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Social Networks 2.0

Nancy K. Baym

"Web 2.0" is supposed to represent a new era of online communication in which users generate the content and fortunes may be made on a "dot.com" after all (Scholz, 2008). Of all the platforms taken as examples of Web 2.0, none seems to generate as much attention as social networking sites (SNSs), the domain on which this chapter will focus. MySpace has launched numerous national and regional efforts to legislate online interaction, people have been jailed for creating fake Facebook profiles, and pundits have worried that all of these sites have led the masses to forget the true meaning of "friend."

One might begin by questioning how much of Web 2.0 and online social networking is really new. As someone who has been studying online interactions since the early 1990s, I shake my head at the idea that the contemporary Internet is "user generated" while that which preceded it is not. The very phrase "user generated" only makes sense when there is an alternative, in this case something like "professionally generated for profit." Until 1994, this alternative did not exist. On an Internet with no World Wide Web, sponsored by the United States government, all of the content was generated by the people, for the people. We only call Web 2.0 "user generated" because a well-established class of professional content providers now dominates the Internet.

As this suggests, one thing that is new about Web 2.0 is that the domains in which people generate their content are now often for-profit enterprises. MySpace, YouTube, and Facebook are the best-known exemplars but are by no means unique. In the early 1990s when users created newsgroups and mailing lists in order to share content, they were the sole beneficiaries. Today when people create content, they continue to benefit, but so too do corporations such as Fox Interactive, Google, and the (as of this writing) privately held Facebook. I will return to this point toward the end of the chapter. For now, let us just note that successful SNS entrepreneurs are doing very well. Facebook sold 1.6 percent of their stock to Microsoft in 2007 for $240 million, suggesting a total valuation of $15 billion. In 2008 the popular European network Bebo was sold to America Online for

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$850 million. When Last.fm was purchased in its entirety in 2007 for a comparatively paltry $280 million, it was more than enough to make instant multimillionaires of its three founders.

The ability of users to create content may not be new, but there are new phenomena afoot in SNSs. This chapter strives to identify what is novel in social networking online and to situate these sites in the larger context of the Internet's social history, as well as the history of human relationships preceding that first fateful log-on of 1969 (Hafner, 1998). After defining SNSs and briefly discussing their history, I turn to the three major themes that have characterized social research about the Internet since its beginnings: identity, relationships, and community (Baym, 2002; Silver, 2000a). The chapter closes with a brief discussion of the areas most ripe for future research.

Social Network Sites

The concept of a social network emerged in sociology in the 1950s, filling a middle ground between individuals and communities. Rather than describing an entirely new social formation, it represented a new way of looking at social structures. Allan (2006) grounds the study of social networks in early work by Barnes (1954) and Batt (1957). He points in particular to Wellman's work on "personal communities" throughout the last several decades. Wellman (e.g. 1988; Wellman et al., 2003) argues that a crucial social transformation of late modernism is a shift away from tightly bounded communities toward increasing "networked individualism" in which each person sits at the center of his or her own personal community. The concept replaces neither community nor individual, but brings a cultural shift enabled and accelerated by the Internet and related technologies to the fore.

Starting with any individual, one can identify a social network by expanding outwards to include that person's acquaintances and the interconnections among those acquaintances. The specific criteria by which social network scholars consider links worthy of inclusion in the network may vary from close ties to everyone a person knows in any capacity (Allan, 2006), a definitional quandary reflected in the decisions SNS users must make about which personal connections they will create through a site. To the extent that members of different people's social networks overlap and are internally organized, they may constitute groups, but social networks are egocentric and no two individuals will have identical social networks.

On the Internet, SNSs fill a middle ground between homepages and blogs in which the individual is primary, and online communities in which the group is primary. boyd and Ellison (2007) defined SNSs as "web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system" (n.p.). It is not always clear what exactly should count as an SNS.

Some respondents to a survey I ran on Last.fm, a site which meets all of boyd's and Ellison's criteria said they didn't consider the site an SNS, and their answers to the question of which other SNSs they use indicated definitional boundaries that are fuzzy at best. YouTube and Twitter meet the criteria outlined by boyd and Ellison, yet most people use the former only as a video-viewing site and, with only 140 character updates as content, it's not clear that the latter is comparable to other SNSs.

Boyd and Ellison (2007) use the term "social *network* site" rather than "social *networking* site," in order to emphasize that these sites are more often used to replicate connections that exist offline than to build new ones. Their choice of noun over verb positions Web 2.0 as an extension of pre-existing social phenomena rather than as a transformation. Boyd and Ellison (2007) locate the origins of SNSs with the advent of SixDegrees.com in 1997, followed by AsianAvenue, BlackPlanet and MiGente, then LiveJournal and Cyworld (1999) and Lunarstorm (2000), all prior to the supposed advent of "Web 2.0." MySpace began in 2003, and Facebook in 2005.

Despite the similarities among sites, boyd and Ellison (2007) note that "the nature and nomenclature of these connections may vary from site to site" (n.p.), and that despite some technologically consistent features, SNSs are diverse (see also Hargittai, 2007). Most share profiles that include space for avatars (often, but by no means only, photographs of oneself), listings of personal information and interests, and listings of friends that, depending on the system's infrastructure may be mutual (as in Facebook and MySpace) or, less often, one-way (as on Twitter and LiveJournal). As Golder, Wilkinson, and Huberman (2007) say, "these links between people constitute the 'network' part of the social network, and enable sharing with friends" (p. 43).

Sites vary in their foci, technological affordances, regions in which they are most used, uses to which they are put, and social contexts that emerge through them. Consider, for instance, the contrasts between Last.fm and Facebook. Last.fm, based in England, is focused on music. Social networking is subsidiary to their primary goal of enabling music discovery. In contrast, Facebook, based in California, originated as a means to connect students within the same universities. Their mission is to support and create new personal relationships. Their music dimension remains marginal to their core focus. Facebook is enormously popular in the US and is rapidly gaining ground internationally. Last.fm is very popular in the UK and Europe, but (as of this writing) relatively unknown in the US (despite having been acquired by the American company CBS Corp).

The two sites differ in their affordances. Neither allows much flexibility in page design, as MySpace and LiveJournal do, but Facebook allows users more breadth in shaping their profile. Facebook users can add applications (including several from Last.fm) in order to shape their self-presentation, play games with their friends, and promote causes they find important. They can maintain photo albums, import blog posts, share items and videos from elsewhere on the net. Last.fm users can do very few of these things, but they can display the music they listen to in

real time, create radio streams for others to hear, tag music and bands, author band wiki entries, and see personalized charts of their own and others' listening habits, which cannot be done on Facebook. Both sites allow users to create groups, and both recommend people with whom one might connect – Facebook by calculating the number of shared friends, Last.fm by calculating the number of shared listens. Not surprisingly, the two sites result in differing social contexts. While Facebook is seen as a space in which to socialize playfully with peers, Last.fm is all and only about music – one may socialize, but it's most likely going to be about music. Some of its users do not use its social features, friending no one, yet still have satisfying interaction with the site, a situation that would be unimaginable on Facebook.

Looking more broadly at the current array of SNSs available, one sees far more diversity than these two sites indicate. One point of variation is intended user population. Many are designed for very specific audiences, a tiny sampling of which might include BlackPlanet for African Americans, Schmooze for Jewish people, Jake for gay professional men, Ravelry for knitting enthusiasts, FanNation for sports fans, Vinorati for wine buffs, or Eons for aging baby boomers.

SNSs also vary considerably in their use across global regions. A map put together by French newspaper *Le Monde* shows national differences in SNS usage – MySpace and Facebook dominate North America, Orkut dominates Latin America with Hi5 coming in second, Bebo is most popular in Europe, Friendster in Indonesia, and LiveJournal in Russia. In addition to these international networks, smaller countries have their own regional sites such as LunarStorm in Sweden or Arto in Denmark. CyWorld is immensely successful in South Korea (*Le Monde*, 2008).

One lesson to take from the range of SNSs on offer and the variation in their features and geographical uptake is that "researchers should tread lightly when generalizing from studies about the use of one SNS to the use of another such service" (Hargittai, 2007, n.p.). Comparative work exploring the differences among sites and the social consequences of those variations will ultimately prove more valuable than efforts to focus on single sites or reduce the phenomena to a single field with uniform outcomes.

Identity

Authenticity

Since SNSs are built around individual profiles, questions of identity are germane to their analysis and have been the subject of most research. Internet researchers have a longstanding fascination with identity. Early online systems were text only, meaning that people who did not already know one another were often anonymous. This was seen as a danger, leading to increased "flaming" (Lea, O'Shea, & Spears, 1992) and worse, but also as an opportunity for identity play (O'Brien; 1999; Stone, 1995; Turkle, 1995). Despite the early focus on anonymity and

deception, many early researchers (e.g. Baym, 1993; Curtis, 1997; Wellman, 1997) argued that identity play and deception were less common than identities closely tied to those claimed offline. In a study of personal homepages with particular relevance for studies of SNSs, Wynn and Katz (1998) showed that people usually contextualize themselves within offline communities by creating links to the sites of organizations with which they are associated.

As reflected in the choice of Milgrim's (1967) term "six degrees" for the first site, SNSs are grounded in the premise that both online and offline people would rather connect with those who share acquaintances. This can create trust and, at least in the abstract, render the dangers – and opportunities – of online anonymity passé (Donath & boyd, 2004). Yet this has not deterred public anxiety about the connections formed through SNSs. To the contrary, fears about deception and child predation have dominated the public discourse about SNSs in the United States and many other countries. The fear of technologically enabled dangerous liaisons is as old as communication technologies (Marvin, 1988; Standage, 1998). Though it is wise to beware of the limits of trust – both online and off – our understanding of SNSs is not improved by succumbing to the moral panic surrounding the authenticity of online identities (Marwick, 2008).

Audience and privacy

Another concern often tied to SNSs that is as old as communication technologies is privacy. Marvin (1988) recounts worries that callers could see into one's home via telephone lines in the early days of that technology. Standage (1998) tells of people fearing that messages sent across telegraph would be overheard by those beneath the wires. Identity is an inherently social concept. It makes no sense to claim an identity for no one; identities are performed for and perceived by others, and identities demand flexibility as different audiences require different aspects of one's self to be emphasized (Goffman, 1959). A crucial issue is thus audience. For whom is an identity created? By whom is it perceived? From whom might one want it hidden?

As Ellison, Steinfield, and Lampe (2007) argue, "popular press coverage has focused almost exclusively on the negative repercussions of Facebook use," mostly regarding "misalignments between users' perceptions about the audience for their profile and the actual audience" (n.p.). SNSs vary in the extent to which they allow users to control the accessibility of their profiles to search engines and other users. Orkut and Last.fm do not allow users to hide their profiles. On Orkut, not only are profiles visible to other users, but the chain of connection between any profile and a registered viewer is also displayed (Fragoso, 2006). In its default settings, Facebook makes all profiles visible to all members of a user's "network" (originally their university), though not to people outside the network or with no Facebook account. In a large university or city network, this can make a profile visible to tens of thousands of people if not more (my university network has nearly 40,000 members, city networks can have many times that). Default privacy

settings are important since users rarely change them (Gross & Acquisti, 2005). In their study of Facebook, Gross and Acquisti (2005) found that users revealed a good deal of personal data and rarely limited access to that information.

In one of the few studies of rural American SNS users, Gilbert, Karahalios, and Sandvig (2008) found that rural women set profiles to private more often than did their urban counterparts, but that men didn't differ on this. These findings are consistent with Larson (2007), whose study of rural American Internet users found a great deal of mistrust about using the medium for interpersonal purposes. These studies raise unanswered questions about who modifies settings, how, and for what reasons.

Because SNSs often connect people who know one another, users may feel "a sense of false security" (boyd & Heer, 2006, n.p.) as they create personae for their "friends," not thinking of their online identity performance as the public or semi-public searchable act it is. When a profile is accessed by an unexpected viewer the results can be embarrassing or life-altering. Information posted in an SNS can be used outside of context with strong negative consequences, including lost jobs, revoked visas, imprisonment, and tarnished reputations (Snyder, Carpenter, & Slauson, 2006).

Even when SNS users have limited their profiles' visibility, they face the problem of collapsed contexts (boyd & Heer, 2006). As almost all SNSs are currently structured, friendship is a binary – one either is or is not a friend – despite the fact that in other social contexts, people have many degrees of friend and are selective about which information they reveal to whom. Facebook has "friends lists" that can be used to constrain which information people on each list can see, and Flickr allows people to limit the visibility of photographs to "friends" and/or "family." It is much more common, however, for all "friends" to have access to the same personal data, regardless of the degree to which one trusts any of them individually (Gross & Acquisti, 2005). Kim's and Yun's (2007) interviews with CyWorld users showed that one motivation for managing "minihompies" (profiles) was self-reflection. Thus, an important audience for one's online identity may be oneself, a person who presumably warrants far greater disclosure than even the closest peers.

Identity categories

Most SNSs provide predetermined sets of categories through which to build identities. The most important identity signals may be one's name and photograph. Their authenticity can be crucial to creating trust. MySpace, Last.fm, and many other sites do not care in the least what name one chooses. On Last.fm, it is unusual to see a real name and avatar pictures rarely depict the users. Cyworld, on the other hand, allows people to pick pseudonyms only after their identity has been verified and "the site's search functions are able to validate the name, date of birth, and gender of other users" (Kim & Yun, 2007, n.p.). Facebook requires real names, although their system for recognizing authenticity is flawed, resulting in multiple

profiles bearing the names of celebrities, businesses, or websites. Baron (2008, p. 82) jokes, "if this rule is being followed, then Karl Marx, Anne Boleyn, and Kermit the Frog are alive and well." One survey of Facebook (Gross & Acquisti, 2005, n.p.) found that 89 percent of user names seemed to be real. Only 8 percent were clearly false and just 3 percent partial. Eighty percent had pictures that made them identifiable.

Unlike other online identity platforms, once users chose their names, SNSs provide them with categories to fill in on their profiles. Though the categories vary, most provide slots for demographic information including age, place of residence, and general interests – usually tastes in popular culture. Lampe and colleagues (2007) used automated data collection to collect profile information from all available profiles on their university's Facebook system and found that on average users filled in 59 percent of fields available to them. Gross and Acquisti (2005) found that 98.5 percent of Facebook users disclosed their full birthdates.

The ways in which predetermined categories both shape and constrain identity construction is most striking in the case of racial identity. In her analysis of BlackPlanet, Byrne (2007) reports that until 2005, members' only options for racial identification were black, Asian, Latino, Native American, and white. Following Nakamura (2002), she argues this "forces users into dominant notions of race" (n.p.), leaving little room for intercultural diversity or intra-racial identities. Other SNSs, such as MySpace, Last.fm, or Facebook do not provide any category for race, which, one might argue, reflects an effort to render race irrelevant or, following Silver (2000b), an assumption that the users, like most of the developers, are white.

Like race, nationality can be a charged identity category in SNSs. Last.fm displays all users' nationality if they've selected it from a drop-down list of options, leading to some distress from people such as Scots, who may not identify as residents of the United Kingdom (which is provided in the drop-down menu), but as residents of Scotland (which is not). The most striking example of this is Orkut (Fragoso, 2006). Orkut, owned by Google, launched as a US-based SNS in 2004. People could join only when invited by an existing member. Within a short time, Brazilians outnumbered every other country's members, a phenomenon which usually has been attributed to Brazilians' purported sociable and outgoing nature, an explanation which is surely inadequate (Fragoso, 2006). People began to construct their identities in terms of nationalism, leading to intense conflicts that were often grounded in language wars as Portuguese speakers colonized what had been English-language discussion groups.

Less charged, but more personally revealing are taste categories. Interest categorizations in online profiles originate in online dating sites (Fiore & Donath, 2005), where they are taken to imply interpersonal compatibility. The early SNS Friendster offered five categories (general interests, music, movies, television, and books) which are also used on MySpace, Facebook, and Orkut (Liu, 2007). Drawing on Simmel, Liu (2007) argues that this sort of taste identification is a way of performing individuality.

Both Liu (2007) and Donath (2007) emphasize the status-carrying potential of such lists. Donath (2007) describes identity cues in social networking sites as "signals of social position in an information based society" (n.p.). Liu (2007), uses Bourdieu to argue that "one's tastes are influenced both by socioeconomic and aesthetic factors. Socioeconomic factors – such as money, social class, and education – can shape tastes, because access to cultural goods may require possession of these various forms of capital" (n.p.).

Given that taste cues can generate status, their authenticity becomes problematic. People may list things they do not actually care for, or omit things they do care about, in order to create a public image in line with what they think others find attractive (Liu, Maes, & Davenport, 2006). In SNSs where people don't know one another through other means, audiences cannot distinguish false self-representations from honest ones, and hence can't punish inauthenticity (Donath, 2007). In SNSs where people do know one another, people have more reason to be honest, but then face the problems associated with collapsed audience contexts (Donath & boyd, 2004).

Another marker of status may be how many friends one has (boyd, 2006; Fono & Raynes-Goldie, 2006). In their work on Facebook, Lampe and colleagues (2007) found that number of friends was modestly positively correlated with self-descriptive content. In particular, people who included information on their profiles that indicated trustworthiness and thus made association with them less risky for others were more likely to have more friends.

Visible friends

Identity construction in SNSs is also distinguished from other forms of online communication in that one's connections are visible to others. Furthermore, others may contribute visible content to one's profile. Offline, where people often meet one another's friends, we all make strategic choices about which friends to expose to which other friends. In SNSs, all friends (and sometimes strangers) can see one's friends list. These lists provide context for interpreting a person and, as such, they can affect one's credibility and even perceived attractiveness (Walther et al., 2008). Donath and boyd (2004, p. 72) were among the first to note that displaying one's connection carries potential risk to one's reputation, writing that "[s]eeing someone within the context of their connections provides the viewer with information about them. Social status, political beliefs, musical taste, etc., may be inferred from the company one keeps." Thus, whatever one writes within a profile may be supported or undermined by the visible connections one has. SNSs themselves can vary in their trustworthiness by encouraging rampant friend collecting on the one extreme and making it difficult to add unknown friends on the other (Donath, 2007). LinkedIn, for instance, requires that one already knows the email address of a person or have a shared connection willing to make an introduction before that person can be added as a connection.

Drawing on research in social psychology showing that physical attractiveness may be affected by the attractiveness of one's peers, Walther and colleagues (2008) examined whether people with more attractive Facebook friends would be rated as more attractive by viewers. Using the same profile photo, but manipulating the attractiveness of friends' photos, they found that surrounding oneself with attractive friends increases perceptions of one's own attractiveness, while linking visibly to unattractive people may lessen one's own physical appeal.

Friends can also affect one's image by writing on one's "wall" or "shoutbox" (Walther et al., 2008), tagging photographs with one's names, and commenting on content one has uploaded. In some SNSs, people can do this even if they have not been accepted as a friend. "This makes participative social networking technologies different from Web pages, e-mail, or online chat" (Walther et al., p. 29), "because all those technologies allow the initiator complete control over what appears in association with his- or herself." Content posted by others may contribute disproportionately to one's image because it is may be seen as less biased by a desire to look good. In their experiment, Walther and colleagues found a double standard. For women's profiles, positive wall posts increased perceptions of physical attractiveness while negative posts decreased such perceptions. For men, negative wall posts indicating excessive drinking and sexual innuendo increased perceptions of attractiveness.

Multiple media

Perhaps the most neglected area of research regarding the use of identity is how people use non-verbal social cues such as video and photographs to create their identities. Lüders (2007), in her close study of a small number of Norwegian young people, showed that they simultaneously use multiple SNSs to create public personae that combine writing, video, and photography. Often their posts were mundane, and in most cases were tied to an identifiable offline persona. It is more difficult to study visual content than verbal content, but as visual means of self-construction become increasingly common, researchers must develop more robust ways to make sense of these phenomena.

Relationships

Personal profiles form the core content of SNSs, but it is the connections among those profiles and the relationships those connections represent that makes them networks. Personal relationship maintenance has always been one of the Internet's most popular uses, as the success of email has long demonstrated, but it has been one of the field's most neglected topics as the fascination with identity construction has too often obscured observation and analysis of relational processes. When attention has focused on interpersonal relationships in Internet research, it has often addressed the formation of new relationships between those

who meet online rather than the more mundane maintenance of relationships between those who already knew one another (Baym, 2002).

To briefly summarize the work on new relationship formation, naturalistic pre-SNS relationship research often examined how online groups provided contexts for relationship creation (e.g. Baym, 2000; Kendall, 2002; Lea & Spears, 1995; Parks & Floyd, 1994), while experimental work (e.g. Walther, 1992, 1996) created task-oriented groups in order to study relational processes. There were often comparisons between "online" and "offline" relationships. Generally, such research has found that "online" relationships are less developed than "offline" ones (Mesch & Talmud, 2006; Parks & Roberts, 1998). However, in longitudinal studies, the differences between on and offline friendships were shown to diminish over time (Chan & Cheng, 2004; McKenna, Green, & Gleason, 2002).

Far less research has examined how the Internet helps people with existing ties to maintain their relationships. Stafford, Kline, and Dimmick (1999) and Dimmick, Kline, and Stafford (2000) found that people used email to support and maintain meaningful relationships, especially long-distance ones. My research (Baym, Zhang, & Lin, 2004; Baym et al., 2007) showed that college students very rarely used the Internet to communicate with people they did not communicate with in other ways.

Relational maintenance

Ellison and colleagues (2007) note that "in earlier online relationship work, the direction of social network overlap was usually movement from online to offline" (n.p.). Research on SNSs has emphasized movement in the opposite direction. While recognizing that SNSs "may facilitate making new friends" (Ellison et al., 2007, n.p.), they seem to be more often used for keeping in touch with people one has met elsewhere. Lenhart and Madden (2007) found that 91 percent of US teens who use SNSs report that they do so in order to connect with friends. Boyd (2006) also found that a primary use of MySpace for teens is socializing when they are not able to be together in an unmediated way. SNSs can also be useful for micro-coordination, as people organize their joint activities on the fly (Humphreys, 2007; Ling, 2004). Mayer and Puller (2008) pulled data from Facebook users at Texas A&M University to see how they met and found that of those who gave a reason, 26 percent met through a school organization, 16 percent through another friend, 14 percent had attended the same high school, and 12 percent had taken a course together. Only 0.4 percent met online. Relationship maintenance, rather than relational creation, has also been found to be a primary motive for using Cyworld (Choi, 2006) and MySpace (boyd, 2006). In contrast, Baym and Ledbetter (2009) found that although most Last.fm friendships were between people who had met elsewhere, almost half (47.1 percent) began through the site, although these did not generally become close.

On the whole, there is very little direct communication among friendship pairs in SNSs. In their analysis of 362 million fully-anonymized message headers on

Facebook, Golder and colleagues (2007) found that only 15.1 percent of friends ever exchanged messages. In their analysis of over 200,000 MySpace messages, Gilbert and colleagues (2008) found that 43.5 percent of friends never commented on one another's profiles, and only 4 percent exchanged 10 or more comments. Baron's (2008) research found that 60 percent of Facebook users wrote on others' walls either never or less than once a week. However, scant direct SNS communication does not imply little relational communication (Baym & Ledbetter, 2009; Haythornthwaite, 2005). Baym and Ledbetter (2009) found, for instance, that while 31.5 percent of friendship pairs on Last.fm only communicated via that SNS, on average friends used 2.13 additional media including instant messaging (42 percent), other websites (34.7 percent), face-to-face communication (33.55 percent), and email (31.3 percent). Furthermore, simply having access to one another's updates on an SNS may facilitate a sense of connection (e.g. Humphreys, 2007). Baron (2008, p. 85) cites a respondent who describes it as "a way of maintaining a friendship without having to make any effort whatsoever," thereby offering the interactants more control.

We know very little about the content or functions of message exchanges within SNSs. There is evidence, though, that in some cases they may allow exchanges more emotionally risky than could take place through other means. Larsen's (2007) work on Arto.dk, shows that participants, in particular adolescent girls, often leave emotionally effusive messages proclaiming their love and admiration for one another on each other's profiles, a form of communication out of keeping with Danish norms. Kim's and Yun's (2007) research likewise suggests that for Koreans, who may avoid emotional communication face to face, Cyworld can offer a venue for such communication, with one informant reporting that she had "been able to save many relationships thanks to my minihompy" (Kim & Yun, 2007, n.p.). Communication through these sites may also help some people convert weak-tie relationships into strong ones (Donath & boyd, 2004; Ellison et al., 2007).

Who friends whom

Although people seem to use SNSs primarily for the maintenance of existing relationships, people do use them to create new relationships which can range from highly specialized weak ties to intimate partnerships. Haythornthwaite (2005) coined the term "latent tie" to refer to potential relationships within a social circle that could be but have not been activated (i.e. friends of friends). By making friends lists visible and, in some cases, offering automated recommendations of latent ties, the architecture of SNSs facilitates the conversion of latent ties to weak ties (Ellison et al., 2007).

The theory of latent ties would predict that people are most likely to form relationships with those within their wider social circle. Indeed, most people on SNSs are connected through very few degrees of separation (Adamic, Büyükkökten, & Adar, 2003) and are more likely to join a "friend" network if their friends within it are also friends with one another (Backstrom et al., 2006). Kumar, Novak, and

Tomkins (2006) analyzed all the metadata from Flickr and Yahoo Groups and showed that consistent social structures emerge between the SNS site Flickr and the interest-based groups of Yahoo. Most users in both sites are part of what they call the "giant component," in which people are tightly connected through just a few degrees of separation. In fact, 59.7 percent of Flickr users are at only one degree of separation, and 50.4 percent are that tightly connected in Yahoo groups. Without the giant component, the average degree of separation between individuals is 4 or 5. At the perimeter of these giant components are "stars" – clusters built around individuals that remain isolated from other star-based sub-communities but which eventually merge into the giant component. Both sites also have many isolates or "singletons" who have no connections to others. From most users' points of view, then, SNSs seem to be very homogenous areas in which everyone knows one another (boyd & Heer, 2006).

In addition to sharing common acquaintances, friends on SNSs are often bound together by demographic and life-circumstance similarities, although the findings on homophily in SNSs are mixed. On Dodgeball, Humphreys (2007) found that users were demographically alike. Golder and colleagues (2007) found that 49 percent of messages exchanged in Facebook were between people attending the same university. Gilbert and colleagues (2008) found that rural MySpace users tended to have on-site friends that lived an average of 88.8 miles away, while urban users lived an average of 201.7 miles from their friends, suggesting that geographic homophily is stronger or more important for rural users. On Last.fm, however, a plurality of Last.fm friendships were between people who lived in different countries and just over 30 percent reported living in the same part of the country (Baym & Ledbetter, 2009).

The foregrounding of taste in SNS profiles, and Mayer and Puller's (2008) findings that racial divisions are largely taste-based, suggests that shared taste may be a strong incentive in SNS friending practices. The evidence on this is mixed. On Last.fm, we found that friends were more likely than not to share musical taste (Baym & Ledbetter, 2009), whether they met on site or elsewhere. However, Liu (2007) examined 127,477 MySpace profiles and found that "on average, MySpace users tended to differentiate themselves from their friends, rather than identifying with their friends' tastes" (n.p.), perhaps in order to build unique identities within their social circles.

Mayer and Puller (2008) showed that online, as offline, college social networks at both large and small American universities are racially segregated. Racial segmentation within Facebook was as high as it was offline. Rather than resulting from institutional forces that make it difficult for people to meet across racial lines, their simulations indicate that preferences drive this segregation.

Hargittai (2007) shows that these factors influence which SNSs people are likely to join in the first place. People self-select SNSs based in part on which services their friends use. She surveyed a diverse sampling of first-year college students and found that Hispanic students were more likely to use MySpace than Facebook, and white, Asian, and Asian American students were more likely to use

Facebook than MySpace. She warns that this may be "potentially limiting the extent to which they will interact with a diverse set of users on those services" (Hargittai, 2007, n.p.). These concerns may also be extended to rural SNS users who have a third as many friends and receive fewer comments on their MySpace walls than urban users (Gilbert et al., 2008).

One important consequence of maintaining and building relationships through SNSs is the increased social capital that may result. To the extent that such sites promote closer ties with those to whom one is already close, they offer increased "bonding capital," enabling a wide range of social support across a wide range of situations. To the extent that they support new and existing acquaintances, they may create "bridging capital," the access to resources that can only come from those unlike oneself (Ellison et al., 2007; Haythornthwaite, 2005; Williams, 2006). In the first significant study examining these questions in SNSs, Ellison and colleagues (2007) showed that intensive Facebook use is associated with both of these forms of capital. Furthermore, intense Facebook use seemed to enhance bridging social capital, giving people access to more resources of different types than they would likely have otherwise (Ellison et al., 2006). The warnings sounded by Hargittai and by Gilbert and colleagues about homophily in SNSs suggests that already-disadvantaged users may have less access to the bridging capital SNSs can provide.

Ambiguity

Donath (2007) posits that SNSs "may transform the concepts of friendship, personal acquaintance, and public celebrity," a possibility she wisely connects to "related cultural reconfigurations, from the reduced autonomy of American youth to the increased attention to the private lives of public figures" (n.p.). One striking difference between relationships maintained through SNSs and those maintained via other means, is that within SNSs, relationships are explicitly labeled by the systems' infrastructure. In most cases the label is "friend." Twitter uses the term "follower" as well as "friend" (one reads "friends" but is read by "followers"). Flickr allows people to be categorized as "friend," "contact" or "family." Cyworld uses the term *ilchon* which, as Kim and Yun (2007) explain, is loaded with significance since it "metaphorically extends the Korean cultural concept of blood ties to virtual interpersonal relations" (n.p.). LinkedIn, oriented toward professionals, uses the affectively neutral yet equally ambiguous terms "contact" and "connection."

Many scholars of friendship have noted the ambiguity of personal links (e.g. Parks, 2006; Rawlins, 1992). Online, as well as off, "the very term 'friendship' is both vague and symbolically charged and may denote many different types of relationship" (Kendall, 2002, p. 141). Partners within the same relationship may differ in how they categorize it. In SNSs, however, the minimal range of relationship labels and the technical necessity of labeling connections enhances this ambiguity. Definitional ambiguity can be useful. "In the face-to-face world," writes

Donath (2007), "people are circumspect about explicitly defining the parameters of their friendships. This is often a matter of saving face – of not embarrassing someone by pointing out the limits of one's affection for him or her" (n.p.). On the other hand, ambiguity can create problematic misunderstandings. Pairs may differ on what kind of relationship their "friendship" represents (Fono & Raynes-Goldies, 2006); people may be held to account for the behaviors of "friends" they barely know (boyd & Heer, 2006; Donath & boyd, 2004); people may not be sure or disagree about what obligations such links entail (Kim & Yun, 2007).

To some extent, SNSs have emergent friending norms, but ambiguity can still lead to conflict (boyd, 2006; Fono & Reynes-Goldie, 2006). One of boyd's teenage interviewees described MySpace's "Top 8" feature that allows people to list eight of their friends above all the others as "psychological warfare." People may also disagree about friending norms. Speaking of LiveJournal, Fono and Raynes-Goldies (2006) note that the term friend "has no fixed signified from which the entire population can derive shared meaning. It is this reflexivity and multiplicity of meaning that causes much of the social anxiety, conflict and misunderstanding" (n.p.). Similarly, "the ilchon metaphor created varying levels of relational tensions, depending on the degree of intimacy that the word ilchon connoted to users" (Kim & Yum, 2007, n.p.).

The little work that has been done looking directly at the nature of the ties on SNSs suggests that most are weak ties. Baron (2008) found that students reported an average of 72 "real" friends but 229 Facebook friends, a figure almost identical to the result found in Ellison and colleagues (2007) that two thirds of Facebook friends were not considered "actual" friends. Baym and Ledbetter (2009) found that while some reported close relationships on Last.fm, on average they rated their on-site relationships just below the midpoint on measures of relational development.

SNSs can also lead to new sorts of relationships such as those that emerge between fans and celebrities. The fan/band relationship was integral to the growth of MySpace (boyd & Ellison, 2007). Though this is often seen as a form of identity work on the fans' part and audience building on the part of the celebrities, Baym and Burnett (2008) showed that for many musicians the connections fostered through sites like MySpace develop into a new sort of emotionally rewarding relationship between fan and friend. This phenomenon may not apply just to celebrities, but also to micro-celebrities or even relative unknowns, as friend links may be formed simply because a person admires another user's "amusing web links, provocative conceptual musings, and attractive artistic output" (Fono & Raynes-Goldie, 2006, n.p.; see also Lange, 2007)

Community

Much, perhaps most, of the Internet research prior to SNSs focused on interest-based online groups and communities (rarely distinguishing between the two

concepts). Hardly any work looks at community in the context of SNSs, leaving a wide-open terrain for future scholarship. As we have seen, most SNSs are based on individuals rather than interests; even those that are interest-focused are organized around individual profiles and dyadic connections. Although most SNSs offer ways to create user groups within the sites, these are usually poorly organized afterthoughts rather than key elements of the social structures. As boyd and Ellison (2007) say, this constitutes "a shift in the organization of online communities" (n.p.). My research (Baym, 2007) showed that music fans organize themselves loosely across sites that include multiple SNSs as well as blogs and news sites, with the result that coherent community can be difficult to create or sustain.

Online community research has shown, for instance, that online groups develop norms and behavioral standards (e.g. Baym, 1993; Lea et al., 1992; McLaughlin, Osborne, & Smith, 1995) and internal hierarchies (e.g. Galegher et al., 1998), and provide social support (e.g. Kollock, 1999; Preece & Ghozati, 1998). With the exception of social-capital analysis, there are no parallels within SNS research, although these phenomena are likely at play. There has, however been work showing that social norms emerge within SNSs, making them somewhat akin to communities in their own right. I have mentioned boyd (2006) and Fono's and Reynes-Goldie's (2006) claims that sites develop friending norms. Donath (2007) argues that SNSs develop norms for what constitutes truth in terms of "the mores of our community." Humphreys (2007) points to Dodgeball-wide behavioral norms, although in parallel to friending norms, she notes that "normative Dodgeball use is not only emerging but contested" and that sub-groups "may have different tolerance levels, expectations, and definitions of acceptable or 'correct' Dodgeball use" (Humphreys, 2007, n.p.).

Social norms are also rooted within the behavioral contexts in which users live. Donath (2007) argues that SNSs "place people within a context that can enforce social mores" by making them "aware that their friends and colleagues are looking at their self-presentation" (n.p.). SNSs can thus invoke and encourage group norms that extend beyond the sites. This might include issues of taste (Liu et al., 2006), and also of behavior. Focus group interviews undertaken by Walther and colleagues (2008) found that "statements reflecting both excessive and morally dubious behavior" (p. 38) were viewed unfavorably in Facebook profiles, although, as we have seen, their experiments suggested this might only be true for women. Golder and colleagues (2007) found strong temporal rhythms to messaging norms in Facebook some of which are "robust and consistent across campuses and across seasons" (n.p.), and others which are more similar within a university.

Missing Topics

SNSs are relatively new and academic research is notoriously slow. By the time you read this, there will doubtlessly be dozens if not hundreds more articles

published on the topic. There is no shortage of work to be done. The length of the above three sections is itself an indication of some of the understudied areas. We have a good understanding of the self-presentation issues involved in SNS profiles, although there has been little work on how people are actually perceived in these sites. We have a good sense of the diversity of reasons people friend one another on SNSs, but know very little about these relationships or the roles of SNSs in creating, maintaining, and sometimes terminating them. We know next to nothing about how online communities use SNSs or how and if community emerges through these sites.

The research to date has focused on MySpace and Facebook, with occasional forays into other sites. We need comparative work that examines SNSs in varied national and topical contexts, work on users other than college students and adolescents, and analysis of how people organize their social experience across multiple sites and how they integrate these sites into the whole of their interpersonal encounters. We need studies that look rigorously at media such as photography and video. Sustained longitudinal studies will help us understand how these sites function over time rather than in the snapshot moments that are currently studied.

All of these areas are ripe for future analysis. But perhaps the area most crying out for sustained critical analysis is the one I touched on at the start of this essay: ethics. What are the practical and ethical implications of the move from socializing in not-for-profit spaces to proprietary profit-driven environments? Users may think that sites like Facebook belong to them, but they are wrong (Baron, 2008). As SNSs become practical necessities for many in sustaining their social lives, we become increasingly beholden to corporate entities whose primary responsibility is to their shareholders, not their users. Their incentive is not to help us foster meaningful and rewarding personal connections, but to deliver eyeballs to advertisers and influence purchasing decisions. The terms of use of many of these sites are deeply problematic – my students are shocked when I show them what they have agreed to without reading – and we have little choice but to trust that these sites will not abuse the content we have uploaded or expel us without recourse when we have invested so heavily. Questions are also raised about the lines between just reward for the content users provide and exploitation of users through free labor. At the same time, users are not without influence. When Facebook implemented their Beacon system tracking user purchases and other activities across the Internet and announcing them to their friends, a user backlash forced them to change their plans. The power struggles between owners/staffs and users are complex and thus far all but ignored in scholarship.

One might argue that if one doesn't like the terms of service or site redesigns enacted without user input, one should simply leave, but, as Petersen (2008) discusses, that is not feasible when an SNS is where one's data and connections are stored: "The users of Flickr that I interviewed all say they would not dream of moving to another site, unless they could take their network with them as well as all their pictures with comments, tags and notes" (n.p.).

Another ethical issue that has been little touched upon by scholars is the potential for data-tracking by those running the sites and search providers. Users have little, if any, choice to opt out of how their data are used once they have placed them on an SNS. As the above discussion of privacy suggests, they are also not well-informed about the uses to which the data they place online may be put. Zimmer (2008) has articulated the concerns around what he terms "Search 2.0," warning about "the growing integration of Web 2.0 platforms – and the personal information flows they contain" and the extent to which "search providers are increasingly able to track users' social and intellectual activities across these innovative services, adding the personal information flows within Web 2.0 to the stores of information can leverage for personalized services and advertising" (n.p.).

I do not mean to imply that SNSs should be viewed as a threat. They offer numerous benefits, including the abilities to carefully craft a public or semipublic self-image, broaden and maintain our social connections, enhance our relationships, increase access to social capital, and have fun. Those who provide these services are generally not charging us for their use. Yet they are without doubt restructuring the nature of social networks both online and off, and we must be cautious about studying them from within the lifeworlds they promote rather than stepping outside to understand them in their larger cultural and commercial contexts.

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