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Taina Bucher¹

Abstract

In an age in which social networking sites have become the preferred way of socializing online, the question of how to think about the contours of friendship in and through these mediated spaces becomes all the more important. In contrast to much existing research on online friendship, this article takes on a software-sensitive approach. Through a close reading of various sociotechnical processes in which friendship is activated on Facebook (i.e., registering, making a profile, finding friends, communicating, etc.), this article suggests that friendships online need to be understood as a gathering of heterogeneous elements that include both humans and nonhumans. Moreover, this article attempts to show how the traditional notion of friendship as something created between equals and free of structural constraints does not apply to the realm of social networking sites, where software increasingly assists users in making certain choices about who will and who will not be their friends.

Keywords

new media theory, Facebook, software, critical media studies, friendship

Introduction

Social networking sites such as Facebook are structured around the principle of sociality, the relations between self and others. These relations are conceptualized as friendships. Not only is friendship the name given to the social connections between users on Facebook, the individual subject is also fundamentally addressed and positioned as friend. The immense popularity of Facebook in recent years has resulted in

¹University of Oslo, Norway

Corresponding Author:

Taina Bucher, University of Oslo, Department of Media and Communication, Gaustadalleen 21.,
P.O. Box 1093 Blindern, 0317 Oslo, Norway.
Email: taina.bucher@media.uio.no

much academic research investigating issues of friendship on social networking sites. Issues that have been widely addressed include the qualitative differences between offline and online friendships (Buote, Wood, and Pratt 2009; Parks and Roberts 1998), the meaning of friendship (boyd 2006; Lewis and West 2009), impression management and interpersonal communication (Lüders 2009), and social capital (Ellison, Steinfield, and Lampe 2007). Most research however remains user-focused, investigating friendship as a preexisting social category transposed into the realm of social networking sites. Yet, the configuration of friendship online is fundamentally technologically driven and commercially motivated. An investigation of the meaning of friendship in social networking sites must therefore include a critical understanding of the various technocultural processes (Langlois, 2013) that shape sociality online. Everything from setting up a profile on Facebook to connecting with other users and maintaining a network of friends requires an intimate relation with the software platform itself. Algorithms assist users in finding friends and supposedly “know” user preferences and habits. This is so that one’s “important” friends can be made more visible and can help users “remember” people from the past and prompt users to take certain communicative and relational actions. As van Dijck (2012, 161) rightfully points out, “what is important to understand about social network sites is how they activate relational impulses.” Not only is it important to understand *that* relationships are activated online, but also *how* they are activated: by whom, for what purpose, and according to which mechanisms.

Social networking sites are essentially designed and programmable spaces that encourage the user to carry out specific actions. This article addresses the sociotechnical ways in which social networking sites such as Facebook *want* friendships to be activated, and activated in specific ways. The aim is to examine the specific mode of friendship produced in and through the Facebook “assemblage,” as a gathering of heterogeneous elements and processes (Deleuze and Guattari 1987). Taking the position that technology is not neutral, but rather a mediating and productive force, I argue that it is imperative to look at the specific ways in which sociality is *programmed* (i.e., encoded, assembled, and organized) in order to understand how users are made to relate to themselves and others as friends.

This article will focus specifically on the role played by software actors in the configurations of online friendship. As Facebook on a material level is software, its structural conditioning of friendship can be understood by paying attention to the materiality of cultural expressions that are embedded within various software processes, algorithms, and protocols. Part of the argument thus involves questioning the traditional view that “friendship clearly exists as a relation between individuals” (Webb 2003, 138). Instead, what I want to argue is that friendship on Facebook clearly exists as a relation between multiple actors, not only human individuals, but also nonhuman software actors. As already implied, users not only forge connections with “friends” via online platforms, the platforms themselves also contribute to the creation of these social connections. In this article I propose the concept of *algorithmic friendship* as a way of understanding the ways in which algorithms and software have become active

participants in our networked lives and information ecosystems, forming the ways in which users are made to relate to self and others. As we will see, developing an understanding of the sociotechnical dimension of friendship necessarily also entails paying attention to the apparent disconnect between established definitions of friendship and Facebook “friending.”

Assemblage as an Analytical Framework

Facebook is not just a simple website or social networking platform, as in a blank canvas upon which sociality is allowed to take place. Rather, as website and platform, Facebook constitutes an assemblage of various relations and actors, including people, technology, software processes, social practices, and values. The concept of assemblage usefully points toward the ways in which reality and its specific entities are, above all, compositions of diverse elements that when put together have the capacity to act (see Deleuze and Guattari 1987). Assemblage should be understood in the sense of its original French meaning of *agencement*—as a formation and process of assembling rather than a static arrangement (see Anderson and McFarlane 2011; Phillips 2006). Here, I prefer the concept of assemblage/agencement to the related concept of network, reminiscent of actor network theory (ANT). I use assemblage as an overall heuristic that allows for thinking more broadly about the co-functioning and productivity of heterogeneous elements. Both assemblage thinking and ANT come with specific sets of vocabularies and vantage points—none of which I fully adopt. Analytically, ANT is more attuned to understanding how networks stabilize, translate, and become durable (see Latour 2005), which is not the focus of this article, hence the preference given to the concept of assemblage here. However, where ANT does become useful with regards to studying software-subject relations is in terms of its concept of *agency*. Accordingly, everyone and everything can be an actor, as long as the action influences or provokes an action by someone or something else (Latour 2005). ANT thus helps us acknowledge the mediating role of different actors when questioning the meaning and configuration of friendship online.

For my purposes, framing Facebook as an assemblage helps viewing the platform as a “process, an ongoing organizing of multiplicities, of relations between elements and forces, that produces affects” (Coonfield 2006, 290). This is to say that Facebook, by organizing heterogeneous relations in a specific way, constitutes a productive force: it makes new relations possible. The concern is not so much with what the assemblage is, but rather with what it can do, by bringing heterogeneous elements together—in this case producing new modalities of friendship. Here I draw on Foucault’s conceptualization of power as productive, and particularly the notion that power is productive of certain ways of becoming a subject (Foucault 1982). In rather subtle ways, buried underneath the signifying surfaces of the computer interface, embodied in abstract protocols, written in calculable documents and wired materials, software engages in processes of subjectivation. Seen this way, Facebook constitutes a platform for the production of “computer-aided subjectivity” (Guattari 1989, 133).

In regard to new media, a critical understanding of the production of subjectivity as fundamentally intertwined in technical and institutional mechanisms (Foucault 1982; Guattari 1996, 197) provides a necessary framework for considering programmed sociality in and through social networking sites. Seeing friendship as an assemblage provides a lens through which the power of software to produce new modalities of subjectivation can be analyzed. Thus, what is of importance here is to be open to the diverse range of actors and relations that come together to make something called friendship meaningful.

Software-Generated Friendship

This article focuses on exploring the relationships between software and users, that is, how a friend as a social category with a specific field of cultural values, norms, and practices is configured in and through software. Here, I explore some of the features and experiences that define the process of software-assisted subjectivation in Facebook. The various friendship experiences discussed in the following are not meant as an exclusive list of software-subject relations in and through Facebook. Rather, the different steps and stages should be read as various ways in which friendship becomes infused and augmented by software. Let us start from the beginning, with what happens once a user registers and constructs his or her user profile.

Upon registering on Facebook, the user is instantly faced with the imperative to add friends. In contrast to the Aristotelian conception of friendship as something rather precious that one cannot have with many people at once (Aristotle 2004, 168), Facebook promotes the total opposite. One of the first suggested steps in the registration process is to connect your email account with your new Facebook account in order to allow for the synchronization of existing contacts. In many cases, the software already knows you. The logic of the database is such that stored personal information that you and other users provide become the first sources for finding a friend on the platform. With over 900 million Facebook users, there is a great probability that new registrants already exist on the platform by virtue of the data others provide, consciously or unconsciously, about you. Most users are ghosts in the machine just waiting to come alive. Once a user has confirmed his or her existence by registering, he or she is prompted to start filling in the template of the personal profile.

The profile is illustrative of what Lisa Nakamura (2002) has described as “menu-driven identities.” Nakamura discusses the logic of online forms that give little room for constructing identity in ways other than those already defined by the system. Accordingly, a menu-driven identity is a form of stereotype, making it easier to categorize, classify, and sort people. As much as these stereotypes may have worrisome social, cultural, and political implications (Nakamura discusses this in the context of race), the “template-driven identity” promoted by Facebook and other social networking sites has a more goal-oriented purpose. Users’ identities need to be defined within a fixed set of standards in order to be compatible with the algorithmic logic on which these software systems run. If users could freely choose for themselves who and what

they wish to say about themselves, there would be no real comparable or compatible data for the algorithms to process.

As anyone who has tried to register on Facebook without adding friends can attest to, what drives Facebook are the friendships forged between users. How friendships are forged depends primarily on two separate but interrelated aspects, *findability* and *compatibility*. That is, how accessible and findable are you and how compatible are you as a friend to others and vice versa. Default and privacy settings are important features in regulating the desired flow of connectivity facilitated by the database of “friends.” Users may choose and customize their privacy settings on Facebook, indicating and regulating the amount, nature, and access to specific types of personal information. The platform itself configures personal profiles for connections by setting the default access in the basic profile privacy settings to “everyone.” The privacy settings explicitly state that changing the defaults will “prevent you from connecting with your friends”; conversely, by keeping the default, you will “help” your friends from all spheres of life “to find you” (Facebook 2011a). These privacy and default settings demarcate Facebook as a friend-collecting tool, geared toward optimizing the friend recommendation algorithms for social graph enhancement.¹

One important mechanism for finding friends is the “People you may know” (PYMK) feature that operates on a “friend of a friend approach” (Chen et al. 2009). Friend of a friend (FOAF) is a common algorithmic technique for modeling friend recommendations online. This algorithm is based on the idea that if Anna is a friend of Tina, and Alice is a friend of Tina, Anna could be Alice’s friend too. As researchers on the data mining team of MySpace tellingly declared: “Similar to real life, finding good friends is not easy without the help of good recommendations” (Moricz, Dosbayev, and Berlyant 2010, 999). A good and potential friend, according to the FOAF algorithm, is one who already shares a friend with you. Thus, the probability that someone will be recommended as a friend to another user increases with the number of friends these two people have in common, conceptualized in the attribute “mutual friends.” Whereas most philosophical accounts of friendship view shared activity as the basis for friendship (Helm 2010), Facebook apparently puts shared friends at the center of friendship formation. The deployment of “mutual friends” as a compatibility measure is clearly also an important rhetorical strategy used in Facebook to suggest and amplify friendship initiations. Mutual friend counts appear on many levels throughout the system. For instance, one encounters mutual friend displays whenever one goes to a friend’s user profile, whenever one hovers over a friend’s hyperlinked name with the mouse, and whenever one receives a “friend request.” Within the PYMK feature, these mutual friends arguably play a decisive role in signifying compatibility for friendships.

Along with the smiling faces or otherwise flattering visual self-presentations manifest in the profile pictures, the mutual friend count functions as an implicit argument for why it makes sense for a user to take the next logical step, that is, to add the other as a friend. Here we may begin to see the subtle ways in which algorithms can be considered actors in the sense that they prompt action, do things, or in Latour’s (2005, 154)

sense, “make a difference.” Finding friends and forging connections is made easier with the help of algorithms. How many friends you have in common is used as the primary measure for friend compatibility. Once a user has found a certain number of existing friends and added them to his or her network, being on the platform becomes more meaningful. It is interesting to note how the number of friends constitutes the basis for “leading a good life” on the Facebook platform, which stands in opposition to the Aristotelian idea of achieving a good life through “virtue friendship” (Aristotle 2004, 164). The accumulation and number of friends thus becomes the only way through which a meaningful Facebook existence can be realized. This is the law of network effects upon which social networking sites hinge. The more people are using it, the more useful it gets.

There are two principle features designed for engaging in practices of friendship on Facebook—the personal profile and the news feed. Algorithmically driven, the news feed displays an edited view of what one’s friends are up to in an order of calculated importance, with the most important updates on top of the feed. The mechanism at work in displaying the most interesting news about a user’s friends and their actions are the EdgeRank and the GraphRank algorithms. Whereas EdgeRank passes judgment on the importance of *every* interaction related to the Facebook platform, GraphRank is a subset of EdgeRank, geared specifically toward aggregating meaningful patterns out of users’ interactions with applications. Every action and interaction connected to Facebook, be it a status update, a comment on someone’s photo, or a clicked “like button,” may become a story on someone’s news feed. Not every action, however, is of equal importance, nor is every friend for that matter. Everything and everyone that shows up in the news feed have already gone through a selection process guided by the EdgeRank algorithm, which essentially decides “which of the things your friends say should show up in your News Feed” (Madrigal 2010). Friendships on Facebook are continuously measured, examined, and augmented by the software. EdgeRank does not just decide which stories should show up, but also which friends. “The secret-sauce algorithm is able to mystifyingly keep that dude from high school from continuously popping up in your timeline” (Blue 2010). The power of the algorithm becomes apparent in its capacity to make certain people more visible than others. The underlying software always already intervenes in the practices of friendship by selecting which friends a user should pay attention to.

While the algorithms of the Web are often notoriously guarded trade secrets, three key variables determine the importance of people and their actions. These were introduced at a Facebook developers’ conference in April 2010. Facebook algorithms rank “objects” (i.e., a photo), the user, and “edges” (i.e., interactions). The interconnectedness of the affinity between viewing user and edge creator, the weight of the type of edge, and the length of time elapsed between postings.

For an affinity score, Facebook knows how often a particular user tends to interact with another user, for example how often he or she comments or looks at that friend’s profile. A user increases his affinity toward a friend the more he or she interacts with that friend. Different types of edges are weighted somewhat differently. Not

surprisingly, objects with many “likes” and comments have a much greater weight. “For example, a friend’s status update that might not normally be a highlighted story may be highlighted after many other friends comment on it” (Facebook Help Center 2011). The time factor, in turn, refers mainly to the freshness and newness of the edge. The power of EdgeRank lies in its capacity to define certain regimes of visibility by assigning more weight to edges that generate a higher degree of user participation. Moreover, EdgeRank illustrates the ways power articulates through the algorithm to suggest an ideal form for friendship formation. Facebook conditions the range of possibilities and modes of becoming a subject as governed by algorithmic forms of visibility, configuring the ways in which friendships are allowed to unfold within the boundaries of the platform.

One of the basic tenets of friendship is that it requires maintenance. Individuals must continuously work on developing and nourishing friendship, which requires a repeated decision to keep faith, loyalty, and mutual reinforcement (Derrida 2005, 15-6; Webb 2003, 122). In a context where the average Facebook user has 130 friends (Facebook 2011b), maintenance becomes hard and time-consuming. To assist, several software mechanisms help users nourish their friendships. The now-pervasive like button constitutes an important actor for expressing and articulating friendship. The like button is a Facebook-designed feature and social plug-in that allows users to share content and express affirmation. With the like button Facebook made paying attention to friends a one-click sentiment. As a token of “phatic communication,” the “like” signifies the most cost-effective way to maintain and perform friendships on Facebook.² Similarly, the friend birthday reminder feature is one of most important friendship activators, as it spurs interaction on a frequent basis, as there is always a friend on Facebook who has birthday. Having shown how various software actors interfere with and augment the various dimensions of friendship on the Facebook platform, I now turn to the ways in which algorithmic friendship relates to more traditional accounts of friendship.

Towards an Understanding of Algorithmic Friendship

Software configures friendship online by encoding values and decisions about what is important, useful, and relevant and what is not. Software restricts certain activities by making others possible or impossible. As I have shown, this becomes apparent when considering the multifarious ways in which software elements, including the database, interface, privacy settings, algorithms, and code, “authorize, allow, afford, encourage, permit, suggest, influence, block, render possible and forbid” human action (Latour 2005, 83). These interventions alter the traditional ways in which we think about friendship.

One of the basic assumptions underlying the constitution of friendship on Facebook is the idea of sameness or similarity as a foundation for friendship. For example, the PYMK algorithm introduces (or reintroduces) people to each other, based on a rather safe conception of similarity. The friend of friend approach thus represents a “subtle

form of limiting access to *difference*" (Elmer 2004, 40). This logic hints at the politics of software in that an algorithm always selects and reinforces one ordering at the expense of others (Mackenzie 2006, 44). On one hand, the PYMK algorithm conforms to traditional conceptions of friends as people that are somehow like us. On the other hand, it also challenges a widely cited definition of friendship as "voluntary relationships, largely free of structural constraints and based on equality" (Allan 1989, 1). Users are constantly encouraged and prompted to take certain actions, including befriending people. The PYMK feature contained on the left-hand column of the user interface functions as a constant reminder that there might be even more people out there waiting to be added as friends. While the traditional notion of friendship highlights the voluntary and durational aspect of becoming friends and becoming friends anew, the software, one may claim, encourages and functions as a suggestive force that "pushes" users to connect with the people he or she may already know according to the algorithm.

The subtle ways in which the software behaves thus pushes, reminds, and introduces users to each other. This is not to say that friendships on Facebook are not of a voluntary nature. Rather, the software assists in making friendships happen in the first place. Let us for a brief moment return to the notion of the ghostly Facebook existence mentioned earlier: the ways in which the software in many cases already knows the user, even before he or she has registered on the site. This kind of technical remembering, what Stiegler (1998) calls "tertiary retention," can be seen in the way that synchronizing one's Facebook account with an existing e-mail account reminds the user of long-lost social connections. When registering on Facebook, users are prompted to import existing contacts by providing information about their e-mail accounts. Facebook will then provide information about which of the user's social connections are already on Facebook, subsequently suggesting that he or she add them to their social assemblage or network. The accumulation of subjects into the Facebook database also feeds into the friend-finding algorithm, constituting the grounds up on which people are assessed for their compatibility as friends. The software thus enables remembering.

People we do not think about, people we might not remember, or people we might not necessarily consider friends continuously show up in the right-hand column of our personalized news feeds. A professor from another department, an acquaintance from one's student days, or simply a distant cousin on one's mother's side of the family are all candidates for possible new friendship connections dug up from the database by the PYMK algorithm and other memory aids. Various software features are in place to activate friendship impulses, such as community, commitment, and responsibility. For example, the "See Friendship" feature offers a way to view the connection you have with another user on an aggregated "Friendship page." This page can be found by following a link placed below "relevant Wall posts." Designed the same way as a personal profile, the friendship page contains photos in which two friends are tagged, comments that have been exchanged between the two, information about when the pair became friends on Facebook, along with all kinds of information about things the

friends have in common. This peculiar software-aggregated view of two friends' shared history on Facebook ultimately aims to "bring back memories, conversations and times spent together" (Kao 2010).

Through features like this, Facebook seeks to induce and simulate the emotional and intimate connections seen as a defining feature of friendship. As Facebook friends are not a set of distant strangers but rather people we already know, there is a certain responsibility on behalf of users to nurture and maintain these relations. The system supports this by prompting users to say hello, write on a new friend's wall, and so on. What becomes apparent is how the software does not leave users alone. Facebook becomes an active agent participating in the performance of friendship.

Traditionally, friendship has been thought of as an exclusive social relation. Aristotle (2004, 168) argues, "it is impossible to have friendship, in the full sense of the word, for many people at the same time, just as it is impossible to be in love with many people at the same time." Friendships require continuous nurture and care. Friendships are not static relations but are constantly evolving over time. Requiring ongoing affective engagement, folded in different temporalities and rhythms of repetition, memories, and anticipation, the nature of friendship is fundamentally ontogenetic, or always in a state of development.

The ontogenetic nature of friendship becomes more apparent within the context of Facebook. Users willingly and repeatedly like, comment, click on, and tag each other, creating the flow of attention needed to give the impression of continuous commitment. As EdgeRank is geared toward interaction, users who do not participate get downplayed, while users who frequently comment, like, and share are made more visible. In curious ways, Facebook reinforces the exclusivity of friendship and the classic conception of quality over quantity. However, contrary to the Aristotelian virtue ethics, quality in Facebook is measured on the basis of quantity. Therefore, it is the amount of engagement on the platform that becomes decisive as to whether or not a user is regarded as a "good friend" by the algorithm and thereby made more visible. The paradox here is that while EdgeRank reinforces the notion that we may only engage in a handful of friendships at any given time, it does so by encouraging users to accumulate friends. Thus, on another level, exclusivity is done away with completely.

Exclusivity and the notion that we must choose how to divide our time between friends are evidently inscribed into the software. Herein lies the power of the EdgeRank algorithm to determine users' presence on the news feed. According to the algorithm, friends on Facebook embody different levels of interestingness that can be measured and subsequently arranged and distributed accordingly. The operational logic of the algorithm can be viewed in terms of what Rancière (2004, 12) describes as the "distribution of the sensible"—the political-aesthetic logic of revealing, "who can have a share in what is common to the community based on what they do and on the time and space in which this activity is performed." Similarly, EdgeRank reveals who can have a share in the community of friends, based on what they do (as measured in the amount and nature of participation), the time in which the activity took place (as measured in

frequency and recency), and the space in which the activity is performed (e.g., some spaces are given more weight, such as talking to each other in Facebook chat or messages).

We can see another paradox with regards to exclusivity if we consider Facebook friendship in light of the traditional definition of friendship as a private and intimate relation between two persons (Hays 1988, 395). Far from being a private and intimate relation, the Facebook architecture is set up in such a way as to make friendships public. Friendships are not exclusive to two people as they engage the whole network. However, Facebook needs to balance the private and public aspects of friendship. While designed to engage the network, Facebook also hinges on users having a sense of intimacy, so as not to flatten out the meaning of friendship. Maintaining the notion of friendship as something to be cared for and nurtured is therefore extremely important for a commercial social networking platform like Facebook where friends have become a valuable currency.

Precisely because friendships signify something exclusive, a social relation that implies trustworthiness, friends can be used for commercial purposes. The perceived commercial value of friends and their relations have been put at the very center of Facebook's engineering efforts. By means of developing the so-called Open Graph protocol, which also enabled the implementation of the like button, Facebook has been able to expand into to the far corners of the Web—taking its users and their relations along with it. "Liking" content across the Web not only provides valuable data about users' affinities, but importantly gives access to users' friendship networks and their tastes and so on. As such, the Open Graph and the like button directly intervene in the production and circulation of meaning by framing friendship as a currency that can be used for commercial purposes.

The like button thrives on the assumption of consumer sameness or similarity, where users desire or like the same things their friends do. Tellingly, one of the largest consumer trend firms in the world highlighted what they called the "f-factor" in their May 2011 trend report (Trendwatching 2011). The f-factor refers to the power of friends in consumers' purchasing decisions today. The report based its claim precisely on the assumption that we trust our friends and think like our friends, turning friends into the most relevant recommenders. For example, the assumption of sameness embedded in the like button is amplified by the jeans company Levi's arguing for "like-minded shopping" or the travel site Tripadvisor.com, which refers to "trusted hotel reviews."³

Moreover, the commercialization of friendship can be seen in the move toward using friends as advertisements. Through a feature called "Sponsored Stories," Facebook turns "friends' actions into promoted content" (Parr 2011). When a user for instance "likes" Starbucks on an Open Graph-enabled Web site, the application publishes a story on his friends' news feeds saying that he endorses or recommends the brand. Businesses and organizations can take advantage of the phenomenon of word of mouth, a powerful way of recommending goods and information of potential interest.

Friendships on Facebook then are shaped through the particular ordering of the social—the distribution of the sensible—in and through software, and especially the algorithms orchestrating news feed. Friends embody different levels of interestingness as a consequence of the social-sorting mechanisms of the algorithm. Users are given the impression of constant activity as those friends whose updates are most frequently commented upon are given priority over others whose updates are only rarely commented upon. Facebook rewards the “influencers” with visibility on the basis that they attract a lot of interaction. The probability of attracting the attention of others will in turn increase the more connections one has. The more friends, the better the chances of receiving comments or likes on one’s actions on Facebook. The more interaction a user is able to generate, the greater the probability of becoming visible on friends’ news feeds. Collecting and accumulating friends is therefore not just a peculiar feature of online social networking, but also a requirement for getting on the news feed. Not only does accumulating friends enhance a user’s chance of becoming visible on the news feed; it also enhances the chance of becoming a potential friend to someone else. That is, a “user with a wider social circle has a higher probability of friendship overlap and therefore may be recommended frequently to many different users” (Daly, Geyer, and Millen 2010, 302). The politics of algorithmic friendship becomes evident when the probability of being a recommended friend increases with popularity and diminishes when a user has fewer friends. What the friend-of-friend algorithm essentially suggests is that a desired friend is the person who frequents diverse social networks and has as many friends as possible.

Conclusion: What Friends Are For

Social networking sites are inherently about friendship. However as this article has shown, Facebook does not merely facilitate friendship by providing a platform for existing friendships; it is also a “friendship maker”. Friendships online thus need to be understood as a socio-technical hybrid, a gathering of heterogeneous elements that include both humans and nonhumans. In an increasingly software-mediated world, a sensibility toward the active role of nonhuman actors creating forms of sociality becomes imperative. Thinking of friendship as an assemblage—a relational process of composition—offered a way to critically scrutinize how software participates in creating, initiating, maintaining, shaping, and ordering the nature of connections between users and their networks. To conclude, I would like to draw attention to three points of collision between more broadly held conceptions or cultural ideas of friendship and the ways in which friendships are produced by the software.

First, friendships on Facebook are never only between two individuals. Rather we need to think of online friendship as a relationship involving a plethora of actors, both human and nonhuman forces. Users do not simply send out “friend requests” or accept them; software as actors (like the PYMK algorithm) increasingly assists users in making these kinds of decisions. While friendships are still about selecting and making

decisions about whom to devote one's time and attention to, these decision-making processes have increasingly been delegated to algorithms. Derrida's (2005, 29) question about what a future would look like if decisions could be programmed indeed seems to have found at least one answer in the sociotechnical construction of friendship on Facebook. This programmability of friendship importantly helps orchestrate the various temporalities of friendship. The software helps users establish a relation to the past and present by "remembering" everything from friends' birthdays, friends' most "memorable status updates," and the shared history of a friendship as manifest in the "see friendship" function. The algorithmic configuration of friendship furthermore hinges on the anticipatory logic of friendship. In the friendship assemblage of Facebook, friends are used as key variables to calculate the probabilities of future actions on the platform.

Second, friendships on Facebook break with some of our most hallowed cultural assumptions about friendship in terms of shared and reciprocal activities (Lynch 2005, 189). Friendships in many philosophical accounts are thought of as relationships that hinge on shared activity, reciprocity, mutual contact, and joint pursuits (see Aristotle 2004; Telfer 1991). While the publicness of friendship on Facebook in some respect qualifies as a form of shared life, the algorithms suggest otherwise. True, the initiation of friendships on Facebook with the help of the PYMK algorithm and "friend request" feature hinges on the notion of reciprocity. However, when it comes to performing friendship on Facebook, the cultural logic of reciprocity and mutual contact are undermined by the operational logic of EdgeRank. As only a fraction of all updates posted reaches the news feed at any given time (Bucher, 2012), the presence and performance of friendship on Facebook does not hinge on reciprocity between two human friends, but rather on the dynamics of the software-subject relations. There is thus a need to be wary about treating the news feed as a kind of public sphere or common space of living together, as the mutual contact is far from guaranteed. While for Aristotle, reciprocity is the glue of all friendship (Vallor, 2012), friendships on Facebook needs no glue; they are the glue. As Facebook expands into other parts of the Web, friendships are the glue between Facebook and external websites. In a networked society, friendships become attached to users' digital personae, which they cannot escape.

Finally, contrary to the notion that friendship is something in which we freely choose to engage (Allan 1989), friendships on Facebook lose some of their voluntary character. Encoded in an environment of objects and edges, the connections we forge with other people may have real consequences as the conditions of the intelligible and sensible is increasingly calculated on the basis of who our friends are, what they have done, and how many of them there are. Whatever action a user's Facebook friend performs on the platform, say "checking-in" at a restaurant or "liking" a brand, automatically also gets associated with the user. A user's digital identity is thus collapsed with that of his or her friends. The implications of this can be far-reaching, as friends have become a primary means through which *the production and occlusion of information* can be programmed. Contrary to the notion that friendship is something created between equals and free of structural constraints, friendships on Facebook constitutes a case of what I call *programmed sociality*, which needs to be understood as a process of

sociotechnical negotiations between users and software. As friends on Facebook increasingly constitute the economic cement of our current information ecosystem, what and whom friends are for thus becomes one of the most pressing social problems today.

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Notes

1. Facebook uses the term *social graph* to express the connections between people on the network.
2. Phatic communications refers to linguistic expressions where the main function is to serve as a token of sociality and connectivity rather than to convey new information.
3. Levi's was one of the first companies to make extensive use of the like button in a social media campaign. Immediately after the release of the like button in April 2010, Levi's integrated it into their website, offering a way for customers to shop socially. Shoppers could "like" particular jeans and share it with their Facebook friends as well as find "top-liked" products within their networks. In the case of Trip Advisor, the like button was actively used to let users see the hotel reviews of their friends and their networks as a way to signal supposedly especially trustworthy travelers' reviews.

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Author Biography

Taina Bucher is a research fellow in Media Studies at the Department of Media and Communication, University of Oslo. She is currently completing her PhD dissertation, which theorizes and analyzes how software shapes sociality in and through social networking sites. She has forthcoming articles in *New Media & Society* and *Culture Machine*.