Boundary Regulation in Social Media

Fred Stutzman
H. John Heinz III College
Carnegie Mellon University
Pittsburgh, PA
fred@fredstutzman.com

Woodrow Hartzog
Cumberland School of Law
Samford University
Birmingham, AL
whartzog@samford.edu

ABSTRACT

The management of group context in socially mediating technologies is an important challenge for the design community. To better understand how users manage group context, we explored the practice of multiple profile management in social media. In doing so, we observed creative and opportunistic strategies for group context management. We found that multiple profile maintenance is motivated by four factors: privacy, identity, utility, and propriety. Drawing on these motives, we observe a continuum of boundary regulation behaviors: pseudonymity, practical obscurity, and transparent separation. Based on these findings, we encourage designers of group context management systems to more broadly consider motives and practices of group separations in social media. Group context management systems should be privacy-enhancing, but a singular focus on privacy overlooks a range of other group context management practices.

Author Keywords

Privacy, social media, qualitative research

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION

In recent years, social media has been adopted by increasingly diverse populations in the United States [21]. Once the domain of the characteristically young, technical elite, social media has achieved mass adoption. As participation in social media diversifies, one particular challenge that arises is the management of group context [19]. As a result of the growth of social media, it is now common for users to interact with a wide range of social groups, such as family members, coworkers, and long-lost contacts [20]. Users are challenged to balance the composition and volume of their disclosures to these wide-ranging groups of differing social composition. To address

the challenges of multiple group contexts, users of social media employ a range of strategies, including self-censorship, limitation of group access, or the utilization of technical controls such as privacy settings and access control lists [19, 29].

In the design community, the management of multiple groups in social media is often approached through a lens of privacy, where the intended outcome of a design intervention is an effective private segmentation of social media content by group [2, 5, 11, 13, 17, 28, 33]. Clearly, privacy is a motivation for the management of groups in social media, but as this research evidences, it is not the only motive. By starting with privacy, more functional or mundane needs for group separations may be overlooked in the design of social media group management systems. In this research, we draw on the experiences of individuals that have opportunistically created and employed strategies for group management in social media, identifying a range of motives and methods for the management of groups in social media.

As part of a study exploring the challenges of group management in social media, twenty individuals that maintained multiple profiles on a social media site were interviewed. This baseline criterion was established to recruit individuals that had, at a minimum, actively created segmentation within a social media site that produced differential group audiences. We did not assume motives or outcomes for this criterion. Using a mixture of inductive and deductive analysis, following a grounded approach [30], we explored participant motives for the creation of this explicit group separation. In addition to exploring the methods and motives of the group separations through multiple profile maintenance (MPM), we examined relevant social groups influencing the decision to employ MPM, we explored the outcomes of MPM, and we gauged participant self-evaluation of efficacy and burden of MPM.

Using MPM as an *ex ante* lens through which group separations in social media can be studied, we are unburdened by the assumption of a privacy motive. To this extent, our framing and analysis is guided by theories of boundary regulation, which locate the management of interpersonal disclosure within a framework of optimization [4, 27]. With this frame, we are able to explore how participant group regulation strategies most effectively

produce a desired level of disclosure, and how this desired level of disclosure is constructed in relation to the group, the context, and the affordance of the site.

In our analysis, we first identify four motives for group boundary regulation through MPM in social media. These are: privacy, identity, utility, and propriety, which are explicated in depth. We then observe a range of tactics, both explicit and implicit, employed by our interviewees to manage group boundaries in social media. The first tactic is the simple creation of more than one profile on a social media site, to have separate persona within a single site. The second tactic is the use of privacy settings to present a single persona within a single site differently to multiple audiences. The third tactic involves the segmentation of audiences between social media sites, or a systematic limiting of access to certain persona based on contextual setting. We then place these tactics on a continuum of boundary-regulating behaviors that can be addressed in both design and policy.

RELATED WORK

This study examines multiple profile maintenance in the larger context of social media, though a majority of the documented behavior occurred in social network sites. A social network site, as defined by boyd and Ellison [7], has three characteristic features. A social network site allows a user to 1) create a representational profile, 2) articulate their connections in the site, and 3) traverse those connections. As more people adopt social network sites, individuals may find that their list of "friends" covers a broader range of group contexts [e.g., 20, 21], leading to the potentially problematic merging of group contexts. As group contexts merge in social media, individuals must decide how they want to manage disclosure choices with respect to these multiple contexts.

Group Context in Social Network Sites

Researchers have identified a number of strategies individuals use to manage the co-occurrence of multiple social contexts in social network sites. Lampinen et al. [19] identified two meta-strategies for the management of multiple group contexts in a social network site. A user may adopt behavioral strategies, including *division of the platform, channel selection*, and *self-censorship*. Alternately, a user may adopt mental strategies, such as the *creation of inclusive identities*, *trusting*, and *being more responsible with content creation* [19, p. 287]. Skeels and Grudin [29], in a situated analysis of social network sites in the workplace, found that tensions exist in the management of multiple social group boundaries. Participants indicated *use of privacy settings*, *content control*, and a desire to *maintain multiple networks* as management strategies [19, pp. 100-101]. These tensions are manifest in a study by DiMicco and Millen [9], in which genres of social network profiles are identified in relation to disclosure in the professional context. Individuals with more business-centric profiles had less personally-engaged profiles than those the authors termed "*Reliving the college days.*"

Information disclosure in social network sites has been extensively studied, with studies often highlighting the disconnect between stated privacy goals and information sharing behavior [1, 3, 8]. Recent work indicates increased awareness of privacy implications of social network site use, as well as increased management of disclosure behaviors [18, 24, 31]. Strategies for management of disclosure include increased use of social network site privacy features, as well as editing of the profile to portray a more acceptable image [18]. These changes in privacy behavior have co-occurred with the growth of popularity of social network sites, a potential reaction to the merging of group contexts in the sites.

According to research by the Pew Internet and American Life Foundation, approximately 57% of adult social network site users have more than one social media profile. Of this group, 17% maintain more than one profile on a single site [20, p. 8]. Reasons for multiple profile management are both functional, with 24% of respondents of the Pew study indicating "*My friends use many different websites so I have more than one profile to stay in touch with them*" and privacy-enhancing, with 19% responding "*Some profiles are professional, others personal*" [20, p. 8]. We do not claim that multiple profile creation (on a single site) is a broad-based trend. Rather, we see this as an emergent phenomenon, whose population is an identifiable group that is likely dealing with the challenges of group context management.

Design Solutions for Group Context Management

The management of group context in socially mediating technologies is an important challenge for the design community [12]. As Farnham and Churchill [12, p. 359] note, a "problematic trend in social media design is the assumption that a single unified user identity is appropriate and sufficient." Technological affordance generally requires that individuals be identified and treated as a unified self, which does not map particularly well onto social practice. One needs only to look to the work of Goffman [15] to understand the essential role selective management of disclosure plays in everyday life: our presentations of self are not the same in all contexts, but are adaptive to circumstance.

In addition to inherent social challenges, the complexities of a unified presentation of self may adversely affect social media business practices. If individuals withdraw and restrict sharing due to the complexities of group context, the end result may be less content shared; as peer-produced content is the engine of social media, designers have clear incentives to address this problem. Indeed, the design community (broadly understood) has responded to this challenge, and put forth a range of potential solutions for the management of group context. We classify these solutions as *recommenders*, *awareness interfaces*, and *alternative structures*.

Recommenders are automated systems that predict group configurations based on graph-theoretic affiliation parameters [e.g., 2, 17, 35; more generally see 32]. These systems automatically predict and configure "friend lists" that foster differential sharing. Awareness interfaces are a class of privacy-enhancing technology that leverage explicit and implicit interaction to make a user aware of an audience [e.g., 10, 11, 22, 26, 33]. These systems play an important role in reducing both the dimensionality and complexity of disclosure rule configuration in a social network site. Finally, alternative structures represent a more general rethinking of the unified model of identity in social network sites [e.g., 5, 13, 16, 28].

The common trait that unifies these solutions is that they are designed for privacy enhancement. Clearly, privacy enhancement is a worthwhile goal, one that has broad benefit. However, privacy may not be the only goal of individuals managing context in social media, and systems of group context management that are designed for privacy may not completely address the needs of users. Consider an individual that wishes to keep family and co-workers separate on a social network site for the simple reason that they do not want to bore family members with posts about work. This situation, one that is not uncommon, is not motivated by privacy in a traditional sense, but out of propriety. As social media expands, and the populations that adopt social media diversify, we must consider the range of motivations for the management of context, realizing that a privacy-centric approach to design may improperly bias solutions.

Group Context Management as Boundary Regulation

To address the challenge of group context in social media, we employ Altman's framework of boundary regulation. This framework, which is increasingly applied in HCI to address the challenges of disclosure management in ubiquitous and mediated social environments, focuses on the "selective control of access to the self" [4, p. 24]. While boundary regulation is, at its essence, a privacy theory, its applicability in HCI is a function of its adaptability. By adapting our desired levels of disclosure to context, Altman argues that privacy, and disclosure regulation is an ongoing, bi-directional, optimizing process. As individuals move through contexts, they perceive stimuli. Based on the individual's goals in the context, boundaries of communication are opened or closed in response to the stimuli. Because regulation is an imprecise state, Altman specifies that individuals continually manage their boundaries with regards to optimizing their privacy or disclosure goals.

Palen and Dourish [25] apply Altman's boundary regulation theory to technologically-mediated social settings, concluding that "privacy management is a dynamic response to circumstance rather than a static enforcement of rules; that it is defined by a set of tensions between competing needs; and that technology can have many impacts, by way of disrupting boundaries, spanning them,

establishing new ones, etc." [25, p. 135]. As Nippert-Eng [23] demonstrates, increased socio-technical mediation challenges individuals to define and manage new boundaries; in this we see an extension of the concept of "privacy" beyond disclosure regulation in systems, to active separation or repression of different spheres of life. This socio-technical disclosure management requires ongoing awareness to social context and technological affordance.

Drawing on the theoretical perspective of privacy as boundary management specified by Altman [4], and extended by Palen and Dourish [25], this study explores the use of multiple profiles in social media as a boundary regulation practice. This particular practice was first documented by boyd [6] as the "mirror network" concept, in which the individual maintains two or more discrete identities on a single social media site. boyd describes mirror networks as a structural approach to privacy management, in which individuals create a highly sanitized version of the profile and connect these mirror profiles to each other. The linkage between these profiles creates the impression of authenticity.

Through the lens of Altman, multiple profiles represent an explicit boundary, through which communicative access is granted selectively to specific aspects of an individual's persona. Therefore, multiple profiles serve as locations for observable boundary regulation, which allow an applied analysis of Altman and colleagues' theories of privacy. Between the two (or more) profiles, individuals decide their goals for disclosure, regulate their communicants, and derive the optimizing process with regard to privacy and disclosure goals. With this theoretically specified process in mind, our goal is to explore the motivations and practice of MPM as a boundary regulation strategy. In doing so, we are able to explicate the range of motivations for such a practice, and provide evidence for the design of effective group context management technologies.

THE STUDY

This work was conducted as part of a study exploring the practice of group management in social media. In this study, we interviewed individuals that engaged in the maintenance of multiple profiles in social media, exploring their motives for, and the outcomes of, the use of multiple profile maintenance as an explicit group management strategy.

Methodology

For this study, we interviewed twenty individuals that engage in MPM. We solicited interviews through postings to listserves, blogs and social network sites. Second-stage referrals by participants also resulted in successful recruitment. Individuals were required to meet three criteria for participation in the study. First, we required that participants had, at one point, employed multiple profiles on a social media site. The mechanics of this behavior vary between sites, so we objectively required that participants had maintained more than one identity (i.e., login) on a single site. Notably, some sites, such as Facebook, forbid

the practice of MPM; we interviewed subjects that employed MPM on sites where the practice was disallowed, and on sites where the practice is permitted; we did not notice a substantive difference between participants based on MPM permissibility. Second, participants were required to have adopted MPM within the last two years. This criterion was established to increase incidental recall—the participant's recollection of the process regarding the creation and use of multiple profiles. Third, participants were required to be age 24 or older. We believe that the motivations for MPM vary based on stage in the life course, and we explicitly wanted to study the behavior of individuals later in the life course than a college population (studies of social media frequently focus on college populations). We acknowledge that our population size and research methodology does not allow generalization. Still, we purposefully recruited a diverse sample (Table 1) to maximize variation within our data.

Interviews were conducted in-person or via phone, depending on the participant's preference. The researchers jointly conducted all interviews, which lasted between fifty minutes and one hour and twenty minutes (the average was approximately one hour). The interviews were audio recorded; these recordings, in addition to the researchers' field notes and diagrams, comprise the analytic data set. On completion of the interviews, participants were compensated with a ten-dollar gift certificate. We approached the interviews and analysis from both an inductive and deductive standpoint [30]; our interview questions were derived from review of the literature and extant theoretical models of boundary regulation. The interviews were semi-structured, with participants being asked a standard block of questions developed by the researchers. In the interviews, participants were engaged around three core themes: social media self-efficacy, privacy attitudes, and experiences with boundary regulation. The majority of interviews were spent discussing the individual's perception of boundary regulation via MPM; future work may explore audience perceptions of the regulation process. Upon completion of the interviews, the researchers transcribed the recordings, and jointly conducted analysis.

The audio transcription and field notes were imported into Atlas.Ti 6.0, and codes were developed following both an inductive and deductive approach. Our theoretical orientation towards boundary regulation elicited deductive codes for context, separation techniques, and goals of the separation process. Our inductive coding of the transcripts led to the development of codes for audience type, motivation, and thematic types of boundary regulation in social media. In all cases, the codes were refined iteratively between the researchers, and axial coding was employed to identify the major themes of the project, following the grounded theory approach [14].

Identifier	Gender	Age	Profession
F1	F	49	Journalist
F2	F	45	Marketer
F3	F	26	Admissions Counselor
F4	F	32	Lawyer
F5	F	47	Systems Analyst
F6	F	28	Fundraising
F7	F	47	Business Analyst
F8	F	35	Librarian
F9	F	30	Marketing Director
F10	F	29	Office Manager
F11	F	37	University Administrator
F12	F	27	Logistics Expert
M1	M	34	Business Development
M2	M	39	Professor
M3	M	32	Non-profit Director
M4	M	36	Instructional Technologist
M5	M	43	IT Strategist
M6	M	35	Graphic Designer
M7	M	57	Writer
M8	M	29	Entertainer

Table 1. Study participants.

FINDINGS

In the paper, we report our findings in the following order. First, we introduce a typology of boundary regulation via multiple profile maintenance in social media derived from the interviews. We then explicate the typology, describing the interviewees' motivations and tactics for boundary regulation in social media through MPM. We extend this discussion with a reflection on how these findings inform both theory and our evolving understanding of disclosure regulation in social media. We conclude the research with a discussion of how boundary regulation can be supported in the design of group context management systems.

Typology of Boundary Regulation

Figure 1 provides a visual overview of the continuum of practices identified. We observed that individuals crafted a set of strategies, within their technological limits and the limits of the site, to accomplish their disclosure regulation goals through MPM. We place these strategies on a continuum that reflects the state of identification between profiles; this continuum ranges from hidden to public. By regulating boundaries by *site* and *linkage*, and adjusting the type and volume of content shared at each profile, individuals were able to effectively optimize disclosure through MPM. These goals are reflective of a range of motivations and tactics, where the individual bases disclosure goals on knowledge of context, response to stimuli, and goals. Notably, privacy features into some, but not all of the formulations we observed. By considering the range of motives and methods for group boundary regulation, designers of group management technologies may be able to more effectively address the needs of social media users.
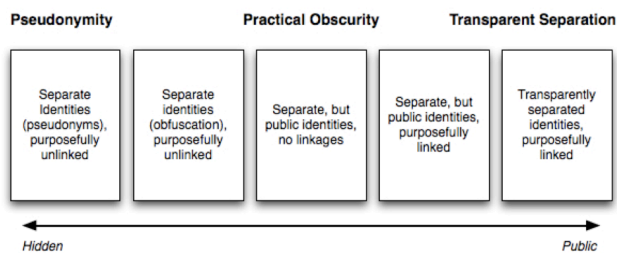
Figure 1. **Processes and components of boundary regulation through multiple profiles in social media.**

The most concealed profiles were *pseudonymous*. These profiles are fully disassociated from personally identifiable information, they are not linked to the individual's identity or other profiles on social media sites, and they rely exclusively on a pseudonym or obscure name variant for identification purposes. F1, a journalist, employed a pseudonymous account where she could "give a political opinion of something."

On the other end of the continuum, the least concealed profiles were *transparent separations* that made no attempts to obscure either the real identity of the user or any other profiles the user maintained. Often, transparent separations were employed for practical purposes, as the individual had no privacy motives to separate a subset of their profiles. F12, who maintains five Twitter accounts (in addition to other social media accounts), keeps one private, but the other four are transparently separated. She states that the four public accounts are "for everyone, and the only one that is private is my personal one."

The majority of individuals we interviewed employed *practical obscurity*. A profile in a state of practical obscurity is not completely concealed, but it is obscured to the point that the individual felt their "alt" profile could not be located without at least some substantial investment of time or resolve. Practical obscurity can be achieved through a number of means including modification of privacy settings, manipulation of search engines, pseudonymity, and technological separation. F5, a systems analyst, does not use privacy settings on her profile. Instead, she signs her profile with an obscure variant of her name. Only members of her in-group are given access to the name, which is the key referent to the profile; one could not find it by simply searching for her name. It is possible that out-group observers could discover her profile through other means, but F5 feels comfortable her profile is reasonably obscure.

The three states of our typology—pseudonymity, practical obscurity, and transparent separations—are placed on a continuum (Figure 1) as there are not clear-cut determinations between states. Rather, individuals flexibly managed the states of their profiles in response to communication and disclosure goals. To better understand this process that constitutes the typology, we explore the motivations and methods for boundary regulation via MPM.

Motives for Boundary Regulation

We were interested in why individuals engaged in MPM in social media. In our analysis of the creation of multiple profiles on a single social media site, we identified four primary motives. These were: privacy, identity, utility, and propriety (Table 2). In the following section we explore each motive separately. We preface this discussion by noting that these motives are not discrete: they often cross-cut, with many respondents indicating one or more motives in their choice to employ multiple profiles. These motives are not static: an individual's motivations for MPM evolve as time and circumstance change.

Motive One: Privacy

Unsurprisingly, the first motive for MPM was privacy. For the purpose of this paper, the term privacy covers the penumbra of interests effectuated by selective control of access to the self or temporary withdrawal from the public domain as described by Altman [4] and Westin [34]. Because this understanding of privacy implies a continuum of information regulation practices, we identified a number of sub-motivations. The primary sub-motivation was an individuals' desire to selectively control their own disclosures. F5, a systems analyst, identified MPM as a way to safeguard disclosure. In utilizing multiple profiles, F5 is able to socialize online with peers without fear of her behavior negatively affecting her professional life:

"I don't want it to be so divorced from who I am. It's not a total departure from what I think my spirit is or who I am. But it's something that's just a little safe, you know? I want to be able to be real on Facebook without having a lot of repercussions professionally..."

As the quote from F5 illustrates, MPM allows individuals to make disclosures to audiences they trust, without fear of repercussion. In our study, the fear of repercussion was primarily directed towards the individual's professional career. That is, individuals wished to make their disclosures private as to not negatively affect their careers. Other participants linked boundary regulation to physical and emotional safety sub-motives. F1, a journalist who maintains a gender-neutral second profile, was very conscious of the link between privacy and safety. By creating a secondary public persona devoid of gender identifiers, F1 is able to communicate with less fear of repercussions to physical and emotional safety:

"I guess as a woman you kind of want to be gender neutral because it used to be that you had to be careful going online, because if you were a woman you would be the subject of all kinds of either stalking or spamming or, just,

Motive	Outcome
Privacy	Selective withdrawal of access to the self or disclosure
Identity	Management of the self in eyes of multiple audiences
Utility	Optimizing disclosure for appropriate circumstances
Propriety	Normative conformity to prevailing customs and usages

Table 2. Motivations for MPM.

you know, its just not pleasant"

In another segment of the interview, F1 identified the value of an information sparse secondary profile as it does not leak information that can be exploited by malicious others, a discrete privacy-enhancing activity. F1 cites the example of individuals that share information about their real-time physical location:

"I knew some young kids who tweeted 'I'm going to lunch at so and so' and they came back to their apartment and they had been robbed... I assume they have an alarm system or an attack dog or neighbor checking out their house."

Another privacy-related sub-motivation for MPM was the creation of a space for disclosures participants considered confidential. F6, an academic fundraiser, stated that when she first created her personal profile:

"My friend told me when people apply for jobs [potential employers are] searching your MySpace and your Facebook to see what you're like. And I said 'Now, wow, I never thought about that.'"

In F6's case, we observe a withdrawal of information from the public sphere to private, inclusive spheres through MPM. In doing so, the participant is protected, and enabled to share with a known audience. M2, an educator, describes his communication with trusted friends on a private profile:

"More or less those were people to whom I was already presenting myself in other offline or online contexts. It really didn't feel as though I were taking a giant step in terms of self disclosure or awareness of myself as somebody in a social context. "

We found that the privacy benefits of maintaining at least one pseudonymous profile are twofold. Pseudonymity both conceals information and encourages disclosure. Functioning as a shield, pseudonymity protects a user's personally identifiable information such as name, date of birth, address or contact information. As a result of the disassociation with the primary identity, individuals can disclose with less reservation, knowing that the pseudonymous profile is "invisible" to search engine queries on the individual's name, for example. M4, an instructional technologist, describes the use of pseudonymity as a shield:

"I've got [a religious thoughts] page where I'm anonymous. My wife and I blog there. I don't want to be seen as 'Here's some spiritual guidance. Look to us for spiritual guidance.' Which is really not what we're trying to do. We don't want to be perceived as that. So we just don't say anything on that blog about who we are."

Motive Two: Identity Management
The second motive for MPM we identified was identity management, particularly the management of identity in the eyes of others. An example of an identity-based motive for MPM is to proactively create distinct professional and personal identities. F1, a journalist, created a separate professional identity using her real name:

"So that I could use that to be all about business, and to be all about not expressing an opinion on a news story or whatever else I would send out a link to. While I kept my [pseudonymous] profile, because that could be a place where I could have opinions, where I could express personal stuff."

Referring to her pseudonymous profile in the third-person, F1 stated that with a pseudonymous Twitter profile "you can be whatever you want." F2, a marketer, explored the tension between the boundaries in her personal and professional life, identifying context-appropriate spaces for socialization:

"On LinkedIn, I'm a little more professional... I tend to be little more professional with Facebook. I have realized my family is on there, and who I work with. I mean, it's personal, it's business, it's family. When I use Twitter for myself, I'm just me. There's no holds barred. Same with my blog. It's just me."

Notably, F2 employs a strategy of MPM but also considers boundary regulation through a set of by-site separations of context. It is important to note that while all participants employed MPM, MPM was just a part of their overall group boundary regulation strategy. M4, for example, describes how the dynamics of personal and professional identity separation can shift over time. Of Facebook, he states:

"I've had Facebook long before everyone else started using it of course. But I used it first as a professional networking thing, along with other instructional technologists. But then as soon as all my family and friends started getting on there, I started deleting all my professional networking people because it became more of a personal space and less of a professional space."

Consistent with the specification of Altman [4], the separation of identity appears to be an ongoing, optimizing process. Individuals that maintain separate spaces for separate parts of their identity must maintain an awareness of the social dynamics of the space. As the dynamics of the space change, individuals may re-craft or move identities to separate spaces. On the other hand, some individuals create identities in separated spaces that are future-proofed against context merging. Many individuals echoed the statement of F10, an educator and administrator:

"I am consciously aware of how I craft what I write. I don't use swear words… I was trying to keep that in the back of my head when posting."

Motive Three: Utility
The utility and effectiveness of MPM in social media appeared to draw individuals to this boundary regulation strategy. By maintaining division between profiles, participants were able to more effectively promote,

collaborate or coordinate their activities in social media. This motive is particularly notable as it is not driven by, or associated with, privacy needs. For example, F2, the marketer, used one of her profiles to promote a restaurant that serves as a meeting place for users of social media. F6, an academic fundraiser, uses one of her MySpace profiles to promote her employer, a school:

"I'm not associated with it… I'm not even a friend because it was set up just for alumni. Since I don't hold a degree it doesn't make sense for me to be a friend."

By having profiles separate from her personal profile, F6 is able to use Myspace and Facebook accounts as part of her job without reflecting on or clouding her personal identity. She also notes that: *"Being able to control MySpace really lets me target the audience."*

Multiple profiles allow individuals to cater to their audience through segmentation based on the nature and quantity of disclosure. F1 appreciated that one of her profiles allowed her to roam to any topic she chose, posting as often as she liked, whereas her other profile was reserved for specific posts related to journalism. She enjoyed not having to apologize for her off topic posts. She relayed the experience of a woman she was following on Twitter:

"Who I think was sending notes all about gardens and garden sharing. But when all the Iran stuff came up, she just went off on that for probably two weeks. And apologized to her followers about, you know 'I'm sorry. I normally tweet about this, but, right now, I want to tweet about that.'"

F12, a planning expert, uses multiple profiles to segment her volume of information disclosure:

"If somebody on my personal Twitter says 'oh my gosh you are inundating me with too many updates,' I will tell them that they can follow my public profile that I update substantially less."

Notably, F12 also uses the profiles to segment her information consumption by logging in to the different profiles to access different "streams" of information.

F12 was aware that some of her readers might "feel as if they have to read everything" she posts, and that she could shepherd those followers to the profile where she exercised more discretion regarding post frequency and topic:

"If it is an account I use for business [her real name account], I wanted to keep the message on point and I wanted to keep it not full of noise… So it was an effort and understanding that there was a noise level a lot of people didn't like on Twitter, and they won't follow you if you're tweeting 20 times a day about stuff they don't care about."

Finally, a number of interviewees were aware that the content they shared in one domain would not be useful in another. Family members may not care about work

business, and vice versa. M1, who works in travel business development, describes boundary regulation for utility:

"There are times where there's a tweet I want to put out, and I have to make the decision – do I want to put it out under [personal name] or [travel tweet account.] And a majority of what I do through [travel] source is [travel] related. But, if you were at a party and all you did was talk about what it was that you sell or whatever, people are going to get tired of hearing from you."

The attention to utility is consistent with theories of boundary regulation. Individuals are motivated to not overwhelm information streams (e.g., Altman's fourth proposition), as there is shared benefit in efficient communication channels. Furthermore, management with an eye towards utility is indicative of an optimizing process, in which communication is effectively managed between two domains, limiting the risk of inadvertent or unwelcome disclosure out of context.

Motive Four: Propriety
Finally, individuals reported regulating boundaries out of a sense of propriety, defined here as a normative conformity to prevailing customs and usages. We commonly observed the propriety motive discussed in relation to the individual's position in a power structure. For example, many individuals would befriend their boss on their professional profile, but not their personal profile out of a sense that it was not customary for employees to have such candid relationships with their superior. F6 describes this power dynamic:

"When I created the pages for the school, she was one of the first fans. She said 'I think this is great.' But there's just a professionalism there that's just we don't need to go there yet. If one of us were to leave the job, then sure. Maybe we would be friends. But I don't want her to see her personal status that says I've had a bad day. That kind of thing."

What is notable about F6's instance is that the boundaries were regulated with both participants mindful to the power dynamics. That is, individuals in power seemed to be aware that the connection to a personal profile represented an incursion into the personal lives of those they supervise. Of course, this was not the case in every instance. Individuals with personal and professional profiles reported several attempts where individuals in the business realm attempted to gain access to a personal profile. The most common reason for rebuffing these requests was a sense of propriety. Regarding disclosure on one of her profiles, F6 stated "now when my boss pops up and Facebook tells me 'we think you should be friends,' I don't say yes because she's my boss."

While the workplace or professional boundaries represent a common location for the management of power dynamics, it was not the only place participants described. Personal relationships, such as the relationships between parents and children, were discussed. F1 describes her experience with

the power dynamic between grown children and their parents:

"I have a 71 year old mom. She's on Twitter now. She follows me. So, that is probably more what keeps me in line than anything else. And it probably is the same kind of thing keeping people on Facebook in line from a younger point of view."

Social media enables the connection and re-connection of individuals across large temporal or geographic boundaries. F11, an administrator, describes the challenges of managing a personal contextual sphere, in which some friends are "present" and some friends are from a distant past.

"I know these people from fifth grade, and it seems like people I remember fondly but I was never friends with really, and it seems like it was easier to kind of have them, to keep track of them, for them to see what I was doing, than some of the people that I was actually closer to when I was a kid."

This point is important because it reveals the fluidity of context. Even within a defined space there is rich variation in one's communication and privacy goals. In social media, we are asked to regulate these boundaries of privacy across large groups, often times with little information from the potential communicants. In interpersonal communication, we can draw on cues in a conversation to adjust privacy boundaries. In social media, where hundreds of friends are listeners but not necessarily producers of content, the optimizing function of boundary regulation becomes difficult. MPM represents a blunt segmentation of communication boundaries, one that is optimizing, but lacking in information when compared to an interpersonal context. We envision a number of opportunities for social media sites to provide better tools for the management of context. To explore this opportunity, we turn next to the methods of boundary regulation in social media that we observed.

Methods of Boundary Regulation

Although our criteria for participation in the study was the maintenance of dual profiles on a single social media site, participants employed a wide range of methods to regulate boundaries of group disclosure. In our analysis, we identify two main forms of boundary regulation, broadly classified as *regulation by site* and *regulation by linkage*. Regulation by site refers to the range of technical boundary-setting behaviors that restrict a third party's access to a profile in a social media site. Regulation by linkage covers a range of social and technical practices that restrict linkage between persona. Notably, these methods of regulation are ad hoc, involving an interaction between social practice and technological affordance such as privacy settings.

Regulation by Site

We observed three discrete methods of boundary regulation by site in social media. Due to our participant selection criteria, the primary method of regulation was the creation of multiple profiles on the same service, most commonly Facebook and Twitter. These accounts were most often used for boundary regulation between different disclosure contexts of the individual's life. F9, a marketing director, describes this process:

"My personal Facebook profile, I have friends on there you know, I'm friends with now, that I went to high school with, people I've worked with in past jobs, a lot of relatives, you know, people that I know and interact with in real life. My work profile, it's bare bones."

Another form of boundary regulation observed was the use of a single account with highly segmented privacy controls. For example, an individual may accept friend requests from multiple social groups, but use privacy controls to restrict the disclosure of personal content to one social group. F11 describes the process of using Facebook's privacy list features to separate social groups within a single account:

"I think that with the more kind of customizable privacy stuff that I can generally accept, like I don't get requests from people that I don't know very much. And I've typically accepted requests from people that I don't know very well, but put them in a work-only list where they would not see my status updates or links."

Finally, we observed boundary regulation through "segmenting by site." This class of segmentation involves using different social media sites to engage with explicitly different audiences. F7, a business analyst, describes using multiple social media accounts to afford "segmentation by site:"

"I view them completely separate. Because there are people that I meet on other places on the internet that maybe I just visit once or twice, but I'll tell them I have a Myspace profile and this is it..,if you want to see more about me or something like that. I never give them my Facebook, ever. If it's not somebody that I personally know they don't get on Facebook."

In discussing these strategies, participants commonly focused on ways to keep context separate. For individuals with a "public face," such as marketing directors or sales persons, this was sometimes problematic. Regulation by site allowed powerful management of context and disclosure, but individuals would lose out on the benefit of their rich content creation in various settings. The next set of strategies we discuss, regulation by linkage, describe some of the ways that individuals provided selective pathways between their multiple identities.

Regulation by Linkage

We define a linkage as a connection between identities that cross an established boundary. The first form of linkage we identified is linkage between profiles. M1, who works in business development, has two public Twitter accounts: one for personal reasons, and one for his business. He describes his linkages between the two accounts:

"I decide what's appropriate for [my personal twitter] and what's appropriate for [my business twitter]. And then I stick with it. I may retweet occasionally, between the two, but not often. But I don't try and hide the fact that I'm one or the other… I just think some things are appropriate for the people who follow [my personal twitter] and some things are appropriate for the people who follow [my business twitter]."

In the preceding quote, we see that M1 has first regulated by site, creating two Twitter accounts that allow a separation of the personal and professional context. He regulates access between them through selective linking by "retweeting," which creates a link between the profiles. By creating this link, M1 provides a pathway between the two accounts.

Other participants went to lengths to prevent the discovery of linkages between sites. F9, the marketing manager who maintains a personal and professional Facebook account, makes sure there are no linkages between her two accounts. She complements this behavior with a second obfuscation strategy, using her maiden name on her personal Facebook account to ensure that professional contacts do not locate her personal account. She describes the linkages as follows, with awareness of risks related to linkage.

"I don't really…I do post about work but nothing specific and I try to keep the two very different because even though I only have one coworker on my Facebook, I know how these things can get back."

The first form of linkage, between profiles, is primarily focused on the connections between two digital representations of identity. In theory, two linked identities could be anonymous, providing no information about the person responsible for maintenance. Therefore, the second form of linkages we identified are the connections between the profile and the physical identity. These linkages are how the individual regulates access from the profile to the person. These linkages can be thought of as the chain of *data traces* that would connect a profile to an individual. F8, a librarian, manages her identity linkages by associating a robust set of social media accounts with each persona. F8 describes the process as follows:

"I have two different identities, I have a personal one. Facebook I think it's a little harder to do. I have one presence there but its geared towards my professional stuff, so its not, hardly…there's not much personal information there. But, I do have a separate Flickr account, I pay for pro for both of them. I have separate Twitter accounts, I have separate Myspace pages, I have separate blogs."

In the case of F8, each persona has a separate set of associated content-sharing profiles. This practice reduces the risk of accidental linkage crossing. For example, if each persona connected to the same Flickr account, it would not be difficult to deduce the linkage. However, in F8's case, each persona can publish robust content to a separate associated profile with little risk of linkage to the person.

CONCLUSION

In this research, we have demonstrated there are a variety of motives and strategies for regulating contextual boundaries of disclosure within social media. While group management systems are often designed to be privacy-enhancing, we show that utility, propriety, and identity management are additional salient motivators for boundary regulation. In a socio-technical system, the granting or restriction of boundary access is often concomitant with information exchange. Individuals expressed a desire to regulate boundaries with an explicit goal of regulating information volume and topicality. Participants also indicated a concern for not overwhelming audience information streams as motivation for boundary regulation. With regards to the large amount of information produced in social media sites, this finding is a particularly interesting elaboration of the desire to optimize communication effectiveness.

This study utilized qualitative methodology to develop a better understanding of the motives and methods of boundary regulation via multiple profile maintenance. We found that multiple profile maintenance is motivated by four factors: privacy, identity, utility, and propriety. Drawing on these motives, we observe a continuum of boundary regulation behaviors—pseudonymity, practical obscurity, and transparent separation—that emerge from multiple profile maintenance. Based on these findings, we encourage designers to consider these motives and methods when designing group context management technologies in social media. While these technologies should be privacy-enhancing, a singular focus on privacy misses a range of other potentially useful applications of group boundary regulation.

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