass media in the rise of standardization and cultural change. As media scholar Michael Schudson explained:

The media are a central institution - one might even claim *the* central institution - in the cultural construction of American nationhood and cityhoods and communityhoods across the land. The eighteenth-century newspapers were key instruments of commercial and, later, political integration. The nineteenth-century newspapers were key instruments of urbanization, providing not only the advertising forum that made new institutions like department stores possible, but also providing a community identity that held a city together when it was no longer a face-to-face community or even a "walking city" (Schudson 1995, 42-43).

Most urban areas supported several papers, with papers reaching to different demographics of people. As upper class-focused papers continued to cover the high-brow interests of their audience, more and more papers interested in reaching the common man were born. Enterprising publishers such as Joseph Pulitzer and William Randolph Hearst began to base their financial model of production on sales and advertising rather than political party contribution. As a result, many newspapers began to play down their party ties and began to think about providing balanced coverage of news in order to appeal to a larger audience (Cherney 1997, 133).

In order to attract attention, such papers often resorted to sensational headlines and stories. This "yellow journalism" of the mass papers targeted at the lower class audiences was derided by the upper classes as the promotion of the vulgar in public

discourse. As this trend continued, new sections of the paper were introduced to cover sports, fashion and comics. In addition, social commentary and gossip about prominent citizens crept into the papers of the lower classes, and the audience seemed to accept this with a gleeful empowerment they had not previously experienced.

Elite papers did not watch these changes in practice silently. A publishing war soon broke out, a war that pitted the high culture newspapers (such as the *New York Times*) against the common man's press. As the sensational papers (such as the Pulitzer's *World*) began to move away from a rational model of journalism and towards a sensational model, the change was met with revulsion by the upper classes. However, like so many moral conflicts in urban America during the 1890s, the conflicts over journalistic practice (including whether or not it was appropriate to publish "private" material in the newspaper) were a cover for the brewing class conflict (Schudson 1978, 118).

Into this environment, one major technological innovation led directly to the establishment of a privacy protection for upper class members: photography. With the introduction of flash powder to the process, the exposure time was only limited by the limitations of the mechanical hardware, and photographs could be taken in less than a single second. As a result, "snap shots" let a photographer take photographs without the permission or even without the knowledge of the subject.

The ability of photographs to capture action led to a novel interest in the activities of other people. As newspapers began to run photographs of prominent people in compromising positions, the public's desire for this style of content increased, and newspapers began to serve the entertainment appetite by emphasizing scandal with renewed vigor.

The Birth of the Legal Right to Be Left Alone

In 1890, two young lawyers from Boston decided to challenge the photographers' newly acquired abilities with the law. The construct of American privacy as a legal right first appeared in an 1890 *Harvard Law Review* article written by Samuel D. Warren and Louis D. Brandeis titled, "The Right to Privacy." This article did not attempt to establish

a right of privacy from either a constitutional justification or an argument of privacy's intrinsic value to all societies. Instead, its argument was that as American society had evolved, a "certain level of sophistication" in society has made it increasingly difficult for a person to retreat from external scrutiny:

Recent inventions and business methods call attention to the next step which must be taken for the protection of the person, and for securing to the individual, what Judge Cooley calls the right 'to be left alone.' Instantaneous photographs and newspaper enterprise have invaded the sacred precincts of private and domestic life; and numerous mechanical devices threaten to make good the prediction that "what is whispered in the closet shall be proclaimed from the housetops (Warren and Brandeis 1890, 195).

Warren and Brandeis cited the development of instant flash photography and numerous other mechanical devices as threats to personal space that required a legal restriction for their use. This argument led to their definition of the right to privacy simply as the "right to be left alone," a reference to Judge Thomas Cooley's statement concerning "personal immunity" (1888, 29) two years earlier. While elegant in its simplicity, this phrase was of little help in the legal arena, as determining to what extent someone should be left alone has varied almost as often as the circumstances under which the right is challenged by a competing right of access.

In essence, Warren and Brandeis formed their argument by stitching together English Common law and existing copyright law to form a right to withhold personal information from publication, which gave them the foundation for a right to privacy.

The authors claimed that a right of privacy is due a person out of respect for his or her standing, and claimed that the unauthorized disclosure of private facts (the only form of violation mentioned in their article) can corrupt a society by encouraging the nation to divert its attention away from important political and economic issues. The article also argued that each person possesses an "inviolable personality," an abstract collection of images, texts and facts that when assembled, form a person's identity.

This construct allowed the authors to argue that this "inviolable personality" should be controlled by the possessor, because the "common law secures to each

individual the right of determining, ordinarily, to what extent his thoughts, sentiments, and emotions shall be communicated to others”(198). In effect, they argued from the precedent of copyright law to make a person the owner of his or her image, with the implied control and disposal rights granted private property.

Eventually, this link between privacy and copyright law also implied that a citizen had the right to sell his or her image as a commodity. “Inviolable personality” is an abstract self made up of images, texts and facts, the collection of which can be sold as a commodity. In essence, Warren and Brandeis seem to have been arguing that people have copyright rights to themselves, which allowed the person to have their potential marketability of their “inviolable personality” damaged or “assaulted” (and thus in need of protection under tort law) when someone exposed them to public scrutiny without permission. Thus, this abstract self soon became a commodity in its own right.

For Warren and Brandeis, this protection of the abstract self was based on their desire to provide a response mechanism for upper class individuals trying to protect the sanctity of their family names and reputations. As technology increasingly empowered the lower classes in democratic fashion, the upper classes turned to law to reinforce the existing social boundaries. Brook Thomas framed “The Right to Privacy” as a representation of “elitist, bourgeois ideology” (Thomas 1992, 723) and Dean Prosser called it an attempt by the Boston elite to make law out of failing social custom (403).

In other words, Warren and Brandeis had front row seats for the cultural changes America experienced in the transition between the Victorian era, when social pressure and self-restraint governed behavior, and the progressive era, when law began to become an increasingly utilized control.

Because this right is not constitutionally supported, the right of privacy was first defined under tort law, and the cases that it is applied to have been exclusively cases of defending the privacy of one person or group against another person or group of persons. Tort law can vary from state to state and only advances as individual cases are brought before the U.S. Supreme Court for judgment.

Though the foundation of the privacy tort was effectively created in 1890, it was not until the 1960s that it became a useful tool, when legal scholar William Prosser argued that the previous privacy cases could be categorized into four distinct torts:

intrusion, private facts, false light and appropriation. These distinctions made it easier for a citizen to bring civil suit against another, and made the legal discourse surrounding privacy easier to navigate. Despite this contribution, it is difficult to overemphasize how influential Warren and Brandeis' article, born of class conflict, shaped the way Americans today think about privacy, publicity and intellectual property.

Considering Contemporary Privacy Trends

America has changed much since the beginning of the 20th Century. As the beginning of that century saw the conclusion of the transition from agrarian economy to industrial economy, the beginning of the current century saw America struggling with the transition from an industrial society to an information economy.

In 1962, Fritz Machlup measured information production, becoming one of the first to see information and knowledge as an economic resource. These observations led to discussions about the coming "Information society" and how business would change.

Society had also changed. After the end of World War II, the decline in family size and the decreasing age of independence led to the creation of a greater number of single dwellings. This increase in privacy led to a greater need for surveillance for the purposes of social control. As the embedded familial networks began to lose their influence, reputations ceased to be an effective measure of a person's trustworthiness, and Americans began to measure trust by requiring credentials and data about individuals (Nock 1993). Rather than the strength of one's standing in a community of known connections, trustworthiness began to be measured by degrees, credit scores and government records.

In this environment, the importance of data management was born. Gandy (1993) persuasively argued that access to one's data places allows individuals to be categorized by others in ways in which few would be comfortable. Because these categories can be used to predict market behavior, consumer information has become a commodity in the information economy.

Much of the recent privacy research has focused on invasions of secret spaces in the forms of surveillance cameras, telemarketing calls and identity theft. These topics sell

books because of their sensational nature, but ignore the structural changes occurring in society that make personal data vulnerable.

Information is routinely collected through networks for modification and analysis (Castells 1996, 32). Modern Americans leave data trails with almost every interaction in which we engage: secrecy simply is not possible in a world in which credit cards, cell phones and even toll roads are all used to track the movements of individuals (Bennet, Raab and Regan, 2003).

It is increasingly difficult for most of us to know what information is being collected, what it is being connected to, and who has access to it. When one considers the number of privacy disclosure agreements one signs in a given year (just a few common examples: medical disclosure forms, mortgage agreements, software agreements, credit card agreements, online bank access agreements, loans, cable and television service, etc.), it quickly becomes apparent that little about our behavior is not known by someone.

Americans are not wholly ignorant of these issues, but seem ill equipped to act in meaningful ways to protect their data. A recent study conducted by Jupiter Research (2002) revealed that while 70 percent of U.S. consumers worry that their privacy is at risk, they report doing little to protect their data. Of particular interest, the study found that only 40 percent of those polled read privacy statements before handing over personal information to Web sites (and only 30 percent of online consumers find Web site privacy statements easy to understand).

It is within interactions such as these that individuals and corporations establish surveillance. Lyon (1994) demonstrated how modern surveillance works through solicitations and seductions, encouraging individuals to “trigger” own inclusion in systems of surveillance (52).

Leathern (2002) argued that consumers should learn how to manage their data in ways that allowed them to capitalize on its exchange and get value from its use.

“Data” is the plural form of “datum,” which means “something given.” If data is a commodity in the information economy, why are so many giving away their inherent value for so little in return?

One of the chief causes of the disparity between attitudes of concern and seemingly irresponsible behavior is the influence of online interface design. By seeming

to create a particular aesthetic of intimacy, information architects can encourage individuals to disclose data in ways they might not choose were the implications of the actual network context in which they operated within were disclosed in a meaningful way.

Interface as Social Control

Interface design can be a form of social control. Wood (1974) defines social control as the “the use of power with the intention of influencing the behavior of others” (53). Berndt (1962) argued that social control covered “all the processes and procedures which regulate behavior, in that they exert pressure on persons and groups to conform to the norms” (11). When describing media exposure, Mathiesen (1997) described social control as exerted by “disciplining our consciousness.”

In physical space, architecture creates psychological and social effects (Tuan, 1977) including changing individual conduct (Katyal 2002). A sense of crowdedness can depend on intentionality and environment, such as whether one is at a rock concert or ball room dancing. (Tuan 1977, 61). Architecture frames intentions by connecting schema with opportunities for action, though not always consciously. Benjamin (1935) explained that architecture is experienced habitually and in a state of distraction, but perceived, nonetheless. Too much input can cause stress and inhibit functionality (Brown and Wisner, 1997).

It is not a stretch to imagine the effects digital architecture can have on online behavior. After all, Mok (1996, 46) wrote that “[i]nformation design makes information understandable by giving it a context. Information design builds new relationships between thoughts and places.”

In order to use the Web, almost every user must participate in the consensual hallucination: users believe they “visit” sites when in fact they are having online content delivered to their computer. The context of Web surfing in that metaphor is not the setting of one’s computer, but rather the setting on the screen.

Human interface with the people and institutions of the world through the mental schema they develop. They constantly filter stimuli (tuning out noise, ignoring visuals) by directing attention towards specific elements. To some degree, we all interpret the

world through mental representation. Gibson (1979) described this interpretation as the reading of affordances, the practice of interpreting the world as an offering of possible actions, communicated through structural design. According to Gibson, one's perception is influenced by environment, embodiment and perceived possible action.

Taking this into consideration, it becomes apparent that changes in context don't necessarily control actions so much as shape schema by directing attention towards particular features or visual cues. Contextual cues can cause cognition to be directed in a particular way, which can either encourage or discourage certain patterns behavior. Users are often not aware of the differences between interface design and back-end architecture. "As far as the customer is concerned, the interface is the product" (Raskin 2000, 5).

In his treatise on the aggregation of personal data through online databases, Solove (2004, 99) explained that current practices create "architectures of vulnerability," insecure structures that create opportunities for significant harm. Such Architectures encourage individuals to expose themselves to those who have greater access to online structures and thus more power. Currently, most of those who collect personal data do so out of the user's view. Most users do not know when their information is gathered, where it is stored or how it is used. Furthermore, most companies that gather information are often not accountable to consumers.

How companies utilize user data and how consumers react on the rare occasions they witness such use can be illustrated by tracking several recent controversies surrounding the social networking platform *Facebook*.

Considering *Facebook*

Facebook is an online social networking platform used primarily by university students to coordinate offline social relationships as well as learn more about the members of their community. Like most social networking sites, *Facebook* allows its users to frame and present their identities in the form of authored profiles. These profiles are then linked together as members add "friends" to their network, write messages to each other, join topical groups, share images and post content to weblogs and online

bulletin boards. Users typically spend about 20 minutes each day on the site and two-thirds of users log in at least once per day (Cassidy 2006).

Facebook was introduced in early 2004 by Mark Zuckerberg, a Harvard University student. A month later, the site expanded to 10 other schools. By June of 2004, Zuckerberg left school to run the site full-time (Alexander 2007).

A series of controversies involving the use and access to member data have demonstrated to users the potential for abuse when disclosing personal data online. These controversies, while frustrating for many involved, actually shed light on the abilities of many firms dealing in personal information who choose not to disclose their privacy practices.

In September 2006, *Facebook* members awoke to find their social network filtered through an aggregating tool that reported the latest actions of members to a member's personal network. Immediately, tens of thousands of users voiced their anger over the changes (Calore 2006), claiming that the aggregation of information was invasive. How members reacted to this change in the environment provides insight into how users perceive access and privacy within their social networks.

Facebook responded by posting a blog entry by Zuckerberg, explaining that none of the information portrayed in the feeds was unavailable before the aggregation. "Nothing you do is being broadcast; rather, it is being shared with people who care about what you do – your friends" (Zuckerberg 2006).

A survey of 180 undergraduate students conducted by the author soon after the controversy erupted reported that while more than 90% of respondents considered online data management to be important and more than 2/3 did not agree that *Facebook* protected their personal data, only one student reported leaving *Facebook* because of privacy concerns (Stevens 2007).

Another controversy erupted in November 2007, when *Facebook* launched Beacon, an aggregating advertisement utility that published users' activities on partner Web sites like *eBay*, *Fandango*, *Travelocity*, *Overstock* and *Blockbuster* (Story 2007). In protest, more than 50,000 *Facebook* users signed an online protest organized by *MoveOn.org* (Story and Stone 2007).

Finally, in February of 2008 a controversy erupted when many users discovered that should they ever decide to delete their *Facebook* account, their information would continue to be a permanent part of the network (Aspan 2008). An analysis of the site's policy agreement suggested that its use of data was legal in the U.S., though not in the European Union (Ramasastry 2008).

In each of these controversies, users expressed surprise and outrage at how their data was distributed to other users. Though they had personally supplied the data, the general lack of understanding of underlying database structures displayed by the more vocal critics indicated many users do not understand the implications of the distribution of data across networked environments.

What sets *Facebook* apart from the millions of online venues that collect personal data is not its information collection techniques. Presumably, most sites that collect data are equally capable of combining together information strings and the contextual threads that connect them together. What makes *Facebook* controversial is the transparency with which it operates. By allowing users to see their data reconfigured and redistributed into multiple contexts, the site causes distress by demonstrating information practices that have been enacted behind a veil of technology for years.

Facebook appears to offer one set of expectations (based on the interface aesthetic) for its users, while the output of the collected data demonstrates a radically different relationship between the user and the architecture. In most data transactions, users are not privy to the output of their data collection.

Privacy Presentation Through Interface Design

The design of a technical interface is implicitly political. Green (2001) explains that technological manifestations are symbols of “socially bound knowledge,” a phrase that she uses to illustrate how each manifestation represents a particular perspective of how a society believes a technology should be created and how its utility should be determined (6).

Because of the aesthetics used to construct most sites that collect personal information, most users have little or no awareness about how their data is treated within

online databases. Many interfaces do not make the access provided between software and personal information explicit.

Privacy is about context, and yet it appears that many (if not most) users have not developed a sense of spatial literacy necessary to make responsible decisions regarding their personal data. The interface that unlocks our ability to use digital technology keeps us from seeing what the technology actually is:

Put simply, the importance of interface design revolves around this apparent paradox: we live in a society that is increasingly shaped by events in cyberspace, and yet cyberspace remains, for all practical purposes, invisible, outside our perceptual grasp. Our only access to this parallel universe of zeros and ones runs through the conduit of the computer interface, which means that the most dynamic and innovative region of the modern world reveals itself through the anonymous middlemen of interface design. (Johnson 1997, 19).

Understanding the context of interaction as a sense of place instead of a tool set is important. Dourish (2001) pointed out that where we are located (or perceive we are located) determines what is considered appropriate, rather than the tool. One example he presented was the different behavior people engage in with a cell phone, depending on the setting of its use.

Online site aesthetics also create a sense of environment: how one drafts and email to a bank representative will be different than the text comprising a message to friends. Dourish used Suchman's (1987) attempt to use ethnomethodology (Garfinkel 1967) to bring a sociological understanding of interaction, ultimately arguing that "interaction is intimately connected with the settings in which it occurs" (19).

Dourish encapsulated this view in his term embodiment, which recognized that:

[t]he technical infrastructures that deliver information into our homes and work environments create barriers that separate one stream of information from another and make coordination difficult. Humans respect barriers, too, but they are barriers of different sorts; boundaries between public and private, between home and work, between personal time and the company's time, and so forth. These barriers are more or less flexible, subject to negotiation and adapted to the needs of the moment. However, they map poorly to the kinds of barriers that technological systems put into place (197).

Dourish's embodiment is about the establishment of meaning by considering the "place" of interaction (Harrison and Dourish 1996) and in particular by examining the

interpretations of interface presentation (Dourish and Button 1998).

What an action within a given interface represents to users is heavily influenced by the aesthetic used by the designer of the interface. Hutchins et al. (1986) identify the “gulf of interpretation” as the difficulty of interpreting the system’s state as a response to the user’s command. Dourish (2004) illustrated particular concerns about network security, as computers negotiate heterogeneous network protocols in the name of seamless access (and its corresponding aesthetic), which makes a user’s knowledge about the particular security protocols at any given moment impossible, since the networking decisions are made at the architecture level, hidden from the user’s view (12).

Conclusion

Surveillance of user data will continue to be a growing part of computer and network interactions. For many, surveillance is seen as a negative side effect, apparently not appearing intrusive enough to make us give up new technology services. But are front-end aesthetics reflective of back-end structures? If privacy is something to be surrendered for greater ease of use and access, are we presented with an articulate representation of what we’re being asked to give up?

Ishii and Ulmer (1997) have argued that Americans live in two worlds: the world of computation (“bits”) and the world of physical reality (“atoms”). Recognizing both as part of a user’s context, the designers of information collection interfaces bear a responsibility for communicating the implications of computation in terms of the effect of the physical reality. Whereas computer interactions have largely been described in the past in terms of objects (computers themselves), computing decisions now consist of a myriad of situations, all represented by aesthetics that imply context.

Trust between individuals in our society continues to decline (Paxton 2005). We are increasingly likely to interact with strangers without the information needed to assess reputation (Heimer 2001), primarily because we are part of large impersonal communities with highly mobile populations (Nock 1993, 11-12).

For most users, privacy is still considered in ways Goffman articulated in 1959: the manipulation of image in public space. Though that rendition of privacy is well protected by laws originating from the invasion of the mechanical technology in the

beginning of the industrial age, the aesthetics of reputation protection do little to protect one's data or prepare users to make educated decisions regarding their data in response to the introduction of digital technologies in the present age.

Warren and Brandeis struggled to control the public display of images, but the challenges facing most consumer of information is the obscure display of personal data between unknown data brokers. Thus, agents trade credential "gossip" about users that does not defame anyone's reputation, but nonetheless has no less real consequences for matters of authentication, trust and access.

Regulations pertaining to data practices do exist. The *Code of Fair Information Practices* ("Records, Computers, and the Rights of Citizens," 1972) is one such example, based on five noteworthy principles:

1. There must be no personal data record-keeping systems whose very existence is secret.
2. There must be a way for a person to find out what information about the person is in a record and how it is used.
3. There must be a way for a person to prevent information about the person that was obtained for one purpose from being used or made available for other purposes without the person's consent.
4. There must be a way for a person to correct or amend a record of identifiable information about the person.
5. Any organization creating, maintaining, using, or disseminating records of identifiable personal data must assure the reliability of the data for their intended use and must take precautions to prevent misuses of the data.

And yet, most users of the Internet report fears about data security but take no action to protect or account for how their data is being used. Because consumers do have legal protections, most sites create carefully worded disclosure statements about the use of data, but then present such disclosures in a way that makes it unlikely that a consumer will engage the disclosure statement in any meaningful way, hiding behind the aesthetic of intimacy that implies a context unrepresentative of the network structure of most tools.

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