

Faceted Id/entity: Managing representation in a digital world

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Abstract

In this thesis, i will articulate a theory of how and why individuals use context to convey only a facet of their identity in daily life. Through this multi-faceted identity lens, i will discuss current issues in digital identity management. In this discussion, i will focus on the impact that various design approaches have on an individual's (in)ability to maintain control of personal representation and identity information. I will take the stance that users should have the ability to control their digital identity for the same reasons that they seek to control their physical identity. From this perspective, i will create a set of design standards that will aid designers in developing human-centered technologies that allow for individual control over personal identity. Using these standards, i will design and construct an example identity management prototype – *Secure Id*. By offering security through identity-based knowledge, *Secure Id* will allow users to control how, when, and what aspects of their identity they share with whom in the digital world. The goal of *Secure Id* is to both convey the theoretical concepts of individual control over faceted identity as well as encourage users to reflect on the level of control they have over their information and representation.

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Thesis Readers

Henry Jenkins is the Ann Feder Friedlaender Professor of Humanities and the Chair of the Comparative Media Studies Program at MIT. His research spans across the full range of contemporary and historical popular culture, but focuses primarily on the ways that everyday citizens draw on media to make sense of their lives, express their identities, and form communities. His column, "Digital Renaissance," runs monthly in Technology Review.

Genevieve Bell is a senior researcher within Intel's Corporate Technology Group. She is a member of Peoples and Practices Research, an interdisciplinary team of social scientists, designers and developers responsible for finding new users, new uses, and new user paradigms for technology. Her works focuses on the intersections of emerging technologies and social practice as they occur within domestic and public spaces. Bell also conducts ethnographic research in domestic spaces around the world. She holds a PhD in cultural anthropology from Stanford University.

Introduction

For many people, individual identity is significantly faceted. Given a particular context, individuals convey an appropriate or desired aspect of the self, not necessarily sharing all aspects. For example, one facet of an individual is shown at work while another is conveyed in public social life. While context-driven faceting pervades physical interactions, the digital environment raises a new set of issues that designers must consider when developing applications for individuals. In order to create human-centered technology that respects and reflects individual differences, privacy, and personal control of information, designers must consider how people manage the information that comprises their identity and its representation.

To address these issues, designers must understand how individuals regulate and control their identity, both online and offline. By deconstructing identity management habits that are both fluid and unconscious in the physical world, we can begin to understand what level of control individuals desire in the digital world. When and why does an individual convey specific facets of hir¹ identity? How does one manage personal identity given a particular context? What are the mechanisms by which individuals convey elements of their identity? In short, 'identity desires' remain the same between the physical and digital worlds, but the ways to manage them online are quite different.

In this thesis, i will construct a theory of design that supports these identity desires. This theory is grounded in an understanding of how and why individuals manage their multi-faceted identity in physical and digital environments. I will use this conceptual framework to discuss current practices in digital identity management and discuss what technological changes are necessary in order to design environments that better suit the identity desires of individuals. I will design and build a sample prototype – *Secure Id* - for digital identity management that instantiates these new practices. *Secure Id* will offer users an alternative approach for controlling their faceted identity information online, allowing them to manage who has access to what information using an identity-based knowledge security scheme.

Background

Facets of identity

Although most individuals maintain a cohesive personal identity, it is also common for individuals to only convey particular facets of their identity during certain social interactions [22]. By consciously and unconsciously controlling who has access to what personal information in which contexts, people have devised an intricate mechanism for maintaining a faceted social identity. In this way, individuals are not maintaining multiple identities, but revealing and concealing aspects of their identity as appropriate or desired.

Individuals are motivated to facet their identity when they interact with people who have different values or interests. A series of factors in the last few centuries have contributed to the increasing likelihood of individuals interacting with people who are distinctly different. Often associated with modernity, cultural qualities such as the emergence of the city and the division of labor have helped build a society where the backgrounds of individuals in a shared community are diversified [13]. As there is a vast range in interests and values, individuals are frequently encouraged to relate using the facets of their identities that are

¹ Given the nature of my thesis, using gendered pronouns in most cases would be unhelpful. Currently, there is no consensus on which non-gendered pronouns are most acceptable. As such, for the purpose of my thesis, i have chosen to use a set that is the most comfortable and least derivative of traditional pronouns – s/he, hir, and himself (all of which combine the traditional male and female pronouns). [18][28]

similar and appropriate to their culture. In the digital world, the differences are only exacerbated. Additionally, this is magnified by the elimination of the body as the primary site for recognizing cultural similarities. Given an immense range of values and interests, people are likely to maintain multi-faceted identities to maintain privacy, manage access to personal information, develop context-dependent reputations, and control for context-appropriate behavior. In order to control such facets, individuals must have control over what and how they are conveying personal information.

There are a number of theories about how identity is managed in the physical world. Goffman's ideas about performance of identity offer a particularly useful conceptual framework for considering how people manage and convey different facets of their identity [14]. Additionally, as an individual interacts in a social environment, s/he uses fashion [9][12], body language, and linguistic style and content [2][3] to convey a variety of different information about hir identity. Beyond this, an individual is able to segregate particular facets by controlling access to hir social network [6][17] and only associating specific physical locations with particular aspects of hir identity. Although practically unconscious in the physical world, these behaviors allow the individual to construct and convey a particular aspect of identity, maintaining explicit control over who knows what. In order to allow for faceted identity in the digital world, designers must understand these physical mechanisms for identity control as well as the issues in relating them to the digital environment.

Identity in the digital realm

While simple mechanisms for digital identity projection do not exist, individuals are still motivated to present particular aspects of themselves. While the elimination of the body should free individuals from relying on physical characteristics, such as race and sex, this is not the case [5][20]. While these qualities still exist in the digital realm, individuals are challenged to adequately portray all the particular nuances that the body affords. While lacking an associated body, individuals are still motivated to maintain privacy, properly relate to social norms, and construct digital reputations.

Since traditional opportunities for social awareness are not afforded in the digital realm, new mechanisms have been developed. For example, while current technology is not available to 'see' who is out there in most forums, a simple search allows users to aggregate identity information in ways that are impossible in the physical world. As such, the digital world brings about new privacy and control concerns. In the physical world, i may reveal different aspects of myself in a bar and at a work luncheon, associating my name with both. If i were to do the same in two different digital spaces, Google might allow a stranger to bring up both conversations through a simple search using my name. While this aggregation is virtually impossible in the physical world, it is the digital norm. In order to minimize this aggregation, individuals are required to remain anonymous or manually develop separate personas associated with separate names.

While anonymity and multiple logins offer potential solutions, they also present a variety of social consequences, including an inability to build trust and reputation, often resulting in deception [8]. Out of concern over deceptive and destructive anonymity, and because of users' frustrations at having one login per website, major corporations are currently developing systems to help users unify their logins [1][19][25]. Although these might allow for increased social knowledge, such systems fail to recognize the socially beneficial reasons that individuals manage a multi-faceted identity offline and try to reproduce this behavior online.

Some facet unifications are harmless; others could lead to serious consequences. For example, when Amazon aggregates an individual's multiple facets to recommend products (i.e. the purchase of both

children's books and software engineering manuals), the result is just peculiar suggestions. More strikingly, the prospect of using visualizations [23] to combine one's reputation in a sadomasochism newsgroup with one's reputation in a newsgroup for Perl programmers could prove seriously problematic for the individual.

While working with Hyun-Yeul Lee on *Loom* (a visualization of individuals in Usenet), i realized that representing an individual in a digital world has serious design concerns. To represent an individual, should we only use posts from one newsgroup or one conversation? Since people evolve over time, should we limit the time frame of data used for a current representation? These visualization problems made us aware of the larger issues of identity management that designers need to address.

Design Issues

The core issue in designing an identity management tool is to determine the level in which users should be able to control facets of their identity. Some designers of digital environments believe that technology should allow us to return to a pre-industrial society with little separation between work, home and other facets of personal life. Conversely, others believe that identity is not just faceted, but fragmented, and that digital spaces should allow users to manage multiple identities, completely unassociated with one another. My philosophy is somewhere in between, drawing from how people currently manage their identity in the physical realm. I believe that technology should allow individuals to participate in a wider variety of communities and allow for more explicit control over personal identity, while still allowing for enough information for individuals to build reputations and trust. Based on my view that users want to and currently do manage access to their faceted life, i will emphasize design approaches that allow for individual control.

Because of different modes for communication and presentation, changes in social norms, and the technological ability for mass data collection, the digital world presents a variety of new issues for designers. As such, traditional mechanisms for identity control, such as altering one's fashion or physical location don't necessarily translate. Online, controlling and reading one's presentation requires more than understanding the subtexts of clothing and language. Also, since it's quite simple to switch between locations or contexts by switching between active windows, users can present multiple facets simultaneously or in quick succession. Although a common metaphor, recent attempts to aggregate a variety of spaces imply that different virtual spaces share one common location or context. Given these concerns, and my belief that maintaining multiple facets are beneficial to individuals, i will focus my theory of design on the following issues:

- *How can we aggregate some information while separating others?* Users should be able to maintain a consistent reputation for similar behaviors (i.e. the same reputation on half.com and Amazon). At the same time, they should be able to separate some information when desired (i.e. work versus home presentations). At the same time, users should be able to have one login, retain control over their information and yet offer differing information based on context (i.e. different email addresses).
- *How can users reveal more information based on knowledge?* Users use signs to convey information about subcultural participation, suggesting that those in the know can learn more. How can this layered information be conveyed digitally?
- *What level of control over representation should users have?* Systems use personal data to build recommendation systems and visualize who is online. What control should users have over their presentation, profile, or data?

- *How should users manage multiple facets?* If users can present themselves differently given different contexts, how explicit should this management be?
- *Should a user be able to see what they are conveying?* Since a great deal of information is conveyed inexplicitly (i.e. through archives), how can users see what they are revealing?
- *What information should a user be forced to reveal?* If one goal is to remove anonymity, what data should a user be required to reveal? Information that is written on the body (race/sex/current location) is revealed in the physical world, but contact information (name/address/credit) is not. What is appropriate to be revealed in the digital realm?

Example Prototype: *Secure Id*

Using the fundamental design issues discussed above, I will design and build a sample identity management prototype – *Secure Id* – that allows users to control access to their personal information. To do so, I will extend Fernanda Viegas' work on *Collections* [27], focusing on how individuals can share identity information through knowledge-based privacy schemes. *Secure Id* will allow users to control how different facets of their identity can be accessed during online interactions. To do so, users will maintain a visual collection of their identity information, including: personal demographics, interests, reputation data, presence information, social network data, and anything else that helps an individual build up his identity (i.e. photo collections, weblogs, etc.).

Secure Id will be a visual mock-up in Java, using the *Collections* interface as a backbone. Users will be able to move information into different arenas for explicit access (credit card data to “trusted e-commerce sites”, presence state to “friends”, etc.). On top of this explicit “buddy-list” layout, users can specify that anyone who knows a specific amount of information can get access to particular data. In other words, users can create identity privacy through knowledge, where the more knowledge that a person has, the more information will be revealed.

Privacy through knowledge refers to ways in which identity information is often revealed to those who are aware of what the signs symbolize, a technique frequently used to reveal subculture participation in physical fashion. For example, t-shirts with certain psychedelic imagery represent participation in goa/trance/rave culture, which carries a slew of other indicated interests. However, if the viewer doesn't recognize the association, s/he will not get the subtextual implications that the presenter is offering. Historically, members of sexual subcultures used these knowledge-based fashion codes to find one another in public, particularly in places and during periods when such behavior was outlawed or socially unacceptable². Although these codes are used in the physical world to reveal subculture participation, privacy through knowledge is also useful for people wishing to limit access to less explicit groups of people. For example, I might be willing to let anyone who knows where I'm currently vacationing gain access to the associated contact information, or allow anyone to access my website with family photos if they know the city in which my grandparents reside. By using knowledge to control access to identity information, users are able to maintain another level of control over their digital identity.

In this system, one's “name” is also a part of one's identity and is not automatically conveyed to everyone. As such, the user can maintain multiple nicknames and present each as appropriate. By using *Secure Id*, a user would be able to interact in multiple environments putting forward different (but

² Examples of fashion codes in the gay, lesbian & sadomasochism communities include pinky finger rings, color codes (including pink & rainbows), hanky codes, and bear imagery.

consistent) presentations from which s/he could build hir reputation without fearing aggregation. This ability is particularly desirable in environments where users want support without facing external repercussions (i.e. a newsgroup supporting individuals who are coming out as queer).

In addition to allowing knowledge-based access, the individual maintaining hir identity can see what s/he is revealing in each given environment. Through the visual interface, *Secure Id* will act as a personal portrait, or mirror, allowing the user to see who is currently getting access to what information. This self-awareness allows the user to properly adjust hir presentation for future interactions.

By relying on security through knowledge, the *Secure Id* mock-up will allow individuals to control who can gain access to elements of their identity. By giving the user control over access to personal information and awareness of presentation, *Secure Id* allows users to explore issues surrounding multi-faceted identity.

Evaluation

As *Secure Id* is a design prototype intended to convey some of the ideas presented in my design framework, it must be evaluated for its impact, design quality and conceptual strength. It will not be at a deployable stage appropriate for user tests. Instead, for evaluation of both the design and theoretical components of this thesis, i will rely on the critique of experts in this area. To receive such a critique, components of this thesis will be submitted to a selection of appropriate refereed conferences, journals, exhibitions and in-house critiques. At these critiques, i will ask others to evaluate the content of my ideas, as well as the effectiveness of *Secure Id* in encouraging individuals to reflect on their representation and ability to manage and secure their identity.

Already, two theoretical components of this thesis have been accepted to refereed conferences. A paper on the theoretical aspects of demographic identity was presented at "Sexualities, medias and technologies: theorizing old and new practices" in London on June 22, 2001. Including a discussion of issues in individual representation, a co-authored paper on *Loom* was accepted to, and will be presented at the "Hawai'i International Conference on Social Systems" during the week of January 7, 2002.

Resources

To complete this research, i will need access to a networked computer equipped with software necessary for the design and implementation of a Java or Flash program. Additionally, i will need access to libraries and other sites of theoretical research. Potentially, i will need to hire a UROP for one semester.

Schedule

Date	Work to be completed
10 December 2001	Thesis proposal due
28 February 2002	Design theory completed
31 March 2002	<i>Secure Id</i> prototype completed
10 May 2002	Thesis due

Deliverables

Upon the completion of this thesis, i will deliver a theoretical discussion of these ideas, including an analysis of current practices both on and offline and a prototype of an example identity management tool with security through knowledge, *Secure Id*. Additionally, i will deliver all code, documentation and conceptual notes in the form of an ever-evolving website located at:

<http://smg.media.mit.edu/people/danah/thesis/>

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